AGROTECHNOLOGY STUDY PROGRAM

MODULE HANDBOOK (REVISION)






2025


FACULTY OF AGRICULTURE
UNIVERSITAS SUMATERA UTARA

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1st Semester

USU1101 ISLAMIC RELIGIOUS EDUCATION

Course Name	Islamic Religious Education
Code	USU1101
Semester (s) in which the module is taught	I
Lecturer (Person responsible)	Dr. Ir. Salmiah, MA
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended Required and recommended prerequisites for joining the modules for joining the module	-
Course Description	This course discusses the understanding of the nature of human and the universe (verses kauniyah and tanziliyah). Tanziliyah verses include aqidah, sharia, morals and Islamic History. The main emphasis is on the application of these teachings to daily behavior. Lectures 14 times face to face, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to internalize the BINTANG (Bertakwa kepada Tuhan Yang Maha Esa, Inovatif dan berintegritas, serta Tangguh dan arif / Devout to God Almighty, Innovative and have integrity, and Resilient and wise) values in developing self-ability as a lifelong learner in the field of agrotechnology

Content	1. Students are able to analyze the syllabus, lecture contract and muqadimmah for one semester. 2. Students are able to apply the concept of divinity, proving the existence of God through his creation 3. Students are able to analyze the meaning of faith, the character of believers and taqwa 4. Students are able to explain the nature of man according to the concept of Islam 5. Students are able to apply religion, conditions of religion, classification of religion, and characteristics of religion. 6. Students are able to apply Islam as the religion of the last Revelation 7. Students are able to evaluate the formal sources of Islamic teachings. Students are able to understand and explain the methods of ijtihad in Islam. 8. Students are able to evaluate the formal sources of Islamic teachings. Students are able to understand and explain the methods of ijtihad in Islam. 9. Students are able to apply the values of human rights, democracy and eradication of corruption in an Islamic perspective 10. Students are able to apply the meaning of ethics, morals and morals and their relationship with tasauf. 11. Students are able to apply Islamic concepts of science technology and art 12. Can analyze the concept of civil society and show the role of Muslims in the formation of civil society and the meaning of Islam as a religion of rahmatanlil'alamiin. 13. mics in an effort to improve the welfare of the peopleStudents are able to analyze the concept of Islamic econo 14. Students are able to analyze the concept of Islamic economics in an effort to improve the welfare of the people.
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)

Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Dirjen Pembelajaran dan Kemahasiswaan Kemenristekdikti, Pendidikan Agama Islam untuk Perguruan Tinggi, Jakarta, Dirjen Belmawa, 2016. Muhibbin, Zainul, dkk, Pendidikan Agama Islam Membangun Karakter Madani, Surabayaa, ITS Press, 2012. Razaq, Nasruddin, Dinnul Islam, Bandung, Al-Ma,arif, 2005. Iberani, Jamal Syarif dkk, Mengenal Islam, Jakarta: eL-Kahfi, 2003. Imarah, Muhammad, Islam dan Pluralitas Perbedaan dan Kemajemukan dalam Bingkai Persatuan, Jakarta, Gema Insani, 1999. Lubis,Tagor Muda .2015. Buku Ajar Pendidikan Agama Islam Untuk Perguruan Tinggi Umum.Medan: USU Press. Anshari, E. Saefudin.1991. Ilmu, Filsafat, dan Agama. Surabaya: Bina Ilmu. 3. Matondang, Husnel Anwar. 2017. Islam Kaffa Pendidikan Agama Islam Untuk perguruan Tinggi. Medan: Perdana Publishing. Wahyuddin, dkk., Pendidikan Agama Islam Membangun Karakter Mahasiswa di Perguruan Tinggi, Surabaya, Penerbit Litera Jannata Perkasa, 2019. Abdullah Idi dan Toto Suharto, Revitalisasi Pendidikan Islam, Yogyakarta: Tiara Wacana, 2006 Ali Ibn Ali al-Mas'udi, Abu Hasan, Muruj al-Dzahab wa Ma'adin al-Jauhar, Penyunting Muhammad Muhy al-Din Abd. Al-Hamid, Jilid-2, Beirut: Dar al-Fikr, 1973, Cet.ke-1. Arief, Armai (editor), Sejarah Pertumbuhan dan Perkembangan Lembaga Pendidikan Islam Klasik, Bandung: Angkasa, 2014, Cet.ke-1
Last date of update	July, 2025

USU1102 PROTESTANT RELIGIOUS EDUCATION

Course Name	Protestant Religious Education
Code	USU1102
Semester (s) in which the module is taught	I
Lecturer (Person responsible)	University Team
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended Required and recommended prerequisites for joining the modules for joining the module	-
Course Description	This course discusses the application of basic Christian faith, responsibility to God through sensitivity to others and the environment. Lectures 14 times face to face, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to internalize the BINTANG (Bertakwa kepada Tuhan Yang Maha Esa, Inovatif dan berintegritas, serta Tangguh dan arif / Devout to God Almighty, Innovative and have integrity, and Resilient and wise) values in developing self-ability as a lifelong learner in the field of agrotechnology

Content (is made in PBL brackets, and CM)	1. Able to apply knowledge about Catholic Religious Education Course and what will be done and should be achieved in this course. 2. Students are able to analyze the Calling of Human Life According to the Scriptures 3. Students are able to evaluate the vocation of human life according to the Bible 4. Students are able to analyze Human Relationship with Self 5. Students are able to analyze the relationship between fellow humans, the environment and God 6. Students are able to analyze interfaith dialogue 7. Students are able to apply inter-faith cooperation in Indonesia to build persaudaraan sejati 8. Students are able to apply the nature and meaning of the kingdom of God as the core and form of Jesus' work in the midst of the world. 9. Students are able to analyze the meaning of the passion, death and resurrection of Jesus Christ. 10. Students are able to analyze the meaning of God the Holy Trinity 11. Students are able to evaluate the meaning and nature of the church 12. Students are able to analyze the universal church and local church 13. Students are able to apply faith in society 14. Students are able to apply communication in the church
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49

Reading list	Main Reading Hans Kung, 1999, “Etika Global”, Pustaka Pelajar, Yogyakarta. Henry C. Thiessen, 1995, “Teologi Sistematika”, Gandum Mas, Malang. Herman Bavinck, 2011, “Dogmatika Reformed 1: Prolegomena”, Momentum, Surabaya. Herman Bavinck, 2011, “Dogmatika Reformed 2: Allah dan Penciptaan”, Momentum, Surabaya. J. Verkuyl, 1992, “Etika Kristen, Ras, Bangsa dan Negara”, BPK Gunung Mulia, Jakarta. J. Verkuyl, 2002, “Etika Kristen Bagian Umum”, BPK Gunung Mulia, Jakarta. John M. Frame, 2004, “Doktrin Pengetahuan Tentang Allah”, Literatur SAAT, Malang. K. Bertens, 2011, “Etika”, Gramedia, Jakarta. Kenneth Richard Samples, 2015, “Without a Doubt”, Literatur SAAT, Malang. Millard J. Erickson, 1999, “Teologi Kristen”, Gandum Mas, Malang.
Last date of update	July, 2025

USU1103 CATHOLIC RELIGIOUS EDUCATION

Course Name	Catholic Religious Education
Code	USU1103
Semester (s) in which the module is taught	I
Lecturer (Person responsible)	University Team
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the concept of faith in the church, church life and society in the context of developing the attitude and personal mentality of a Catholic scholar for the benefit of Indonesian society as an expression of his faith. Lectures 14 times face to face, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to internalize the BINTANG (Bertakwa kepada Tuhan Yang Maha Esa, Inovatif dan berintegritas, serta Tangguh dan arif / Devout to God Almighty, Innovative and have integrity, and Resilient and wise) values in developing self-ability as a lifelong learner in the field of agrotechnology

Content (is made in PBL brackets, and CM)	1. The importance of Catholic Religious Education in Higher Education. Social events, issues and phenomena related to the daily life of the Catholic faith. 2. Humans are capable of knowing God. Catholic concept of divinity 3. Scope of Catholic Teaching (Sacrament of Marriage) 4. Religious experience, religion, revelation, and Faith 5. Church, Science and Modernity. Social Teachings Church 6. Old Testament (God's Kingdom is near). New Testament (God's kingdom has come, it's here) 7. The Liturgical Year (Christmas - Easter) culminates the Catholic Church's faith in the Three Holy Days. 8. Catholic teaching and inculturation of Catholic faith in local culture 9. Catholic teachings and the challenges faced in relation to the teachings of Love 10. That the development of science today is always in contact with religious values 11. That the rapid changes that occur also affect how the values/patterns of behavior of the community itself towards the environment and each other. 12. Students are able to analyze situations, concepts (theories) and information that arise and develop in people's lives. 13. Students are able to provide assessment and criticism of the existing situation towards the situation that should be in accordance with the values and teachings of Jesus. 14. Students are able to understand that the Catholic Church is always concerned and in line with the times (aggiornamento) both in science and the Catholic Church for the impact caused by the development of science itself.
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions.

	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Konferensi WaliGereja Indonesia. Katekismus Gereja Katolik [cetakan 8]. Jakarta: KWI & Kanisius, 2013 Achmad, N. Pluralisme Agama, Kerukunan dalam Keragaman. Jakarta: Penerbit Buku Kompas, 2001. Barbour, Ian G. Juru Bicara Tuhan antara Sains dan Agama. Bandung: Penerbit Mizan, 2000. Griffin, David Ray. Tuhan dan Agama dalam Dunia Post Modern. Yogyakarta: Kanisius, 2005. Ismartono, SJ, I. Kuliah Agama Katolik Di Perguruan Tinggi Umum. Jakarta: Obor, 1993. Sugiarto. I. Bambang. Agama Menghadapi Jaman. Jakarta: APTIK, 1992. Leahy Louis. Filsafat Ketuhanan Kontemporer. Yogyakarta: Kanisius & BPK Gunung Mulia, 1994. Sumartana, Th. Kebangkitan Agama dalam Era Globalisasi dalam Reformasi Politik, Kebangkitan Agama, dan Konsumerisme. Yogyakarta: Dian/Interfidei, 2000. Kemenristekdikti. 2016. Pendidikan Agama Katolik Untuk Perguruan Tinggi. Jakarta: Dirjen Belmawa Kemenristekdikti Hardowirjana, R. (2000). Zimat Kristiani: Awam Masa Kini Berevangelisasi Baru. Yogyakarta: Kanisius
Last date of update	July, 2025

USU1104 HINDU RELIGIOUS EDUCATION

Course Name	Hindu Religious Education
Code	USU1104
Semester (s) in which the module is taught	I
Lecturer (Person responsible)	University Team
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the understanding, appreciation and practice of Hinduism, strengthening faith and belief, history of Hindu development, Vedas, basic Hindu beliefs, techniques for achieving religious goals, Hindu philosophy, Hindu ethics, Yadnya, Hindu society and the basis of Hindu leadership. Lectures 14 times face to face, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to internalize the BINTANG (Bertakwa kepada Tuhan Yang Maha Esa, Inovatif dan berintegritas, serta Tangguh dan arif / Devout to God Almighty, Innovative and have integrity, and Resilient and wise) values in developing self-ability as a lifelong learner in the field of agrotechnology

Content (is made in PBL brackets, and CM)	1. Able to convey academic/professional arguments on the purpose and function of Hindu religious education as a component of general compulsory courses 2. Able to reason and implement Hindu spiritual values in building shraddha and bhakti (faith and Taqwa) to God Almighty, in forming a humanist personality 3. Able to be honest, law-abiding, creative, healthy and adaptive based on Hindu religious values 4. Skilled in presenting the results of individual and group studies on a case (case study) related to the contribution of Hinduism in the development of world civilization. 5. Skilled in presenting the results of individual and group studies on a case (case study) related to the contribution of Hinduism in the development of world civilization. 6. Able to present a model of society that is able to build a humanist, aesthetic and globally competitive civilization 7. Able to present a model of society that is able to build a humanist, aesthetic and globally competitive civilization 8. Understand the purpose and function of Hindu religious education as a component of general compulsory courses 9. Understand the purpose and function of Hindu religious education as a component of general compulsory courses 10. astering Hindu spiritual values in building sraddha and bhakti to God Almighty 11. Mastering Hindu spiritual values in building sraddha and bhakti to God Almighty 12. Understand the concept of Hindu humans in shaping honest, law-abiding, creative, healthy and adative personalities 13. Understand the contribution of Hinduism in the development of world civilization 14. Understand the concept of society based on the teachings of Tri Hita Karana
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%)

	• Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Singer, Wayan, 2012. Tattwa (Ajaran Ketuhanan Agama Hindu, Surabaya, Paramita Tim Penyusun, 1997, Pendidikan Agama Hindu Untuk Perguruan Tinggi, Hanuman Sakti Wiana, 1994, Bagaimana Hindu Menghayati Tuhan, Manikgeni . Wiana, 1982, Niti Sastra, Ditjen Hindu dan Budha. Titib, 1996, Veda Sabda Suci Pedoman Praktis Kehidupan, Paramita. Pudja, 1997, Teologi Hindu, Mayasari Agung Leo, Sri Wahyuni.2013. “Perencanaan Pembelajaran Sejarah. Yogyakarta”: Ombak. Atmodjo, 1977. “A Newly Discovered Pillar Inscription of Sri Kesari Warmadewa at Malet Gede”, dalam 50 Tahun Lembaga Purbakala dan Peninggalan Nasional 1913-1963.Jakarta. Bangli I.B. 2005. “Mutiara Dalam Budaya Hindu Bali (Pedoman Guide”).Surabaya: Paramita. I.B Suparta Ardhana,2002. “Sejarah Perkembangan Agama Hindu di Indonesia”. Surabaya.Paramita.
Last date of update	July, 2025

USU1105 BUDDHIST EDUCATION

Course Name	Buddhist Education
Code	USU1105
Semester (s) in which the module is taught	I
Lecturer (Person responsible)	University Team
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the main teachings of Buddhism and its application in the fields of science and technology as well as its practice properly and correctly in daily life, nation and state. Lectures 14 times face to face, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to internalize the BINTANG (Bertakwa kepada Tuhan Yang Maha Esa, Inovatif dan berintegritas, serta Tangguh dan arif / Devout to God Almighty, Innovative and have integrity, and Resilient and wise) values in developing self-ability as a lifelong learner in the field of agrotechnology

Content (is made in PBL brackets, and CM)	1. Tipitaka/Tripitaka Scriptures 2. Philosophical and Historical Meanings of Buddhism and Human Life 3. Laws in Buddhism that are universal 4. The concept and meaning of the Almighty Godhead in Buddhism 5. Values of morality as a guide to human life (Sila) 6. The concept of Buddhist society and interfaith harmony. 7. Concept and Urgency of Buddhist Cultural and Political Dynamics in the context of nationality. 8. Students are able to know how Buddhism helps to create a prosperous society. 9. Students are able to understand the role as an agent of national unification 10. Students are able to understand the basics of Buddhist teachings to build harmony. Students are able to know how to build tri harmony in life. 11. Students are able to understand the meaning of puja/respect. Students are able to understand how to perform puja bakti correctly. 12. Students are able to understand MEDITATION Meditation: credits x 50 5 No Special Instructional Objectives Subject Matter Time Source Meditation and its benefits. Students are able to understand how to do meditation 13. Students are able to know how Buddhism helps to create a prosperous society. 14. Students are able to understand the moral standard of Buddhist life
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64

	D = 50-59 E ≤ 49
Reading list	Main Reading Kemenristekdikti. 2016. Pendidikan Agama Buddha Untuk Perguruan Tinggi. Jakarta: Dirjen Belmawa Kemenristekdikti Mukti, Wijaya Khrisnanda. 2003. Wacana Buddha Dhamma. Jakarta: Yayasan Dhamma Pembangunan. Nārada. Tanpa tahun. Sang Buddha dan Ajarannya Vol. 2. Terjemahan oleh Visākā Gunadharma. 1998. Jakarta: Yayasan Dhammadipa Arāma. Zimmer, Heinrich. 2003. Sejarah Filsafat India. Terjemahan oleh Agung Prihantoro. Yogyakarta: Pustaka Belajar. Dayal, Har. 1932. The Bodhisattva Doctrine in Buddhist Sanskrit Literature. Delhi: Motilal Banarsidass Publishers Wahyono, Mulayadi. 2002. Pokok-Pokok Dasar Agama Buddha. Jakarta: Departemen Agama RI Sangha Theravada Indonesa. 2007. Paritta Suci. Jakarta: Yayasan Sangha Theravada Indonesia Piyadassi. 2003. Spektrum Ajaran Buddha. Terjemahan oleh Hetih Rusli dkk. Jakarta: Yayasan pendidikan Buddhis Tri Ratna. Sangharakshita, Mahāsthavira. 1996. Membuka Wawasan Intersektarian. Jakarta: Sangha Agung. Kusaladhammo, Ashin. 2007. Kronologi Hidup Buddha. Jakarta: Ehipassiko Harold, C., 1989, Pluralisme Tantangan bagi Agama-Agama, terj., Jogjakarta : Kanisius.
Last date of update	July, 2025

USU1106 CONFUCIAN RELIGIOUS EDUCATION

Course Name	Confucian Religious Education
Code	USU1106
Semester (s) in which the module is taught	I
Lecturer (Person responsible)	University Team
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the main teachings of the Confucian religion and its application in the fields of science and technology as well as its good and correct practice in daily life, nation and state. Lectures 14 times face to face, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to internalize the BINTANG (Bertakwa kepada Tuhan Yang Maha Esa, Inovatif dan berintegritas, serta Tangguh dan arif / Devout to God Almighty, Innovative and have integrity, and Resilient and wise) values in developing self-ability as a lifelong learner in the field of agrotechnology

Content (is made in PBL brackets, and CM)	1. Able to explain the overview and goals to be achieved in the RuKhonghucian religion. 2. Able to understand the purpose of body and soul, life and after life that can be achieved by a human being who lives in the Holy Way, practicing virtue based on religious guidance. 3. Understand the three basic activities in studying and believing in the Ru - Khonghucian religion 4. Understand and believe in the nature of life 5. Able to understand the Godhead and believe in God Almighty, understand and uphold the Prophet and Prophethood and Shenming in Ru - Khonghucu religion. 6. Understand the Religious Philosophical aspects of the Shrine, Religious Holidays, Incense and how to salute and greet. 7. Understand the main points of faith of the RuKhonghucu religion. 8. Understand the main points of RuKhonghucu Moral and Ethical Teachings 9. Able to understand the Principles of Moral and Ethical Teachings of Confucianism. 10. Understanding the implementation of Ru-Chinese Moral and Ethical Teachings in Life 11. Understand the implementation of Ru-Chinese Moral and Ethical Principles in Life 12. Understand the religious holidays of Ru -Chongqing. Knowing the kinds of incense and their uses. 13. Understand the basic faith of a Ru-Chinese believer. Understand the eight creeds 14. Understanding the overall Ru-Chinese religious education leads students to become a Junzi.
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74

	C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Xs. Tjhie Tjay Ing dkk, Hidup Bahagia dalam Jalan Suci Tian, Gerbang Kebajikan Ru, 2010 Yu Dan, 1000 Hati Satu Hati, Gerbang Kebajikan Ru 2009
Last date of update	July, 2025

USU1107 EDUCATION FOR THE SECT OF BELIEF IN GOD ALMIGHTY

Course Name	Education for the Sect of Belief in God Almighty
Code	USU1107
Semester (s) in which the module is taught	I
Lecturer (Person responsible)	University Team
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	
Course Description	This course discusses the main teachings of Belief in God Almighty and its application in the fields of science and technology as well as its practice properly and correctly in daily life, nation and state. Lectures 14 times face to face, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to internalize the BINTANG (Bertakwa kepada Tuhan Yang Maha Esa, Inovatif dan berintegritas, serta Tangguh dan arif / Devout to God Almighty, Innovative and have integrity, and Resilient and wise) values in developing self-ability as a lifelong learner in the field of agrotechnology

Content (dibuat dalam kurung PBL, dan CM)	1. Able to explain the overview and goals to be achieved in the RuKhonghucian religion. 2. Able to understand the purpose of body and soul, life and after life that can be achieved by a human being who lives in the Holy Way, practicing virtue based on religious guidance. 3. Understand the three basic activities in studying and believing in the Ru - Khonghucian religion 4. Understand and believe in the nature of life 5. Able to understand the Godhead and believe in God Almighty, understand and uphold the Prophet and Prophethood and Shenming in Ru - Khonghucu religion. 6. Understand the Religious Philosophical aspects of the Shrine, Religious Holidays, Incense and how to salute and greet. 7. Understand the main points of faith of the RuKhonghucu religion. 8. Understand the main points of RuKhonghucu Moral and Ethical Teachings 9. Able to understand the Main Points of Moral and Ethical Teachings of RU_Khonghucu 10. Understand the implementation of the Principles of Moral and Ethical Teachings of Ru-Khonghucu in Life 11. Understand the implementation of the Principles of Ru -Chonghucian Moral and Ethical Teachings in Life 12. Understand the religious holidays of Ru -Chongqing. Knowing the kinds of incense and their uses. 13. Understand the basic faith of a Ru-Chinese believer. Understand the eight creeds 14. Understand the overall Ru-Chinese religious education leads students to become a Junzi.

Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Xs. Tjhie Tjay Ing dkk, Hidup Bahagia dalam Jalan Suci Tian, Gerbang Kebajikan Ru, 2010 Yu Dan, 1000 Hati Satu Hati, Gerbang Kebajikan Ru 2009
Last date of update	July, 2025

USU1108 PANCASILA EDUCATION

Course Name	Pancasila Education
Code	USU1108
Semester (s) in which the module is taught	I
Lecturer (Person responsible)	Afrita, SH., M.Hum
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the foundations and objectives of Pancasila Education, Pancasila in the context of the history of the struggle of the Indonesian people, Pancasila as a system of philosophy, Pancasila as a political ethic and national ideology, Pancasila in the context of the constitution of the Republic of Indonesia and Pancasila as a paradigm of life in society, nation and state in 14 face-to-face lectures, structured assignments, quizzes, midterm exams, and semester final exams....
Module objectives/intended learning outcomes	• Students are able to apply the values of Pancasila and citizenship • Students are able to understand general basic sciences • Able to build a global-minded character in both scientific and cross-disciplinary fields.

Content	1. The nature of Pancasila education 2. The purpose of Pancasila education 3. Concept and Urgency of Pancasila in the Current History of the Indonesian Nation 4. Argumentation about the dynamics and challenges of Pancasila in the study of the history of the Indonesian Nation 5. The concept of the State and the urgency of the state foundation Pancasila as the State Foundation 6. The relationship between Pancasila and the Preamble of the 1945 Constitution of the Republic of Indonesia 7. Concept and Urgency of Pancasila as an Ideological System 8. Challenges of Pancasila as an Ideological System and the Essence and Urgency of Pancasila as an Ideological System 9. The concept of the urgency of Pancasila as a Philosophical System 10. Dynamics and Challenges of Pancasila as a Philosophical System 11. The concept of the urgency of Pancasila as an Ethical System 12. Dynamics and Challenges of Pancasila as an Ethical System 13. Pancasila as the basic value of religious science development 14. Pancasila as the value base of science development for nation building.
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49

Reading list	Direktorat Jenderal Pembelajaran Dan kemahasiswaan Kementerian Riset Teknologi dan Pendidikan Tinggi, 2016, Buku Ajar Mata Kuliah Compulsory Umum Pendidikan Pancasila, Jakarta: Direktorat Jenderal Pembelajaran Dan Kemahasiswaan Kementerian Riset Teknologi dan Pendidikan Tinggi, Cet. Pertama Putra, Z., Wajdi, H.F. 2021. Buku Ajar Pendidikan Pancasila dan Kewarganegaraan Panduan Kuliah di Perguruan Tinggi. Ahlimedia Book. Suharta. 2019. Pancasila. Penerbit Lakeisha. Wahono, S., Suajiyo., Malik, D.K. Pendidikan Pancasila untuk Perguruan Tinggi. Akademika.
Last date of update	July, 2025

MAT1101 BASIC MATH

Course Name	Basic Math
Code	MAT1101
Semester (s) in which the module is taught	I
Lecturer (Person responsible)	Lia Harlina, M.Si
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses derivatives and the use of derivatives. Integrals and the use of integrals. Integration Technique. Introduction to Differential Equations in 14 face-to-face lectures, structured assignments, quizzes, midterm exams, and semester final exams.
Module objectives/intended learning outcomes	Students are able to understand the basic general basic sciences

Content	1. Number system and solving problems of Linear Equations and Quadratic Equations 2. Odd functions, Even functions, Decomposition functions 3. Simple Graphs, Exponential Functions, Trigonometric Functions 4. Simple Graph, Exponential Function, Trigonometric Function 5. Right limit, Left limit, Infinite limit 6. Differential. 7. Standard derivative, higher order derivative, implicit, trigonometry. 8. Standard integration Standard integration, function of a linear function in x 9. Integration of a multiplication-integration by parts (partial) I 10. Integration of a multiplication-integration by parts (partial) II 11. Integration with partial fractions of rules a,b, c, d and f I 12. Integration with partial fractions of rules a,b, c, d and f II 13. Integration with partial fractions of rules a, b, c, d and f III 14. Integration of trigonometric functions.
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Mulyadi, S.R., Patty, E.N.S., Ama, H.M., Anggraeni, D.M. 2020. Buku Matrikulasi Matematika Dasar untuk Tingkat Perguruan Tinggi. uwais inspirasi Indonesia.

	Jumini, S. 2017. Buku Ajar Matematika Dasar Untuk Perguruan Tinggi. Penerbit Mangku Bumi. Suryanti, S., Zawawi, I. 2020. Pengantar Dasar Matematika. Deepublish.
Last date of update	July, 2025

KIM1101 BASIC CHEMISTRY

Course Name	Basic Chemistry
Code	KIM1101
Semester (s) in which the module is taught	I
Lecturer (Person responsible))	Dr. Muhammad Taufik, S.Si., M.Si
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	
Course Description	This course discusses elements and compounds, stoichiometry, periodic systems, electron configurations, atoms and molecules, hybridization and resonance, gases and gas laws, liquids and vapor pressure, solutions, types of solutions, colligative properties of solutions, equilibrium in solutions and pH in 14 face-to-face lectures, structured assignments, quizzes, midterm exams, and semester final exams....
Module objectives/intended learning outcomes	Students are able to understand the basic general basic sciences

Content	1. scope of chemistry and the position of chemistry as part of natural science 2. Basic laws of chemistry regarding atoms 3. Atomic mass, molar mass of an element and avogadro number, molecular mass, mass spectrometer, percent composition of compounds, determination of empirical formulas through experiments, chemical reactions and chemical equations, the number of reactants, moles, gas volume and products and limiting reagents and percent of reaction results (theory and real) 4. Reactions in the aqueous medium, especially in precipitation, acid-base, redox reactions, these reactions are related to the concentration of solution Compulsory in solution stoichiometry. 5. Properties of gases and gas laws related to gas pressure, kinetic of gas molecules, gas equations, and energy. 6. Energy and types of energy, energy in atoms and molecules 7. Electromagnetic radiation 8. Chemical reactions and periodic lists 9. Chemical bonding and molecular structure 10. Molecular geometry and atomic orbital hybridization 11. Broanstead acid-base 12. Organic chemistry 13. Organic chemistry introduction to homologous series 14. Intermolecular matter and forces.

Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Mido Y. and M. Satake. 1994. Chemistry for Agriculture and Ecology. Discovery Publishing House. Timberlake, K.C. and W. Timberlake. 2014. Basic Chemistry. Pearson Education. Knowles , D .A. 1998. Chemistry and Technology of Agrochemical Formulations. Springer Dordrecht. Cremlyn , R . J .W. 1991. Agrochemicals: Preparation and Mode of Action. Wiley; 2nd edition. Goodwin ., Mercer. 1988. Introduction to Plant Biochemistry. Pergamon Press.
Last date of update	July, 2025

AGT1101 BOTANY

Course Name	Botany
Code	AGT1101
Semester (s) in which the module is taught	I
Lecturer (Person responsible))	Dr. Ir. Lisa Mawarni
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the character and diversity of plants based on differences in morphology, anatomy (cells, tissues, and organs and their respective functions, the factors that play a role, and the arrangement of names carefully in 14 face-to-face lectures, structured assignments, quizzes, midterm exams, and semester final exams...
Module objectives/intended learning outcomes	Students are able to understand the basic general basic sciences

Content	1. Botanical scope 2. Parts and properties of single and compound leaves 3. Identify the shape, direction and branching of stems 4. Properties, parts and root systems and other parts of plants that are part of the metaphormosis of roots, stems, leaves 5. Flower parts and classify flowers, and be able to make flower formulas, and classify fruits and seeds. 6. Taxonomic terminology, systematics, and taxonomic theories 7. Gymnosperms-angiosperms and dicots-monocots 8. Plant identification 9. Plant cells and cell organelles 10. Tissues in general type and nature 11. Tissue formation, constituents and functions of meristem, permanent, mechanical, protective, secretory and transport tissues 12. Types of root and stem tips 13. Type of stomata in certain leaves 14. Pigments found in certain leaves
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Erskine, W., Muehlbauer, F.J., Sarker, A., Sharma, B. 2009. The Lentil Botany, Production and Uses. Icarda. Hodge, G. 2013. Practical Botany for Gardeners: Over 3,000 Botanical Terms Explained and Explored. University of Chicago Press.

	Mauseth, J.D. 1991. Botany: An Introduction to Plant Biology. Jones & Bartlett Learning. Pollan, M. 2001. The Botany of Desire: A Plant's-Eye View of the World. Random House Publishing Group.
Last date of update	July, 2025

AGT1102 HISTORY OF PLANTATIONS IN EAST SUMATRA

Course Name	History of Plantations in East Sumatra
Code	AGT1102
Semester (s) in which the module is taught	I
Lecturer (Person responsible)	Dr. Ir. Hasanuddin, MS
Language	Indonesian or English
Relation to curriculum	Compulsory
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the history of the establishment of plantations in the East Sumatra region, their development and their influence on changes to the country's economy, power structure, politics and community culture from colonial times to the present as well as the potential of plantations and their prospects in the future in 14 face-to-face lectures, structured assignments, quizzes, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• Students are able to apply management theory in plantations • Able to apply global insights in various aspects of life within the scope of monodisciplines and interdisciplines • Able to build a global-minded character in both scientific and interdisciplinary fields 3.

Content	1. Colonialism and Modernization in Southeast Asia and Colonial Plantations 2. Several sultanates in the East Sumatra Region (Sultanates of Deli, Langkat and Serdang and the Socio-Political Situation of East Sumatra 3. The Origins of Plantations in East Sumatra and the Cultivation of the Deli Tobacco Commodity 4. Diversification of Deli Tobacco into Hardwood Commodities 5. Revolution and the Decline of the Plantation Industry 6. Work Organization, Industrial Relations and Plantation Communities and the Lifestyle of Plantation Communities 7. Social Structure, Plantation Power and Stratification and Exclusivity of Plantation Society 8. History of Tobacco Plantation in Deli Land 9. Tobacco Plantation in the Early Independence Period 10. History of Rubber Plantations Pioneering the early establishment of the Plantation Research Center (Avros) 11. Rubber Plantation in the Early Independence Period 12. History of Oil Palm Plantations Early pioneers of the establishment of the Plantation Research Center and its change to PPKS 13. Oil palm plantations in the early days of independence, oil palm plantations today and their prospects in the future 14. Presentation of assignments etc.
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69

	C = 60-64 D = 50-59 E ≤ 49
Reading list	Allan Akbar. 2018. Perkebunan Tembakau dan Kapitalisasi Ekonomi Sumatera Timur 1863-1930. Jurnal Tamaddun Vol. 6 , No. 2, Juli-Desember 2018 Anisyah Ramayanti. 2018. Kehidupan Kuli Perempuan di Perkebunan Tembakau Deli Sumatera Timur Tahun 1870-1930. AVATARA, e-Journal Pendidikan Sejarah Volume 6, No. 2, Juli 2018) Basarshah, Tengku Luckman Sinar. 2005. Bangun dan Runtuhnya Kerajaan Melayu di Sumatera Timur. Medan: Yayasan Kesultanan Serdang. Breman, Jan. 1997. Menjinakkan Sang Kuli: Politik Kolonial, Tuan Kebun, dan Kuli di Sumatera Timur Pada Awal Abad ke-20. Jakarta: Pustaka Main Grafiti Guntur Arie Wibowo. 2015. Kuli Cina di Perkebunan Tembakau Sumatera Timur Abad 18. Jurnal Sejarah Dan Budaya, Tahun Kesembilan, Nomor 1, Juni 2015. Toler, Ann Laura. 2005 Kapitalisme dan Konfrontasi di Sabuk Perkebunan Sumatera, 1870-1979. Yogyakarta : Karsa.
Last date of update	July, 2025

AGT 1103 INTRODUCTION TO AGRICULTURAL SCIENCE

Course Name	Introduction to Agricultural Science
Code	AGT 1103
Semester (s) in which the module is taught	I
Lecturer (Person responsible)	Prof. Dr. Luthfi A.M. Siregar, S.P., M.Sc
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the definition and scope of introductory agricultural science, the history of agricultural development, elements and characteristics of agriculture, farming and farm development, technology development in agriculture, development of agricultural tools and machinery, post-harvest activities, agricultural institutions and trade.
Module objectives/intended learning outcomes	• Students are able to apply the theory of the basic principles of sustainable agricultural systems • Students are able to solve problems in the field of agrotechnology with attention to social culture • Students are able to manage natural resources and human resources, especially in the field of plantation • Students are able to design innovations in the field of agrotechnology by utilizing science and technology

Content	1. Introductory scope of agricultural science, Agricultural Scientists and Knowledge 2. History of Agricultural Development 3. Historical Trajectory of Agriculture 4. Farming and farm development 5. Environmental versus agricultural issues (Agroecology) 6. Technology development in agriculture 7. Climate (Indonesia) in agricultural practices 8. Agricultural institutions and trade systems 9. Post-harvest 10. Food diversification 11. Sustainable agriculture 12. Revitalization (modernization) of agriculture 13. Biotechnology for agriculture 14. Agribusiness and agro-industry
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Adrianto. 2014. Pengantar Ilmu Pertanian. Yogyakarta Arwati, S. 2018. Pengantar Ilmu Pertanian Berkelanjutan. Makassar: CV Inti Mediatama. Shinta A. 2011. Ilmu Usaha Tani. Malang: UB Press. Soetriono dan A. Suwandari. 2016. Pengantar Ilmu Pertanian (Agraris Agribisnis Industri). Malang: Intimedia. Kementerian Pertanian 2015 “Rencana Strategis Kementerian Pertanian 2015 2019”,Jakarta Selatan. Hal 231-340
Last date of update	July, 2025

AGT1104 INTRODUCTION TO AGRICULTURAL INFORMATION TECHNOLOGY

Course Name	Introduction to Agricultural Information Technology
Code	AGT1104
Semester (s) in which the module is taught	I
Lecturer (Lecturer (Person responsible))	Dr. Taufiq Rizaldi, S.P., M.Si
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Lectures (3 x 50 minutes) per week or 35.00 hours per semester • Self studi: 35 jam • Structured assignment (i.e.: article reading/review and case method): 15.00 hours per semester • Projec base learning : 30 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the concept of information technology and its application in various fields of life, especially in agriculture to support the distribution of information... Lectures 14 times face to face, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to internalize the BINTANG values in developing self ability as a lifelong learner in the field of agrotechnology. • Able to apply communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations. • Able to develop global insights for character and potential in accordance with scientific fields and across disciplines.

Content	1. Able to understand the concept of IT and its application in daily life, especially in agriculture. 2. Understand the definition, uses, and classification of computers. Understand the components of a computer system and have an initial overview of e-agriculture. 3. Able to understand unit systems, data storage systems, and understand input and output in computers. 4. Able to understand software, internet, World Wide Web (WWW), and multimedia. 5. Able to explain the application of Information technology in agriculture I 6. Able to explain the application of Information technology in agriculture II 7. Able to analyze and evaluate the role of Information Technology to produce information and knowledge in the field of pests and plant diseases 8. Able to analyze and apply the role of Information Technology to make decisions and predict ways to control pests and plant diseases. 9. Able to analyze the role of Information Technology in Conventional Plant Breeding 10. Able to analyze and apply the role of Information Technology in Unconventional Plant Breeding 11. Able to analyze and evaluate the role of Information Technology in Precision Agriculture 12. Able to analyze and evaluate Remote Sensing and its use in the field of agronomy 13. Able to analyze and evaluate the role of Information Technology to assist performance in the field of Soil Science 14. Able to analyze and apply the role of Information Technology to interpret data in the field of Soil Science
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions.

	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Wawan dan Munir, (2013), Pengantar Teknologi Informasi, UPIPress, Bandung. Frenzel, Louis E., (1989), Communication Electronic , Mc Graw Hill , New York . Jogiyanto. Pengenalan Komputer. Yogyakarta: Andi Offset, 1999. Supriyanto, Aji. Pengantar Teknologi Informasi. Jakarta: Salemba Infotek. 2005 Pfaffenberger, Bryan and Bill Daley. Komputers in your Future. New Jersey: Prentice Hall. 2004 Purnomo, Herry, Zacharias, Theo. Pengenalan Informatika: Perspektif Teknik dan Lingkungan. Yogyakarta : Penerbit Andi. 2005 Abrar, A.N. (2003). Teknologi Komunikasi, Perspektif Ilmu Komunikasi. LESFI : Yogyakarta. Arikunto, S. (2010). Prosedur Penelitian. Jakarta: PT Asdi Mahastya. Arikunto, S. & Jabar, C.S.A. (2010). Evaluasi Program Pendidikan : Pedoman Teoritis Praktis Bagi Mahasiswa dan Praktisi Pendidikan (Rev.ed). Jakarta: Bumi Aksara. Asmani, J.M. (2011). Buku Panduan Pemanfaatan Teknologi Informasi dan Komunikasi Modern, Tips Efektif Pemanfatan Teknologi Inforamsi Dankomunikasi dalam Dunia Pendidkan. Yogyakarta: Diva Press. Lantip, D.P. & Riyanto. (2010). Teknologi Informasi Pendidikan. Yogyakarta: Gava Media.
Last date of update	July, 2025

2nd Semester

USU1109 CIVIC EDUCATION

Course Name	Civic Education
Code	USU1109
Semester (s) in which the module is taught	II
Lecturer (Person responsible)	Afrita, SH., M.Hum
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Citizenship is a course that studies the values of Pancasila and Citizenship in 14 meetings with 1 UTS meeting and 1 UAS meeting.
Module objectives/intended learning outcomes	• Students are able to apply the values of Pancasila and citizenship • Students are able to understand general basic values

Content	1. Intolerance, bullying and equality 2. The nature of civic education in developing the full capabilities of a scholar or professional 3. National identity 4. National integration 5. Constitution in Indonesia 6. Constitution in Indonesia 7. Rights and obligations of the state and citizens 8. Democracy in Indonesia 9. Law enforcement in Indonesia 10. Archipelago as a conception and collective view of Indonesian nationality in the context of world relations 11. National resilience and state defense for Indonesia in building collective national commitment 12. National resilience and state defense for Indonesia in building collective national commitment 13. Exhibition of civic education projects 14. Retrospective reflection
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Pendidikan Kewarganegaraan Untuk Perguruan Tinggi, Ditjen Belmawa Ristekdikti, cetakan I, 2016. Pendidikan Kewarganegaraan di Perguruan Tinggi, Prof. Dr. H. Kaelan, M.S. Drs. H. Achmad Zubaidi, M.Si, 2007 Hukum dasar Geopolitik dan Geostrategi dalam kerangka keutuhan NKRI oleh Prof. DR Ermaya Suradinata, SH.MS,MH, 2005

	S.K. Dirjen Dikti Depdiknas RI No.38/DIKTI/Kep./2002 tentang Rambu-rambu pelaksanaan Matakuliah Pengembangan Kepribadian di Perguruan Tinggi, Dirjen Dikti, Jakarta.
Last date of update	July, 2025

USU1110 INDONESIAN LANGUAGE

Course Name	Indonesian Language
Code	USU1110
Semester (s) in which the module is taught	II
Lecturer (Lecturer (Person responsible))	University Team
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses language as a means of oral and written communication, grammar (structure and effectiveness), spelling composition, diction, reasoning, paragraphs and scientific writing in 14 meetings with 1 UTS meeting and 1 UAS meeting.
Module objectives/intended learning outcomes	• Able to apply communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations. • Able to develop global insights for character and self-potential in accordance with scientific fields and across disciplines.

Content	1. Students are able to apply the development of Indonesian language 2. Students are able to analyze the function and position of Indonesian 3. Students are able to evaluate the basics of Indonesian spelling 4. Students are able to analyze foreign words and language absorption 5. Students are able to analyze diction in Indonesian 6. Students are able to analyze language symptoms 7. Students are able to apply diction in Indonesian 8. Students are able to identify effective language 9. Students are able to analyze the characteristics of standard and non-standard language 10. Students are able to analyze paragraphs 11. Students are able to analyze letter language 12. Students are able to apply essay text 13. Students are able to analyze scientific works 14. Students are able to apply spoken language and rhetoric
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Buku ilmiah, majalah ilmiah, jurnal ilmiah, skripsi dll). Ekosusilo, Madyo.1995. Pedoman Penulisan Karya Ilmiah. Semarang. Dahara Prize Depdiknas. 2003. Pedoman Umum Ejaan LanguageIndonesia yang Disempurnakan. Yogyakarta. Balai Pustaka. Dirjen Pembelajaran dan Kemahasiswaan Kemenristekdikti,

	LanguageIndonesia untuk Perguruan Tinggi, Jakarta, Dirjen Belmawa, 2016. Kamus Besar LanguageIndonesia (daring atau luring), Kemdikbud RI. Hasan Alwi dkk. Tata LanguageBaku LanguageIndonesia. Edisi Ketiga., Balai Pustaka. Pedoman Umum Ejaan LanguageIndonesia (PUEBI). Kuntarto, M. Niknik. 2007. Cermat dalam BerLanguageTeliti dalam Berpikir. Mitra Wacana Media. Jakarta. Hariwijaya, M. 2006. Pedoman Teknis Penulisan Karya Ilmiah. Citra Pustaka.Yogyakarta. Rivai, Mien A. Pegangan Gaya Penulisan Penyuntingan dan Penerbitan. Gajah Mada Press. Yogyakarta. UNY Press, 2005, Rekontruksi Pembelajaran Menulis di Perguruan Tinggi. Diktat. Universitas Negeri Yogyakarta
Last date of update	July, 2025

AGT1201 STATISTICS

Course Name	Statistics
Code	AGT1201
Semester (s) in which the module is taught	II
Lecturer (Person responsible)	Yaya Hasanah
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the notion of statistics, types of data, population vs. sample, presentation of data, measures of concentration, measures of location, measures of diversity, probability concepts, parameter estimation, sampling techniques, hypothesis testing, regression and correlation and discusses non-parametric statistics in 14 meetings with 1 UTS meeting and 1 UAS meeting
Module objectives/intended learning outcomes	Able to apply research methods to identify problems in the field of agrotechnology.

Content	1. Definition of Statistics 2. Data Presentation 3. Measures of Data Centering 4. Measures of Data Variability 5. Concept of Chance 6. Distribution of Discrete Random Variables 7. Distribution of Continuous Random Variables 8. Normal distribution and its applications 9. Sampling theory 10. Paramete Estimation 11. Hypothesis Testing (Central Value Test and proportion) 12. Hypothesis testing (Variance Test) 13. Linear Regression and Correlation 1 14. Linear Regression and Correlation 2
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Ali Hasmy, 2009. Basic Level Statistik. (Bahan-bahan Kuliah) Budiyono, 2004. Statistika untuk Penelitian. Surakarta : Sebelas Maret University Press Burhan Nurgiyantoro dkk., 2004. Statistik Terapan. Yogyakarta : Gadjah Mada University Press Ronald E. Walpole, 1997. Pengantar Statistika. Jakarta : Penerbit PT Gramedia Pustaka E.W., King, B.M, dan Bear G. (1993).Statistical Reasoning in Psychology and Education. John Wiley & Sons. New York. Conover, W.J. (1980). Practical Nonparametric Statistics. John Willey & Sons. New York.

	Sudjana. (1989). Metoda Statistik. Bandung : Tarsito Ruseffendi. (1993). Statistika Dasar untuk Penelitian Pendidikan. Bambang Kustianto, Statistika 1, Seri diktat kuliah, Penerbit Gunadarma, Jakarta,1994 Mc Call, R.B. Fundamental Statistics for Psychology. Harcourt Brace, New York, 1980 Spiegel, M.R. Statistics. Schaum's Outline Series, Asian student ed, Mc Graw Hill, Singapore, 1985. Thorne, B.M. Introductory Statistics for Psychology. Duxbury Press, Massachusetts, 1980 Walpole, R.E. Pengantar Statistik. Edisi terjemahan, PT Gramedia, Jakarta, 1992
Last date of update	July, 2025

AGT1202 PLANT PHYSIOLOGY

Course Name	Plant Physiology
Code	AGT1202
Semester (s) in which the module is taught	II
Lecturer (Person responsible))	Ir. Meiriani, MS
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses cells and cell organelles; water, nutrients and their absorption processes; enzymes; photosynthesis; cellular respiration; transpiration processes; and plant hormones in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	Students are able to apply agrotechnology theories to create a sustainable agricultural system.

Content	1. Describe the meaning and importance of plant physiology 2. Differentiate organelles and their functions and relationships between organelles. Compounding compounds and their biosynthesis 3. Differentiate organelles and their functions and relationships between organelles. Compounding compounds and their biosynthesis 4. Describe the nature, structure and mechanism of action of enzymes. What affects the denaturation and rate of enzymatic reactions and what is meant by allosteric enzymes. 5. Describe the role of water in plants 6. Analyze how nutrients are absorbed and translocated in plants. 7. Differentiate metabolic pathways in C3, C4 and CAM plants and the factors that influence them 8. Differentiate metabolic pathways in C3, C4 and CAM plants and the factors that affect them 9. Analyze the factors affecting respiration, reaction stages in plant cells 10. Analyze the factors affecting respiration, reaction stages in plant cells 11. Analyze the assimilation of some inorganic compounds 12. Describe what growth and development mean, and analyze their patterns and kinetics. 13. Analyze the synthesis, transport and action of several growth regulators and apply them to plants. 14. Analyze the synthesis, transport and action of several growth regulators and apply them to plants.
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69

	C = 60-64 D = 50-59 E ≤ 49
Reading list	Taiz L and Zeiger E. 1991. Plant physiology. Tokyo. The Benyamin/Cumming Publising Company Inc. Salisbury,F.B and C.W. Ross. 1992. Plant Physiology. 4th Ed. California. Wadsworth Publ. Co Hale MG, Orcutt DM. 1987. The physiology of Plant Under stress. New York. John Wiley and Sons. Luttge U and Pitman MG. 1976. Transport in plant II. Part A Cells. Part B Tissues and organs. New York. Spinger-Verlag. Sitompul, S.M dan B. Guritno. 1995. Analisis Pertumbuhan Tanaman. Yogyakarta : Gadjah Mada Univ. Press. Mohr H, Schopfer. 1995. Plant Physiology Translated by Gudrun and D.W. Lawlor. Spinger. Salisbury FB. 1996. Units,Symbols, and Terminology for Plant Physiologi. A Reference for Presentation of Research Results in the Plant Sciences. Oxford University Press. Dasar-Dasar Fisiologi Tumbuhan- Dept Botani IPB 1981. Fisiologi tumbuhan – FB Salisbury + CW Ross. ITB Preess. 1992. Pengantar Fisiologi Tumbuhan. D Dwidjoseputro-Gramedia-1980. Fisiologi Tumbuhan : Metabolisme Dasar. HariSuseno – IPB 1974.
Last date of update	July, 2025

AGT1203 BIOCHEMISTRY

Course Name	Biochemistry
Code	AGT1203
Semester (s) in which the module is taught	II
Lecturer (Person responsible)	Ir. Revandi IM Damanik, M.Si., M.Sc., Ph.D
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study : (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the main molecules that make up organisms (carbohydrates, lipids, nucleic acids, proteins, enzymes as biocatalysts), metabolism (energy transformation, exergonic reactions, and the formation ofATP), cellular respiration processes, photosynthesis, cell structure and components, cell communication and explains the content of secondary metabolites in plants, in 14 meetings with 1 UTS meeting and 1 UAS meeting.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create a sustainable agricultural system...

Content	1. Understanding and identification of the scope, origin, development, and relationship of biochemistry with other sciences, especially plants. 2. Understand the concept and structure of (plant) cell function and the functions of its organelles 3. Understand the basic concepts and kinetics of carbohydrates 4. Understand the basic concepts and kinetics of lipids. 5. Understand the basic concepts and kinetics of amino acids, peptides and proteins. 6. Understand the basic concepts of nucleic acids. 7. Understand the basic concepts of enzymes and coenzymes. 8. Understand the basic concepts of plant vitamins and minerals 9. Understand the reactions related to plant hormones. 10. Understand and analyze the biosynthesis (metabolism) of carbohydrates in plants. 11. Understand and analyze about lipid biosynthesis (metabolism) in plants 12. Understand and analyze the biosynthesis (metabolism) of amino acids and nucleotides in plants. 13. Understand the processes and reactions in plant photosynthesis (dark reaction) and their interrelationships 14. Understand and analyze about the processes and reactions in plant respiration (Glycolysis, glyconeogenesis)
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64

	D = 50-59 E ≤ 49
Reading list	Pengantar Biokimia, Penyusun : Eko Widodo, Dyah Lestari Yulianti, Waluyo Edi S. Universitas Kanjuruhan Malang. Cellular Biochemistry and Physiologi, Penyusun : W. A. Edwards and K. A. Hassall. McGraw- Hill Kogakusha,Ltd. Nutritinal Physiology of Farm Animal. Edited by J. A. F. Rook and P. C. Thomas. Longman London and New York. Togu Gultom, 2001, Biokimia Bagian I " Struktur dan Fungsi", Yogyakarta : Jurusan Pendidikan Kimia FMIPA UNY, JICA-IMSTEP. Togu Gultom. 2002. Biokimia Bagian II " Bagian Metabolisme:, Yogyakarta : Jurusan Pendidikan Kimia UNY. Lehninger, A, (Alih bahsa Maggy Thenawijaya). 1990. Dasar-dasar Biokimia Jilid I,, II, dan III. Jakarta : Penerbit Erlangga. Horton Robert H. Et all, 1996. Principle of Biochemical. Second Edition London : The Prentice Hall International Wood William B. Et all. 1981. Biochemistry A Problem Approach. London : The Benjamin/Cumings Publishing Company Akhmaloka. 1990. Asam Nukleat Struktur dan Fungsi. Bandung : Penerbit ITB Bandung Boyer, R., 1999, Concept in Biochemistry, Pacific Grove : Ann International Thompson Publishing Company, Inc. Lehninger, A.L., Nelson,c D., Michael M. Cox, M.M., 1993, Principles of Biochemistry 2 nd Ed. Worth Publisher, New York Poedjiadi, A., Supriyanti, T. F. M., 2005, Dasar-dasar Biokimia, UI- Press, Jakarta
Last date of update	July, 2025

AGT1204 AGROCLIMATOLOGY

Course Name	Agroclimatology
Code	AGT1204
Semester (s) in which the module is taught	II
Lecturer (Person responsible)	Dr. Ir. Chairani Hanum, M.Si
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the physical properties and phenomena of the atmosphere, the meaning, differences and functions of climate and weather as well as the factors that affect the state of climate and weather in a region and the role of agroclimitology for agriculture in 14 face-to-face lectures, structured assignments, case method and project based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	Students are able to apply agrotechnology theories to create a sustainable agricultural system

Content	1. Position of agroclimatology courses in agricultural science 2. Elements of weather, understanding and benefits of agroclimatology for agriculture 3. Earth's atmosphere and can distinguish symptoms and physical changes in each layer of the atmosphere 4. Rules of air temperature, soil temperature and solar radiation intensity 5. Garden tools and weather measuring aids 6. Concept of solar radiation irradiation - 1 7. Concept of solar radiation irradiation - 2 8. Air humidity, principles and profiles of air humidity and clouds 9. Air pressure and wind 10. Hydrological cycle 11. Rainfall 12. Climate classification, development and basis of classification 13. Global climate 14. Microclimate
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Bayong Tjasyono. 1986. Ilmu Iklim dan Lingkungan. Jakarta : Cendekia Jaya Main. Daldjoeni. 1983. Pokok-Pokok Klimatologi. Bandung. : Alumni. Sukardi Wisnubroto. 1983. Asas-Asas Meteorologi Pertanian. Jakarta: Ghalia Indonesia

	Barry, RG. & Chorley. 1976. Atmosphere, Weather and Climate. London : Methuen & Co Ltd. Trewartha and Horn. 1980. An Introduction to Climate. New York : Mc Graw-hill book Co. Gordon B. Bonan, 2008. Ecological Climatology: Concept and Application. 2nd edition. Cambridge University. Bishnoi, OP.,2010. Applied Agroclimatology. Oxford. Ance Gunarsih, Kartasapoetra. 2012. Klimatologi: Pengaruh Iklim terhadap Tanah dan Tanaman Edisi Revisi. Bumi Aksara, Jakarta. Adrewartha, HG, & Birch, LC. 1974. The distribustion and abundance of animal. Sixth Impression. The Univ. of Chichago Press, London, 782p. Adriani, D. E., Noor, M. H., Mursyid, A., & Rusmayadi, G. (2007). Pengukuran evapotranspirasi padi lokal dengan metodepengukuran langsung dan tidak langsung. Agroscientiae, 20-26. Angus JF, Nix, AA, Russell, JS & Kruizinga, J.E. 1980. Water use, growth and yield of wheat in a subtropical environment. Aust. J.Agric. Res. 31:873-886. Broekmans, AFM. 1957. Growth, flowering and yield the oil palm in Nigeria. J.W. Afric. Inst. For Oil Palm Res II. (7). 187-220. Bueche, FJ. 1984. Fisika. Ed. 8. (Edisi LanguageIndonesia). Darmawan, B. (pen.). Pen. Erlangga, Jakarta.
Last date of update	July, 2025

AGT1205 BASIC AGRONOMY

Course Name	Basic Agronomy
Code	AGT1205
Semester (s) in which the module is taught	II
Lecturer (Person responsible)	Prof. Dr. Ir. Mariati, M.Sc
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the meaning of agriculture in a broad sense (Agriculture) and agriculture in a narrow sense (Agronomy) along with its scope; the origin of plants and their classification; factors that affect plant growth; land clearing and conservation; various agricultural systems and plant cultivation techniques; the use of advanced technology in agriculture in 14 face-to-face lectures, structured assignments, case method and project based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• Students are able to apply agrotechnology theory to create a sustainable agricultural system. • Able to apply agrotechnology theory in the management of plantation commodities, especially oil palm, rubber and coffee in the management of natural resources and human resources.

Content	1. Definition of agronomy, its aspects and scope 2. Growth and development 3. Growth and carbohydrate phases 4. Plant environment 5. Competition and cropping patterns 6. Plant breeding 7. Plant Breeding Planting material - 1 8. Plant Breeding Plant material - 2 9. Plant Growth Control and Generative Propagation - 1 10. Plant Growth Control and Generative Propagation - 2 11. Business and basic principles of agricultural production 12. Fertilizers and fertilization 13. Crop protection 14. Factors causing soil damage
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	H.B. 2008. Dasar-dasar Agronomi. Raja Grafindo Persada: Jakarta Harjadi, M.M.S.S. 1993. Pengantar Agronomi. Gramedia Pustaka Utarna: Jakarta Shiddieq, Dja'far, Putu Sudira, dan Tohari. 2018. Aspek Dasar Agronomi Berkelanjutan. Gadjah Mada University Press: Yogyakarta Hasan Basri Jumin, 1991, Dasar-dasar Agronomi, CV. Rajawali, Jakarta Sadjad, S., 1976, Agronomi Umum, Departemen Agronomi, Fakultas Pertanian Institut Pertanian Bogor

	Asparno Mardjuki, 1990, Pertanian dan Masalahnya, Andi Offset, Yogyakarta Gardner, F.P., R. Brent Pearce dan Roger Mitchell, 1991, Fisiologi Tanaman Budidaya, Penerbit Universitas Indonesia, Jakarta Harjadi, Sri Setyati, 1982, Pengantar Agronomi, PT. Gramedia, Jakarta Hasan Basri Jumin, 1991, Dasar-dasar Agronomi, CV. Rajawali, Jakarta Yusnita, 2003, Kultur Jaringan, Agromedia, Pustaka, Jakarta Kamil, J, 1982, Teknologi Benih I, Universitas Andalas, Padang
Last date of update	July, 2025

AGT1206 SOIL SCIENCE BASICS

Course Name	Soil Science Basics
Code	AGT1206
Semester (s) in which the module is taught	II
Lecturer (Person responsible)	Prof. Dr. T. Sabrina, M.Sc
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the conception of soil in agriculture, soil building blocks, soil formation processes, soil properties and characteristics. The role of minerals organic matter and water in the soil. Soil classification and survey, soil and environmental remediation and soil management for sustainable agricultural productivity in 14 face-to-face lectures, structured assignments, case method and project based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• Students are able to apply agrotechnology theory to create a sustainable agricultural system. • Able to apply agrotechnology theory in the management of plantation commodities, especially oil palm, rubber and coffee in the management of natural resources and human resources.

Content	1. Able to understand the concepts and principles of soil 2. Able to understand the concepts and principles of soil Able to understand the concepts and principles of soil Genesis 3. Able to understand the concepts and principles of soil physical properties 4. Able to understand the concepts and principles of groundwater 5. Able to understand the concepts and principles of soil minerals 6. Able to analyze and evaluate the concepts and principles of soil chemistry 7. Able to analyze and evaluate principles and concepts and solve problems regarding soil fertility 8. Able to evaluate and master the principles and concepts of soil biology 9. Able to master the principles and concepts of soil organic matter, and able to manage soil organic matter 10. Able to evaluate and calculate agricultural soil fertilization needs 11. Able to identify World soil classification 12. Able to analyze land resources for agriculture, and evaluate land suitability 13. Able to analyze and evaluate the role of soil and environmental sustainability 14. Able to analyze and evaluate the role of soil and environmental sustainability
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64

	D = 50-59 E ≤ 49
Reading list	Plaster, E.J. 2004. Soil Science & Management .Thomson Delmar Learning. Australia. Soepardi, G. 1998. Sifat dan Ciri Tanah. IPB. BogorAgrios Bolton, M.D. & Thomma, B.P.H.J. (2012). Plant Fungal Pathogens: methods and Protocols. Springer, New York Hardjowigeno, S. 2005. Ilmu Tanah. Gramedia. Jakarta Weil, R.R. and Brady, N.C.. 2016. The Nature and Properties of Soil. 14th Edition. Pearson Education. New York. Degado, A and Gomez, J.A. 2016. The Soil, Physical, Chemical and Biological Properties . in F.J. Villalobos, E.Fereres (eds). Priciples of Agronomy for Sustainable Agriculture. Springer Internatiomal Pubiishng A.G. Netherland. Sarief, S., 1979. Ilmu Tanah Umum. Faperta Unpad, Bandung. 97h. Notohadipoero, ARS. 1980. Pengantar Ilmu Tanah. Faperta UGM, Yogyakarta. 146h. Hardjowigeno, S. 1993. Klasifikasi Tanah Dan Pedogenesis. Akademika Pressindo. Jakarta. 274 h. Rosmarkam, A. & N.W. Yuwono 2002. Ilmu Kesuburan Tanah. kanisius. Yogyakarta. 255h. Arsyad, S. 1976. Pengawetan Tanah. IPB, Bogor. Hardjowigeno, S. 1992. Ilmu Tanah. Edisi Ketiga. Pt. Mediyatama Sarana Perkasa. Jakarta. 233h. Madjid, A. 2009. Dasar-dasar Ilmu Tanah. Bahan Ajar Online. Jurusan Tanah. Fakultas Pertanian. Universitas Sriwijaya
Last date of update	July, 2025

3^{rd} Semester

AGT2101 PLANT BREEDING BASICS

Course Name	Plant Breeding Basics
Code	AGT2101
Semester (s) in which the module is taught	III
Lecture (Person responsible)	Ir. Emmy Harso Kardinata M.Sc,
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the concepts and scope of the theory and application of the basic science of plant breeding in agriculture, methods of selection in plant breeding activities based on plant breeding types, as well as the introduction of biotechnology for plant breeding. 14 face-to-face meetings, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system • Able to apply agrotechnology theory in the management of plantation commodities, especially oil palm, rubber and coffee in the management of natural resources and human resources.

Content	1. Know the meaning, history and stages of plant breeding 2. Able to understand and carry out practicum material 3. Knowing / explaining about the center of origin of plants 4. Able to explain the parts and functions of flowers 5. Able to distinguish between self-pollinated and cross-pollinated plant flowers 6. Knowing / explaining about hereditary materials, inheritance mechanisms, allele relationships 7. Able to explain the process of inheritance of traits from elders to offspring 8. Identify and give examples of crosses, Mendel's laws I and II 9. Able to explain, conclude, and give examples of the crossing over process 10. Able to determine the distance of genes on chromosomes 11. Knowing/explaining the meaning of genes in sequence and crossing over 12. Able to explain perfectly stacked and imperfectly stacked genes 13. Know/understand about the genetic makeup of sex 14. Able to explain the interaction of a gene that affects phenotypic expression
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading

	Fehr W.R. and H.H. Hadley. 1980. Hybridization of Crop Plants. Crop Scince Cociety of America, Publishers, Madison, Wisconsin, USA. Allard, R. W. 2005. Principles of Plant Breeding. John Wiley and Sons, New York. Wiener G. 1999. Animal Breeding. Centre for Tropical Veterinary Medicine University of Edinburgh. First Published 1994 by Mac Millan Education Ltd. Bacaan Support Hasman, 2011. Prospek Perbaikan Genetik Jarak Pagar. Perspektif I (2) hal 70-80. Hedrick, P.W. 2005. Genetic Of Population 3 rd Jones and Barhet Publisher. London. Peteman,J.D. 2003. Breeding by Design Trends in Plant Science. Mangoendidjojo. 2003. Dasar-Dasar Pemuliaan Tanaman. Penerbit Kanisius. Yogyakarta. Sagala, A.D, M. Lasminingsih, S. 2009. Kemajuan Pemuliaan dan Seleksi Tanaman Karet di Indoensia. Sharma, A.K, Sharma, A. 1994. Chromosome Technique. Harwood Academic Publishers. USA. Sinha, U. and S. Sinha. 1997. Cytogenetics, Plant Breeding and Evolution. Vikas Publishing House PVT LTD. New Delhi. Mugiono, 2001. Pemuliaan Tanaman Dengan Teknik Mutasi.Badan Tenaga Nuklir Nasional, Pusat Pendidikan dan Pelatihan, Jakarta.
Last date of update	July, 2025

AGT2102 PLANT PROTECTION BASICS

Course Name	Plant Protection Basics
Code	AGT2102
Semester (s) in which the module is taught	III
Lecturer (Person responsible)	Prof . Dr. Ir. Marheni MP
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Lectures (3 x 50 minutes) per week or 35.00 hours per semester • Self studi: 35 jam • Structured assignment (i.e.: article reading/review and case method): 15.00 hours per semester • Projec base learning : 30 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the definition, scope, objectives, problems of plant protection, Self-study of related sciences, basic concepts in plant protection, introduction to Plant Disturbing Organisms (OPT) in the form of pests, pathogens, and weeds, as well as plant disorders in the form of nutrient deficiencies, The basics of pest control strategies along with some basic analysis of pest attack intensity, disease intensity, vegetation analysis, Integrated Pest Management (IPM) and its implementation, and prospects for plant protection in the present and future 14 face-to-face meetings, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	•Able to apply agrotechnology theory to create a sustainable agricultural system •Able to apply agrotechnology theory in the management of plantation commodities, especially oil palm, rubber and coffee in the management of natural resources and human resources.

Content	1. Students are able to know the lecture contract and the scope of the lecture 2. Students are able to analyze crop protection by cultivating crops caused by insects 3. Students are able to explain and know plant protection using resistant varieties 4. Students are able to evaluate and plan good physical and mechanical plant protection 5. Students are able to analyze and plan biological plant protection 6. Students are able to explain and know chemical plant protection 7. Able to define and explain the meaning of plant diseases and explain the microorganisms that cause plant diseases correctly and contextually 8. Able to identify fungi (fungi) that cause disease characteristics, classification of fungi that cause disease, ways of fungal infection, general symptoms, and analyze the losses caused by fungi and their control. 9. Able to identify Fungi (fungi) that cause disease characteristics, classification of fungi that cause disease, ways of fungal infection, symptoms in general, and analyze the losses caused by fungi and their control. 10. Able to identify disease-causing bacteria, classification of disease-causing bacteria, ways of bacterial infection, general symptoms, and analyze the losses caused by bacteria and their control. 11. Able to identify disease-causing nematodes, classification of disease-causing nematodes, ways of nematode infection, general symptoms, and analyze the losses caused by nematodes and their control. 12. Able to identify disease-causing viruses, classification of disease-causing viruses, ways of virus infection, general symptoms, and analyze the losses caused by viruses and their control. 13. Able to explain weeds, classification, and the competitiveness of weeds against main crops. 14. Able to evaluate and apply integrated weed control techniques
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%)

	• Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Sudarma I M. 2014. Plant Protection. Plantaxia. Graha Ilmu Publisher. Yogyakarta. 251h. Triharso. 1996. Fundamentals of Plant Protection. Gadjah Mada Publisher University Press. Yogyakarta. 362 h Agrios, G.N. 2005. Plant Pathology. Fifth Edition. Elsivier Academic Press. Pp. 948. Supporting Reading Kerr, A., and F.D. Morgan. 1980. Biological Control of Plasnt Parasites. In : J.F. Brown., editor. A Course Manual in Plant Protection. ustralian ViceChancellors' Committee (A.A.U.C.S.), p: 377-386. Morgan, F.D. and I.H. Parbery. 1980. Control of plant parasites by physical and chemical methods. In : J.F. Brown., editor. A Course Manual in Plant Protection. ustralian Vice-Chancellors' Committee (A.A.U.C.S.), p: 334-359. Elad, Y.I 2012. Integrated management of plant diseases. Effective tools and strategies case studies. Dept. Of Plant pathology and Weed Research, ARO The Volcani Center, Bet Dagan, Israel. Adriko, J., E. Mbega, J. Kubiriba, W.K. Tushemereirwe, O.S. Lund, R.B. Mabagala, A.M. Mondjana, J. Bila, and C.N. Mortensen. 2011. Sampling procedures for the diagnosis of banana Xanthomonas wilt . Technical bulletin University of Covenhagen, Denmark. Pandey, B.P. 2008. Plant Pathology. Pathogen and Plant Disease. S. Chand and Company Ltd. Ram nagar, New Delhi-110 055. 492p.

	Untung, K. 1984. Introduction to the economic analysis of integrated pest management. Andi Offset. Yogyakarta. 92 hal. Winarto. 2015. Nematologi Tumbuhan. Minangkabau Press. 250 hal. Busnia, M. Entomologi. 2007. Andalas University Press. 350 hal Habazar, T.H., Trizelia, Yulmira, Y. 2010. Bioteknologi Perlindungan Tanaman. Andalas University Press. 216 hal. Bos, L. 1990. Pengantar Virologi. Gadjah Mada University Press. 226 hal
Last date of update	July, 2025

AGT2103 PLANT ECOLOGY

Course Name	Plant Ecology
Code	AGT2103
Semester (s) in which the module is taught	III
Lecturer (Person responsible)	Dr. Nini Rahmawati SP., M.Si.
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses understanding and understanding of the scope, relationship of plant ecology with other sciences, objectives and benefits of plant ecology, succession and vegetation communities, adaptation and distribution of plants in various environments, ecotypes and plant environments, plant interactions with biotic and abiotic factors, plantings as environmental indicators, agroecosystems, environmental stress, as well as vegetable germplasm and conservation efforts. 14 face-to-face meetings, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create a sustainable agricultural system

Content	1. The reciprocal relationship between plants and their environment 2. Succession events and the concept of climax 3. Vegetation community 4. Adaptation and selection coefficient 5. Changes in genes and vegetation distribution types 6. Plant ecotype 7. growing environment requirements and environmental factors 8. Interactions between plants and soil and climate 9. Plant interaction with animals 10. Plant interaction with humans 11. Plant indicators 12. Agroecosystems and soil constraints in agroecosystem systems 13. Energy flow and function in ecosystems 14. Environmental stress
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Odum, P .1971. Fondamental of Ecology . Mc. Graw-Hill .London. Brower J.E.H, Zar and Carl, N.E. 1990. Fiel and Laboratory Method For General Ecology Third Edition, Publisher Illionis. University. Soerianegara, I dan A. Indrawan, 1978. Ekologi Hutan Indonesia. Departement Management Hutan. Fakultas Kehutanan Bogor Supporting Reading Mcintosh, R. Patrick, 1985. The Background of Ecology: Concept and Theory, Cambridge, University Press

	Wijana, N. 2014. Vegetation Analysis Method. Plantaxia, Yogyakarta Alvim,P de T. dan T.T. Kozlowski, 1977. Ecophysiology of Tropical Crops. Academic Press, New York Black,C.A.1968. Soil Plant Relationships. John Willey and Sons, New York Connor,D.J;R.S.Loomis and K.G.Cassman.2011. Crop Ecology Productivity and Management in Agriculture System.2 nd edition. University of Melbourne. Hasan Basri Jumin, 1992. Ekologi Tanaman. Suatu pendekatan fisiologis Leopond,A.C.,1964. Plant Growth and Development. Mc Graw Hill Book.Co.Inc. New York Roderick Hunt. 1978. Plant growth analysis. Studies in Biology. Edward Arnold (Publisher) limited Simmonds,NW.1981. Genotype(G), Environment (E),, and GE component of crop yields. Methodology of experimental agricultural (17), 18 : 355-362. William,C.N. and K.T. Joseph. 1970. Climate, soil and crop production inh the humid tropics. Oxford Univ. Press
Last date of update	July, 2025

AGT2104 SOIL FERTILITY

Course Name	Soil Fertility
Code	AGT2104
Semester (s) in which the module is taught	III
Lecturer (Person responsible)	Dr.Ir. Mukhlis, M.Si
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the definition of soil fertility, soil productivity, essential nutrients and the history of the development of soil fertility research. Able to understand and explain the meaning of plant growth, factors that affect it and mathematical models of plant growth rates due to nutrient management, plant soil nutrient relationships, inorganic and organic colloids, available forms of nutrients, Cation Exchange Capacity (CEC) and Base Saturation (KB), movement of nutrients to the roots and their uptake by plant roots. Able to explain the sources, reaction forms, functions, critical limits and symptoms of macro-nutrient deficiencies N, P, K, Ca, Mg, S and micro-nutrients, Fe, Mn, Cu, Zn, Mo, B and Cl in soil and plants. Able to understand and explain about acid soil fertility, calculate the need for lime and how to apply it, fertility of paddy fields and evaluate soil fertility using the pot experiment method and visually observe nutrient deficiency symptoms and understand the working principles of essential nutrient analysis in the laboratory in 14 face-to-face lectures, structured assignments, case

	method and project based learning, practicum, midterm exams, and final exams.
Module objectives/intended learning outcomes	• Students are able to apply soil science theory • Students are able to apply the theory of basic principles of sustainable agricultural systems • Students are able to solve problems in the field of agrotechnology by taking into account environmental factors • Students are able to apply agrotechnology theory in the field of plantation

Content	1. Introduction: Lecture contract; concepts and understanding of soil fertility and soil productivity and essential nutrients. 2. History of the development of soil fertility research : Soil fertility experiments of the 19th and early 20th centuries 3. Concepts about plant growth: Definition of growth Genetic traits and environmental traits that affect growth 4. A mathematical model for measuring plant growth and estimating the growth rate due to the application of a certain amount of growth factors. 5. Inorganic and organic colloidal properties, Cation Exchange Capacity (CEC) and Base Saturation, in relation to nutrient movement to the roots and uptake by plant roots. 6. Nutrient Nitrogen: Sources, forms, properties, reactions, functions, critical limits in soil and plants and symptoms of N deficiency in plants 7. Phosphorus Nutrients: Sources, forms, properties, reactions, functions, critical limits in soil and plants and symptoms of P nutrient deficiency in plants 8. Potassium Nutrient: Sources, forms, properties, reactions, functions, critical limits in soil and plants and symptoms of K deficiency in plants 9. Secondary macro nutrients: Sources, forms, properties, reactions, functions, critical limits in soil and plants and symptoms of Ca, Mg, S nutrient deficiency in plants 10. Micronutrients: Sources, forms, properties, reactions, functions, critical limits in soil and plants and symptoms of micronutrient deficiency (Fe, Zn, Cu, B, Mn, Mo) in plants. 11. Fertility of acid soils: Soil acidification process, relationship of soil pH to soil nutrient availability. 12. Liming of acid soils: Reaction of lime on acid soils, types of agricultural lime and methods of determining lime needs and how to apply it. 13. Fertility of paddy field soils: Nature of paddy soils and their fertility characteristics, nutrient management of paddy soils and how it differs from nutrient management in drylands. 14. Soil Fertility Evaluation: Concepts and methods of soil fertility evaluation; evaluation of plant deficiency symptoms, soil and plant analysis methods, biological tests (pot experiments).

Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: John L. Havlin et al. 2017. Soil Fertility and Fertilizers An Introduction To NutrientnManagement. 8 ed . Pearson India Education Services Pvt. Ltd https://handoutset.com › uploads › 2022/05 › Soil...pdf M. Madjid Damanik, dkk. 2010. Soil Fertility and Fertilazation. USU Press. ISBN 979-458-463-0 Mukhlis, Sarifuddin dan H. Hanum. 2017. Soil Chemistry. Theory and Applications 2nd Edition. USU Press. Medan Tan, K.H. 2011. Principles of Soil Chemistry. 4 th Edition.CRC Press. Sparks, D.L. 2003. Environmental Soil Chemistry. 2 nd edition Academic Press Strawn, D. H. L. Bohn, and G. A. O'Connor. 2020. Soil chemistry. 5 th ed.Wiley-Blackwell Supporters : Sanchez, P. A. 2019. Properties and Management of Soils in the Tropics. 2 nd Edition Cambridge University Press Weil, R. R. and N. C. Brady. 2017. The Nature and Properties of Soils, 15 th edition.Pearson Education. Osman, K. T. 2018. Management of Soil Problems. Springer International Publishing AG, part of Springer Nature
Last date of update	July, 2025

AGT2105 MICROBIOLOGY

Course Name	Microbiology
Code	AGT2105
Semester (s) in which the module is taught	III
Lecturer (Person responsible)	Irda Safni SP., MCP, Ph.D
Language	Indonesian or English
Relation to curriculum	Compulsory courses of the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the history and development of the field of agricultural microbiology, types of microorganisms, nutrition and growth of microorganisms, genetics of microorganisms and biotechnology, the relationship between microorganisms and the soil environment, the role of microorganisms in the plant nutrient cycle, the interaction of microorganisms with plants, the role of microorganisms in agricultural productivity, the management of beneficial and harmful microorganisms in agriculture in 14 face-to-face lectures, structured assignments, case method and project based learning, practicum, midterm exam, and final semester exam.
Module objectives/intended learning outcomes	Students are able to apply the theory of plant pests and diseases

Content	1. Basic principles of microbiology 2. Systematics of microorganisms 3. Cell structure and function of archaea and bacteria 4. Structure and function of eukarytic cells, protists and fungi 5. Virology 6. Nutrition and culture of microorganisms 7. Growth of microorganisms 8. Metabolism of microorganisms 9. Diversity of microorganisms (PBL) 10. Microbial genetics 11. Management and control of microorganisms 12. The role of microbes in nature (CM) 13. Utilization of microorganisms in agriculture and biotechnology 14. Microbes in nature in agriculture and biotechnology (continued).
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Brock, T. D., Madigan, M. T., Martinko, J. M., & Parker, J. (2003). Brock biology of microorganisms. Upper Saddle River (NJ): Prentice-Hall, 2003. Cappuccino, James G., and Chad T. Welsh. Microbiology: a laboratory manual. Pearson Education, 2017. Supporting: Journals and other relevant reading materials
Last date of update	July, 2025

AGT 2106 PLANTATION CROPS I

Course Name	Plantation Crops I
Code	AGT 2106
Semester (s) in which the module is taught	III
Lecturer (Person responsible)	Dr.Ir. Charloq, M.P.
Language	Indonesian or English
Relation to curriculum	Compulsory interest courses Electives outside of interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The oil palm and rubber plantation course learns about the principles, explains and analyzes oil palm and rubber plantations in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and semester final exams.
Module objectives/intended learning outcomes	• Students are able to apply the theory of the basic principles of sustainable agricultural systems • Students are able to apply the theory of agrotechnology in the field of plantation • Students are able to manage natural resources and human resources, especially in the field of plantations

Content	1. History and basic principles of oil palm plantation 2. Botany, morphology of oil palm and growing conditions of oil palm 3. Oil palm planting materials and basic principles of oil palm nurseries 4. Aspects of oil palm cultivation 5. Maintenance of oil palm plants (Projec Base Learning) 6. Harvest and post-harvest of oil palm 7. Elements of oil palm farming 8. History and development of rubber plantations 9. Agroclimatology of rubber plants 10. Rubber plant material 11. Land processing and planting of rubber plants 12. Maintenance and pest control in rubber plants (Case Method) 13. Rubber plant tapping process 14. Rubber processing and rubber farming business analysis
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Adlin U.L. 2008. Oil Palm (Elaeis guineensis Jacq.) in Indonesia, 2nd Edition. Medan: Oil Palm Research Center Lubis, A. U. 2008. Oil Palm (Elaeis guineensis Jacq.) in Indonesia. Marihat Oil Palm Research Center. Medan. Mangoensoekarjo, S and H. Samangun, 2003. Agribusiness Management of Oil Palm. UGM-Press, Yogyakarta.

	Mangoensoekarjo, S. 2007. Soil Management and Fertilization of Plantation Cultivation. Gajah Mada University Press. Yogyakarta. Pahan, I., 2013. The Complete Guide to Oil Palm. Sixth Printing. Penebar Swadaya. Jakarta. Rubber Research Center Sembawa. 2020. Rubber Plant Tapping (Rubber-Based Wantani System). Rubber Research Center. Sembawa. Damanik, S., Syakir, M., Tesma, Siswanto. 2018. Cultivation and Post-Harvest of Rubber. Plantation Research and Development Center. Bogor. Rokhmah, D., and Sobari, I. 2015. Lower Tapping and Upper Tapping Techniques in Rubber Plants. Communication Media for Industrial and Refreshing Plantations. Medan.
Last date of update	July, 2025

AGR1103 MANAGEMENT BASICS

Course Name	Management Basics
Code	AGR1103
Semester (s) in which the module is taught	III
Lecturer (Person responsible)	Ir. Iskandarini MM., Ph.D.
Language	Indonesian or English
Relation to curriculum	Compulsory course
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minit) per minggu atau 28 jam per semester • Self-study : (2 x 60 minit) per minggu atau 28 jam per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Discusses the understanding of the development of management, the functions of science management methods and techniques, management strategies; organizational development and analysis of management practices in Indonesia and developed countries 14 face-to-face meetings, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory in plantation commodity management, especially oil palm, rubber and coffee in the management of natural resources and human resources. • Able to develop global insights for character and self-potential in accordance with scientific fields and across disciplines.

Content	1. Definition of Management and Manager Sources of Management 2. Work Result Assessment 3. Basic Functions of Management 4. Levels of Management and Types and Functions of Managers 5. Skills for Effective Managers and Dimensions of Manager Performance 6. Dimensions of Managerial Environment and Typology of External Environment 7. Environment within the organization and Environmental Analysis of the organization 8. SWOT Analysis Theory 9. Theory of Planning Function and Stages of Planning Process 10. Vision, Mission, Goals and Core Values of the Organization 11. Plan Implementation and Planning Barriers 12. Organization and Organizing Theory and the Organizing Process Division of labor Specialization and Over-Specialization and Departementation HR Planning Staffing Process 13. Position Analysis 14. Recruitment and Selection Process Performance Appraisal and Compensation
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49

Reading list	Main Reading H.B. Siswanto. 2009. Introduction to Management. Jakarta: Bumi Aksara B. Malayu S.P. Hasibuan. 2004. Management: Basic, Definition and Problems. Jakarta: Bumi Aksara C. M. Manullang. 2005. Basics of Management. Gadjah Mada University Press Supporting Readings D. Ricky W. Griffin. 2004. Management, Seventh Edition, Volume I. Gina Gania Translation. Sondang P. Siagian. 2001. 21st Century Management: Bumi Akasara Drucker. P, (2006), Management Challenges for the 21st century, Peter Bound. Robbins, S.P, Coulter, M, (2010), Management, Indonesian Edition, Erlangga Publisher, Jakarta. Stoner, J. A.F, Freeman E. E, Gilbert Jr. D, (2003), Management, Indonesian Edition, Jakarta, PT. Indeks Gramedia Group Terry, GR, (1966), Principles of Management, 4th edition, Chicago: R.D. Irwin IN. Koontz.H, O'Donnell (1984) Management, McGraw-Hill Book Company.
Last date of update	July, 2025

4^{th} Semester

AGT 2201 FOOD CROPS I (RICE, CORN, SOYBEAN, CASSAVA)

Course Name	Food Crops I (Rice, Corn, Soybean, Cassava)
Code	AGT 2201
Semester (s) in which the module is taught	IV
Lecturer (Person responsible)	Dr. Jonathan Ginting
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the cultivation of the main food crops namely rice, corn, soybeans and cassava starting from the preparation of planting materials, tillage, planting, plant maintenance and harvesting. in 14 face-to-face lectures, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system • Able to create businesses in the fields of plantations, food and horticulture on a small and large scale independently

Content	1. definition and division of food crops, plant history 2. history of rice plants, growing conditions, botany, phases 3. preparation of quality rice seeds, seeding and nursery 4. organic and inorganic fertilization in rice plants, pest and disease control, weed control, harvest and post-harvest, and farm business analysis. 5. history of maize crops uses and production statistics, growing conditions: climate and soil, botany, phases of growth and superior varieties of maize. 6. Maize seed preparation, tillage, planting, fertilization, pest and weed control, harvest and post-harvest, and farm business analysis. 7. History of soybean crops, uses and production statistics, climate and soil growth requirements, botany, phases of growth, high yielding soybean varieties 8. Soybean Cultivation: Methods of land and seed preparation, plant spacing and planting, soybean fertilization 9. Irrigation, weed control, pests and diseases, mechanism of root nodule formation, harvest and post-harvest, soybean farming analysis 10. soybean cultivation technology 11. History of soybean crops, uses and production statistics, climate and soil conditions, botany, growth phases, high-yielding soybean varieties 12. Cassava Cultivation: Methods of land and seed preparation, spacing and planting, .fertilization of cassava 13. Sweet potato cultivation technology 14. Sweet potato cultivation technology
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79

	B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Fauzi, A. R., & Puspitawati, M. D. (2018). Cultivation of soybean (glycine max l.) Burangrang variety on dry land. JOURNAL OF BIOINDUSTRY, 1(1), 1-9Zakaria, A. K. (2010). Soybean cultivation development policy towards self-sufficiency through farmer participation. Agricultural Policy Analysis, 8(3), 259-272. Adisarwanto, I. T. (2014). Tropical soybean productivity of 3 tons/ha. Penebar Swadaya Group. Purwaningsih, O. (2019). Utilization of Organic Materials in Soybean Cultivation. Sianturi, J. F. (2021). Sweet Potato Cultivation in Improving Food Security in Banko Lestari Village, Rokan Hilir Regency. Journal of Community Services Public Affairs, 1(3), 81-86. Apriliani, I. N. (2022). Effect of potassium on the growth and yield of two varieties of sweet potato (Ipomea batatas (L.) Lamb). Scientific Journal of Agricultural Students [JIMTANI], 2(5). Ariningsih, E. (2016). Area-based improvement of cassava production in West Java and South Sulawesi Provinces. Agricultural Policy Analysis, 14(2), 125-148. Sundari, T. (2010). Introduction to Superior Varieties and Cultivation Techniques of Cassava. Malang: Research Center for Various Beans and Tuber Crops. Saleh, N., Taufiq, A., Widodo, Y., Sundari, T., Gusyana, D., Rajagukguk, R. P., & Suseno, S. A. (2016). Guidelines for Cassava Cultivation in Indonesia. Nugraha, H. D., Suryanto, A., & Nugroho, A. (2015). Assessment of potential productivity of cassava (Manihot esculenta Crant.) in Pati Regency (Doctoral dissse)
Last date of update	July, 2025

AGT 2202 HORTICULTURAL CROPS I (FRUIT AND VEGETABLE)

Course Name	Horticultural Crops I (Fruit and Vegetable)
Code	AGT 2202
Semester (s) in which the module is taught	IV
Lecturer (Person responsible)	Ir. Meiriani, MP
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the cultivation of horticultural crops, namely various types of fruits and vegetables starting from seed preparation, tillage, planting, maintenance and harvesting in 14 face-to-face lectures, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system • Able to solve problems in the field of agrotechnology by taking into account economic, public health and safety, socio-cultural and environmental factors. • Able to apply agrotechnology theory in plantation commodity management, especially oil palm, rubber and coffee in the management of natural resources and human resources. • Able to apply research methods to identify problems in the field of agrotechnology. • Able to apply communication theory in the application of information technology and publications in the field of

	agrotechnology both orally and in writing, in academic and non-academic situations.
Content	1. Lecturer contract 2. Definition of fruits and their benefits. 3. Prospects for fruit crop development in Indonesia 4. Environmental factors of fruit crops 5. Environmental factors of fruit crops 6. Growth and development of fruit plants and habits 7. Organic fruit crop culture techniques from tillage to pest control 8. Technical culture of selected fruit crops I 9. Technical culture of selected fruit crops II 10. Selected fruit - fruit crop technique III 11. Selected fruit - fruit crop technique culture IV 12. Selected fruit - fruit crop technique culture V 13. Selected fruit - fruit crop technique culture VI 14. Selected fruit - fruit crop technique culture VII
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Readings Pitaloka, D. (2017). Horticulture: Potential, development and challenges. G-Tech: Journal of Applied Technology, 1(1), 1-4. Zulkarnain, Z. (2009). Basics of horticulture. PT Bumi Aksara. Nur'aini, H. I. M. (2019). Getting to know horticultural plants. Duta Publisher. Santoso, B. B. (2011). Basics of horticulture. Basics of Horticulture.

	Irmawati, Y. C. (2009). Cultivation of chili peppers (Capsicum Frutecens. L) in BBP Mondromino ornamental plants and horticulture Wonogiri Regency. Rahayu, T., Rachmawatie, S. J., Pamujiasih, T., & Ihsan, M. (2022). Intensification of yard land with horticultural crops. Darmabakti: Journal of Community Service and Empowerment, 3(1), 32-36. Megasari, R., Harahap, D. E., Syahadat, R. M., Wattimena, S., Angelia, I. O., Prasetyo, A., ... & Hati, R. P. (2023). HORTICULTURE. Tando, E. (2019). Utilization of greenhouse and hydroponic technology as a solution to climate change in the cultivation of horticultural crops. Buana Sains, 19(1), 91-102. Syafruddin, R. F., Sari, D. P., & Kadir, M. (2018). Determination of Leading Commodities and Horticultural Commodity Structure in Tinggimoncong District, Gowa Regency Based on Location Quotient (LQ) and Klassen Typology (KT). Journal of Galung Tropika, 7(1), 22-32. Syafruddin, R. F., Sari, D. P., & Kadir, M. (2018). Determination of Leading Commodities and Horticultural Commodity Structure in Tinggimoncong District, Gowa Regency Based on Location Quotient (LQ) and Klassen Typology (KT). J
Last date of update	July, 2025

AGT 2203 BIOTECHNOLOGY

Course Name	Biotechnology
Code	AGT 2203
Semester (s) in which the module is taught	IV
Lecturer (Person responsible)	Prof. Luthfi AM Siregar, Sp., M.Si., Ph.D
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the history and utilization of botechnology, genetic material and central dogma of biology, recombinant DNA technology, gene transformation, gene expression control techniques in biotechnology, general analysis techniques in biotechnology, safety of genetically modified crops, plant biotechnology research studies to deal with biotic stress, plant biotechnology research studies to deal with biotic stress, studies of plant biotechnology research for improving crop quality (quality and quantity), studies of plant biotechnology research related to health, studies of biotechnology research for improving soil fertility in 14 face-to-face lectures, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• (quality and quantity), plant biotechnology research studies related to health, biotechnology research studies for improving soil fertility. • Able to create innovations and contribute in the field of agrotechnology by utilizing science and technology

Content	1. Terminology and benefits of agricultural biotechnology applications, history of agricultural biotechnology development, role of biotechnology for agriculture 2. DNA as a genetic material and gene expression, history 3. Definition of gene cloning, restriction enzymes, vectors, and hosts 4. Isolation, cutting & splicing of DNA, Transformation and selection 5. principles of in vitro plant propagation 6. Propagation of recombinant microbes 7. Liquid substrate fermentation 8. Solid substrate fermentation 9. Pest infestation (caused by insects) 10. Microorganisms 11. Biofertilizer 12. Soil micro and macro fauna to improve soil fertility 13. Cellular and molecular approaches in addressing the problem of environmental impacts due to agricultural activities 14. Safety and management of genetic engineering products in agriculture
Examination forms	Quiz, Mid-terms and Final Examination 1. Essays questions (5%) 2. Practical works (10%) 3. Mid semester exam (20%) 4. End of semester exam (20%) 3. Projec base learning (30%) 4. Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Yuwono, T. (2019). Agricultural biotechnology. UGM PRESS.

	Maheswari, O. (2021). Guide to Agricultural Biotechnology. DIVA PRESS. Wasilah, U., Rohimah, S., & Su'udi, M. (2019). Development of Biotechnology in Indonesia. Engineering, 12(2), 85-90. Wasilah, U., Rohimah, S., & Su'udi, M. (2019). Development of Biotechnology in Indonesia. Engineering, 12(2), 85-90. Dewanti, P. (2018). Plant Tissue Culture Techniques: General Principles and Application Methods in the Field of Agricultural Biotechnology. Wardani, A. K., Wijayanti, S. D., & Widyastuti, E. (2017). Introduction to Biotechnology. Brawijaya University Press. Pudjiwati, E. H. (2020). BIOTECHNOLOGY AS A SOLUTION TO AGRICULTURAL PROBLEMS IN INDONESIA. Anthology from Bumi Paguntaka: Perspective of Minda Akademia UBT, 2, 31. Suryantini, H., & Nurdiana, N. (2016). Collaboration of Researchers in Biotechnology and Agricultural Genetic Resources in Agrobiogen Journal. Journal of Agricultural Library, 25(2), 63-70. Samekto, R. (2008). Biotechnology and plant health (microorganisms, nitrogen and phosphorus). INNOFARM: Journal of Agricultural Innovation, 7(1). Zunaidah, F. N., & Amin, M. (2016). Development of teaching materials for Biotechnology courses based on the needs and character of students of Universitas Nusantara PGRI Kediri. Indonesian Journal of Biology Education, 2(1), 19-30.
Last date of update	July, 2025

AGT2204 Fertilizer and Fertilization

Course Name	Fertilizer and Fertilization
Code	AGT2204
Semester (s) in which the module is taught	III
Lecturer (Person responsible)	Dr. Ir. Sarifuddin, MP.
Language	Indonesian or English
Relation to curriculum	Compulsory courses of the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the definition of fertilizer, classification of fertilizers, properties and characteristics, manufacturing processes of artificial fertilizers (inorganic), organic fertilizers and biological fertilizers. Able to understand and explain the basic considerations in fertilization and the fate of fertilizers in the soil, types of biological fertilizers, their interaction with soil and plants, their application for food crops, plantations and the manufacturing industry and the effect of fertilizer application on environmental pollution. Able to understand, explain and calculate the dosage of single, compound and mixed fertilizers, fertilizer efficiency and the basics of making recommendations as well as determining the dosage and how to fertilize for food crops and plantations in 14 face-to-face lectures, structured assignments, case method and project based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• Students are able to apply soil science theory • Students are able to apply the theory of agrotechnology in the field of plantation

	• Students are able to identify problems in the field of agrotechnology • Students are able to apply the theory of communication in English
Content	1. Introduction: Lecture contract; explain about the definition of fertilizer, the history of fertilization and the development of fertilization in Indonesia 2. classification of fertilizers based on fertilizer properties 3. Factors considered in fertilization: soil; climate (rainfall); cropping pattern; type and amount of fertilizer and method of application. 4. Nature and characteristics of single fertilizers, manufacturing process of major macro fertilizers Nitrogen, Phosphorus and Potassium. Secondary macro fertilizers and micro fertilizers 5. Single fertilizer requirement; Compound fertilizer; Combination of single fertilizer and fertilizer compound 6. Properties and characteristics of organic fertilizers (Manure, compost, green manure, and guano) 7. Properties and characteristics and manufacture of compound fertilizers and mixed fertilizers (PBL) 8. Reaction of macro and micro fertilizers in soil (CM) 9. Impact of fertilization on soil, water and air pollution and how to prevent it 10. Properties and characteristics of biofertilizers and their manufacturing process 11. Types of recommendations (general, regional, location specific); principles of making fertilizer recommendations 12. Basic principles in making fertilizer recommendations for food crops (rice, corn and soybean) 13. Basic principles in making fertilizer recommendations for annual crops (oil palm and rubber) 14. Fertilizer efficiency and efforts to improve fertilizer efficiency
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%)

	• Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: John L. Havlin et al. 2017. Soil Fertility and Fertilizer An Introduction to Nutrient Management. 8th ed. Pearson India Education Services Pvt. Ltd https://handoutset.com ' uploads ' 2022/05 ' Soil...pdf M. Madjid Damanik, et al. 2010. Soil Fertility and Fertilization. 2nd Edition. USU Press. ISBN 979-458-463-0 Mukhlis, Sarifuddin and H. Hanum. 2017. Soil Chemistry. Theory and Applications 2nd Edition. USU Press. Medan Tan, K.H. 2011. Principles of Soil Chemistry. 4th Edition.CRC Press. Sparks, D.L. 2003. Environmental Soil Chemistry. 2nd Edition. Academic Press Strawn, D. H. L. Bohn, and G. A. O'Connor. 2020. Soil chemistry. 5th edition. Wiley-Blackwell Supporters: Sanchez, P. A. 2019. Soil Properties and Management in the Tropics. 2nd Edition Cambridge University Press Weil, R. R. and N. C. Brady. 2017. Soil Nature and Properties, 15th edition. Pearson Education. Osman, K. T. 2018. Soil Problem Management. Springer International Publishing AG, part of Springer Nature
Last date of update	July, 2025

AGT 2205 Integrated Pest Management

Course Name	Integrated Pest Management
Code	AGT 2205
Semester (s) in which the module is taught	IV
Lecturer (Person responsible)	Prof. Dr. Ir. Marheni, MP
Language	Indonesian or English
Relation to curriculum	Compulsory interest courses Out-of-interest electives
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The integrated pest control course learns about the principles, explains and analyzes integrated pest control in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and final exams.
Module objectives/intended learning outcomes	• Students are able to apply the theory of pest and disease science • Students are able to apply the theory of basic principles of agricultural systems • Students are able to apply agrotechnology theory in the field of • Students are able to identify agrotechnology problems

Content	1. Ecosystem as a management unit for pest organisms 2. Integrated pest and disease control in law No. 12 0f 1992 of the Word Trade Organization related to products 3. Insecticides in traditional pest management and pest management 4. Monitoring, observation and sampling in the application of PHT 5. Ecological, economic approach in the application of PHT 6. Decision models for using pesticides 7. A new paradigm of PHT in sustainable agriculture 8. PHT development steps of a pest in crops 9. Utilization of refugia in PHT in various crops 10. Color and aroma traps in the application of PHT in citrus crops 11. Implementation of PHT of Oryctes rhinoceros pest in oil palm 12. Potential of entomopathogens as biopesticides in the implementation of PHT 13. Challenges and oppurtunities for PHT in the future 14. Challenges and oppurtunities for PHT in the future
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main reading: Binns MR, Nyrop JP, and Der Werf WV. 2000. Sampling and Monitoring in Crop Protection: The Theoretical Basis For Developing Practical Decision Guides. New York. CABI Publishing.

	Boivin G, dan Vincent C. 1987. Sequential Sampling For Pest Control Program. Toronto. Reseach Branch Agriculture Canada. Ciancio A, and Mukerjee KG. 2007. General Concepts in Integrated Pest and Disease Management. Springer Verlag. DeBach P, Schlinger EI (ed). 1973. Biological control of Insect & Weeds. London. Chapman & Hall. Dufour R. 2008. Biointrnsive Integrated Pest Management (IPM), Fundamentals of sustainable agriculture. NCAT Agriculture Specialist Published 2001 Flint ML, and van den Bosch R. 1981. Introduction to Integrated Pest Management. New York. Plenum Press. Norris RF, Caswell-Chen EP, and Kogan, M. 2003. Concepts in integrated Pest Management. New Jersey. Prentice Hall. Oka IN. 2005. Integrated Pest Management and its Implementation in Indonesia. Gadjah Mada University Press. Yogyakarta. Effendi, and S. Baehaki. 2009. Integrated Pest Management Strategy for Rice Crops in the Perspective of Good Agricultural Practices. Agricultural Innovation Development. 2(1): 68-78. Agustian A and Rachman B. 2009. Implementation of Integrated Pest Management Technology in Smallholder Plantation Commodities. Perspective. 8 (1) : 30-41.
Last date of update	July, 2025

AGT 2 207 ENTERPRENEURSHIP

Course Name	Enterpreneurship
Code	AGT 2 207
Semester (s) in which the module is taught	IV
Lecturer (Person responsible)	Ir. Jonis Ginting, MS
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minit) per minggu atau 28 jam per semester • Self-study : (2 x 60 minit) per minggu atau 28 jam per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	2 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course description	This course discusses entrepreneurship theory, the character of an entrepreneur, communication and leadership skills, entrepreneurial motivation, creativity and innovation in entrepreneurship, opportunity identification, how to start a new business and ultimately be able to make a business feasibility in 14 face-to-face lectures, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to internalize the STAR values in developing self ability as a lifelong learner in the field of agrotechnology. • Able to solve problems in the field of agrotechnology by taking into account economic, public health and safety, socio-cultural and environmental factors. • Able to apply communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations. • Able to develop global insights for character and self-potential in accordance with scientific fields and across disciplines.

Content	1. Definition, benefits and scope of entrepreneurship 2. Business fields and legal aspects of entrepreneurship 3. Metamorphosis of life 4. Basic characteristics and starting time of entrepreneurship 5. How to set up a business 6. Membuat rencana bisnis (Business Plan) 7. Business capital - 1 8. Business capital - 2 9. Marketing strategy - 1 10. Marketing strategy - 2 11. Market and marketing 12. Business ethics and entrepreneurship 13. Location and layout techniques 14. Pricing
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Mukrodi, M., Wahyudi, W., Sugiarti, E., Wartono, T., & Martono, M. (2021). Building the Spirit of Business through Entrepreneurship Training. Journal of PKM Business Management, 1(1), 11-18. Hastuti, P., Nurofik, A., Purnomo, A., Hasibuan, A., Aribowo, H., Faried, A. I., & Saputra, D. H. (2020). Entrepreneurship and MSMEs. Wibowo, A. (2017). The impact of entrepreneurship education for university students. Asian Journal of Entrepreneurship and Family Business, 1(1), 1-14. Sanawiri, B., & Iqbal, M. (2018). Entrepreneurship. Brawijaya University Press.

	Suryana, Y. (2010). Entrepreneurship approach to the characteristics of successful entrepreneurs. Hadiyati, E. (2011). Creativity and innovation affect small business entrepreneurship. Journal of management and entrepreneurship, 13(1), 8-16. Sunarya, P. A., & Saefullah, A. (2011). Entrepreneurship. Andi Publisher. Muniarty, P., Bairizki, A., Sudirman, A., Wulandari, W., Anista, J. S. A., Elistia, E., ... & Fitriana, F. (2021). Entrepreneurship. Triningtyas, D. A. (2016). Basics of Entrepreneurship. CV. Ae Media Grafika. Shalahuddin, I., Maulana, I., & Eriyani, T. (2018). Basic principles of entrepreneurship. Deepublish.
Last date of update	July, 2025

Agronomy Interest

5th Semester

AGT3101 RESEARCH METHODS

Course Name	Research Methods
Code	AGT3101
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Ir. Darma Bakti, MS
Language	Indonesian or English
Relation to curriculum	Compulsory courses of the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course explains the concept of science and scientific method, types of research methods, literature study, problem formulation and hypothesis, research design, stages of conducting experimental research and non-experimental research, variables and measurement techniques, sampling methods, data analysis and interpretation, scientific report making techniques and results presentation techniques in 14 face-to-face lectures, structured assignments, case method and project based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• Students are able to manage natural resources and human resources, especially in the field of plantations. • Students are able to apply research methods in the field of agrotechnology • Students are able to apply communication theory in writing final assignments and scientific publications in the field of agrotechnology

Content	1. Introduction: lecture contract; Science: thinking process and knowledge; theory and facts; values in science; Scientific Method: definition, criteria and steps in the scientific method; scientific and non-scientific approaches 2. Research: definition of research, research chain system, research characteristics, contribution and usefulness of research results; Types of research, 3. Literature Study: Definition, purpose and use, literature study criteria, types of literature studies, how to conduct literature studies 4. Determining the Research Object: Research topic: characteristics of good research topics, considerations for choosing research topics, where research topics are obtained; Problems and Hypotheses: Identifying and Formulating Problems, Formulating and Testing Hypotheses (CM) 5. Research Design: Research planning design, research implementation design 6. Experimental research design 7. Descriptive research implementation design 8. Selecting Variables and Measurement Techniques: Definition of variables, types of variables, methods and measuring instruments, validity of measuring instruments, examples of variables and measurement techniques in research in the field of agricultural science (PBL) 9. Sampling Methods: Purpose and usefulness of the sample. Types of sampling methods Criteria and methods of soil and plant sampling 10. Data analysis and data interpretation in experimental research, conclusions and research implications: Statistical techniques in data analysis: analysis of variance, independent sample t-test, contrast analysis regression and correlation analysis. 11. Data analysis and data interpretation in descriptive research, conclusions and research implications Statistical techniques in descriptive analysis, t test and multivariate analysis 12. Data presentation techniques, reference techniques and bibliography 13. Writing a research report: Systematics of research reports, grammar in scientific writing 14. Slide making technique and research result presentation technique: Slide making techniques in power point, Presentation structure, and Presentation technique

Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Mohamad Nazir. 1988. Research Methods. Ghalia Indonesia.Jakarta Suharsimi Arikunto. 2013. Research Procedure: a practical approach. Publisher: Rineka Cipta Aji Sastrosupadi. 2000. Practical experimental design in agriculture. Kanisius Publisher, Yogyakarta Gomez, K.A and A.A Gomez. 1995. Statistical procedures for agricultural research. Second Edition. Translator E.Syamsudin and Justika Baharsyah. University of Indonesia Publisher Uyanto, S. 2009. Guidelines for Data Analysis with SPSS. Graha Ilmu USU Faculty of Agriculture. 2008. Thesis writing guidelines Supporter Up-to-date journals.
Last date of update	July, 2025

AGT3102 Plantation Crops II (Coffee, Sugarcane, Coconut)

Course Name	Plantation Crops II (Coffee, Sugarcane, Coconut)
Code	AGT3102
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Ir. Jonis Ginting, MS
Language	Indonesian or English
Relation to curriculum	Compulsory interest courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	
Course Description	This course discusses the cultivation of plantation crops including coffee, sugar cane and coconut commodities starting from the preparation of planting materials, tillage, planting, plant maintenance and harvesting in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• Students are able to apply the theory of agronomy • Students are able to apply the theory of agrotechnology in the field of plantation • Students are able to apply management theory in plantations • Students are able to apply the science of entrepreneurship in the fields of food, plantations and horticulture

Content	1. Coffee Cultivation. Introduction (lecture contract, history of coffee plants, role in the Indonesian economy and future prospects of coffee) 2. Coffee biology (taxonomy, morphology, Roots, stems, leaves, flowers and fruits), Names and types of coffee 3. Coffee growing conditions (climate and soil), Plant material, Seeding, Land Preparation, Cultivation, Planting Protective Plants Planting, Maintenance, Fertilization, Control of pests, diseases and weeds. 4. Harvesting and processing coffee. Coffee Business Analysis 5. Sugarcane Cultivation (Introduction, History of sugarcane, Biology of Sugarcane, Agroclimate of Sugarcane). 6. Seed preparation, land preparation, spacing, planting holes, and planting. 7. Plant Maintenance. Weeding, Fertilization, Bumbun, KLentek. 8. Management of pests, diseases and weeds of sugarcane (CM) 9. Harvesting, sugarcane processing and sugarcane farming business analysis. 10. Coconut Cultivation (Introduction, History of coconut plant, Biology of coconut, Agroclimate of coconut) 11. Planting materials, seed quality requirements, nursery and seedlings, land preparation, seeding (PBL) 12. Planting, Planting, Maintenance, Fertilization, Pest, Disease and Weed Control 13. Fruit picking and coconut processing 14. Coconut Farming Business Analysis
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64

	D = 50-59 E ≤ 49
Reading list	Main Palma Plant Research Center.2015. Technical Guidelines for the Cultivation of Inner Coconut Plants. Agricultural Research and Development Center. Plantation Research and Development Center. Regulation of the Minister of Agriculture. Number. 49/Permentan/OT.140/4/2014. Technical Guidelines for Good Agriculture Practices on coffee cultivation. Ministry of Agriculture Directorate General of Plantation RI. Najiati. S and Danarti. 1990. Coffee. Cultivation and After-Harvest Handling. Penebar Swadaya. Indrawanto, C; Purwono; Siswanto; Syakir. M and W. Rumini. 2010. Cultivation and Post-Harvest of Sugarcane. Publisher. ESKA Media. Jakarta. Regulation of the Minister of Agriculture of the Republic of Indonesia. Number. 130. MOA/OT.140/12/2013. Guidelines for Good Coconut Cultivation. Ministry of Agriculture. Directorate General of Plantation. Journals related to Coffee, sugarcane and coconut commodities. Supporter Related journals
Last date of update	July, 2025

AGT3103 FOOD CROPS II (SORGHUM, LEGUMES, AND TUBER)

Course Name	Food Crops II (Sorghum, Legumes, and Tuber)
Code	AGT3103
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Ir. Jonis Ginting, MS
Language	Indonesian or English
Relation to curriculum	Agronomy interest courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the cultivation of food crops including sorghum commodities, various types of legumes and tubers starting from the preparation of planting materials, tillage, planting, plant maintenance and harvesting in 14 face-to-face lectures, structured assignments, case method and project based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system. • Able to create businesses in the fields of plantations, food and horticulture on a small and large scale independently.

Content	1. Introduction 2. Wheat cultivation 1 (History, distribution, growing conditions) 3. Wheat cultivation 2 (variety selection, land preparation, maintenance) 4. Wheat cultivation 3 (pest control, harvest and post-harvest) 5. Sorghum cultivation 1 (History, distribution, growing conditions) 6. Sorghum Cultivation 2 (variety selection, land preparation, maintenance, harvest and post-harvest) 7. Peanut cultivation 1 (History, distribution, growing conditions) 8. Groundnut cultivation 2 (variety selection, land preparation, maintenance, harvest and post-harvest) 9. Green bean cultivation 10. Cultivation of Bogor bean 11. Sweet potato cultivation 1 12. Sweet potato 2 cultivation 13. Taro cultivation 14. Arrowroot cultivation
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main AQIL, Muhammad; BUNYAMIN, Z. Water management of sorghum crops. Technology Innovation and Development, 2013, 188. Irawan, Bambang, and Nana Sutrisna. "Prospects for sorghum development in West Java to support food diversification." Agroeconomic Research Forum. Vol. 29. No. 2. 2011.

	Subagio, H., & Aqil, M. (2014). Assembly and development of superior sorghum varieties for food, feed, and bioenergy. Tarigan, Dewi Hiasinta, T. Irmansyah, and Edison Purba. "Effect of Weeding Time on Growth and Production of Several Sorghum Varieties (Sorghum Bicolor (L.) Moench)." Journal of Agroecotechnology, University of North Sumatra 2.1 (2013): 96594.Juarsah, I. (2015). Teknologi pengendalian gulma alang-alang dengan tanaman legum untuk pertanian tanaman pangan. Jurnal Agro, 2(1), 29-38. Pieter, Y., & Mejaya, M. J. (2018). Effect of biological fertilization on growth and yield of soybean in paddy field. Food Crop Agriculture Research, 2(1), Mulyani, A., Nursyamsi, D., & Harnowo, D. (2016). Potential and challenges of utilizing suboptimal land for various bean and tuber crops. In Proceedings of Research Seminar on Various Beans and Tuber Crops (Vol. 25, pp. 16-30). Malang: Food Crops Research and Development Center.Haliza, W., Purwani, E. Y., & Thahir, R. (2010). Pemanfaatan kacang-kacangan lokal mendukung diversifikasi pangan. Pengembangan Inovasi Pertanian, 3(3), 238-245. Sembiring, S. J. B., Saniman, S., & Azlan, A. (2020). Expert System for Diagnosing Pests and Diseases of Amorphophallus Muelleri Plants at the North Sumatra Food Crops and Horticulture Office Using the Dempster Shafer Method. Cyber Tech Journal, 3 (1). Wijayanto, N., & Pratiwi, E. (2011). Effect of shade from sengon (Paraserianthes falcataria (L.) Nielsen) stands on porang (Amorphophallus onchophyllus) plant growth. Journal of Tropical Silviculture, 2(1), 46-51. Supporter Latest journals.
Last date of update	July, 2025

AGT3104 Horticultural Crops II (Ornamental Plants)

Course Name	Horticultural Crops II (Ornamental Plants)
Code	AGT3104
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Dr. Ir. Mariati M.Sc.
Language	Indonesian or English
Relation to curriculum	Agronomy interest courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the cultivation of horticultural plants of various types of ornamental plants from the preparation of planting materials, tillage, planting, plant maintenance and harvesting in 14 face-to-face lectures, structured assignments, case method and project based learning, practicum, midterm exams, and semester final exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system. • Able to create businesses in the fields of plantations, food and horticulture on a small and large scale independently.

Content	1. Definition of fruit plants and definition of ornamental plants 2. Prospects, potential, benefits and functions of fruit plants and classification / grouping of fruit plants 3. Prospects, potential, benefits and functions of ornamental plants and classification / grouping of ornamental plants 4. Principles of production principles of fruit crops and ornamental plants 5. Agrotechnology of watermelon and melon crops 6. Passion fruit and strawberry agrotechnology 7. Banana crop agrotechnology 8. Agrotechnology for citrus crops 9. Mangosteen plant agrotechnology 10. Orchid plant agrotechnology 11. Agrotechnology of aglaonema and caladium plants 12. Agrotechnology of ornamental cut flower plants "chrysanthemum" 13. Agrotechnology of gladiolus plants 14. Types of ornamental palms
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Lubis, M., Lubis, Z., & Efendi, I. (2023). Development Strategy of Upt Seeds of Ornamental Plants and Biopharmaca, Food Crops and Horticulture Office of North Sumatra Province. AGRISAINS: Scientific Journal of Masters in Agribusiness, 5(1), 23-30. Bago, A. S. (2020). Identification of Araceae Family Diversity as Food, Medicine, and Ornamental Plants

	in Hilionaha Village, Onolalu District, South Nisa Regency. Journal of education and development, 8(4), 695-695. Pradenta, O. A. (2021). Marketing Strategy of Ornamental Plants at "Baturraden Horticultural Seed Garden, Food Plant and Horticultural Seed Center for Banyumas Region" (Doctoral Dissertation, Universitas Muhammadiyah Purwokerto). Hapsari, T. D. (2011). Analysis of Marketing Strategy for Ornamental Plants at PT Godong Ijo Nursery, Sawangan, Depok City, West Java. Rohadi, R., Sari, A. R., & Kunarto, B. (2023). Extension of Utilization of Banana Flower Flour and Natural Dyes for Students of Food Crops and Horticulture Agribusiness Department of SMKN 3 Salatiga. Madaniya, 4(3), 917-921. Ruban, E., Rahmah, N., & Fitria, I. (2022). Improving Student Learning Outcomes in Ornamental Plant Agribusiness with Pjbl Learning Model and Steam Approach at Smk Negeri 3 Maluku Tenggara. Journal of Learning Thought and Development, 4(1), 414-417. Purwaningsih, P. (2018). Implementation of Oral Ornamental Plant Sale and Purchase Agreement at Rehan Floris Bogor City. Yustisi, 5(2), 129-146. Akbar, A. (2021). The Use and Economic Value of Aglaonema Sp. Plants Among Ornamental Plant Traders Around Cengkareng and Pulo Gadung. Journal of Bios Logos, 11(2), 122-128. Caffilaray Za, I. L. H. A. M. (2023). Analysis of Ornamental Plant Business Income (Case Study of Chrysanthemum Plants) in Jambi City (Doctoral Dissertation, Jambi University). Maulidia, A. I. (2021). Raw Material Inventory Management on Rose Extract Products (Rosa) at UPT. Development of Agribusiness for Food Crops and Horticulture Lebo Sidoarjo. Supporter Latest journals.
Last date of update	July, 2025

AGT 3105 SEED PRODUCTION AND TECHNOLOGY

Course Name	Seed production and technology
Code	AGT 3105
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Dr. Ir. Haryati MP
Language	Indonesian or English
Relation to curriculum	Compulsory courses within interests Elective courses outside of interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the understanding of seed technology, seed germination and influencing factors, physical and physiological quality testing of seeds, seed harvesting and processing, seed dormancy, seed storage, seed marketing, seed production and certification in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system • Able to create businesses in the fields of plantations, food and horticulture on a small and large scale independently.

Content	1. Definition and purpose of the role of seed production and technology 2. Definition of seed formation process and structure 3. Definition of germination 4. Harvesting and processing 5. Definition of orthodox, recalcitrant seeds and how to store orthodox and recalcitrant seeds 6. Seed health 7. Seed production and quality control 8. Seed circulation, marketing and distribution 9. Seed certification process 10. Seed institutionalization 11. Seed regulations in Indonesia 12. Genetic conservation and international seed organizations 13. Seed dormancy 14. Physical quality of seed
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Yudono, P. (2023). Science and technology of recalcitrant seeds: fruit and plantation crops. UGM PRESS. Samah, E. (2024). PLANT SEED TECHNOLOGY. Despita, R., & Nizar, A. (2019). Textbook of Plant Seed Production Technology. Tyasmoro, S. Y., Permanasari, P. N., & Saitama, A. (2021). Plantation Crop Production Technology. Brawijaya University Press. Prayoga, A., & Ruwaida, I. P. (2017). Textbook of Food Crop Production Technology.

	Revian, M. E., Kusuma, R. M., & Nursetyo, K. I. (2020). Development of a Guidebook for Large Production Practices in Video Media Development Courses in the Education Technology Study Program at State University of Jakarta. Journal of Innovative Learning, 3(1), 24-35. Farmia, A., & Wartapa, A. (2018). Hybrid Seed Production Practicum Manual. Wahyuni, A., Simarmata, M. M., Isrianto, P. L., Junairiah, J., Koryati, T., Zakia, A., ... & Herawati, J. (2021). Seed Technology and Production. Yayasan Kita Tulis. Husen, S., Sutardjo, H. T., & Aulia Zakia, A. (2021). VEGETABLE CROP PRODUCTION TECHNOLOGY. UMM Press. 10. Fawwas, M. (2023). Effect of Various Seed Priming Materials on Seed Quality and Vegetative Growth of Expired Maize (Zea mays L.) Seeds (Doctoral dissertation, Jember State Polytechnic).
Last date of update	July, 2025

AET 2218P WEED SCIENCE

Course Name	Weed Science
Code	AET 2218P
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Ir. Edison Purba, Ph.D.
Language	Indonesian or English
Relation to curriculum	Compulsory courses in interests Electives outside of interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	
Course Description	This course discusses weed classification, reproduction, distribution, and weed seedbank investment, weed control techniques, herbicide classification and formulation, herbicide application, mode of action, and herbicide resistance management.
Module objectives/intended learning outcomes	• Students are able to apply the theory of agronomy • Students are able to apply the theory of basic principles of sustainable agricultural systems • Students are able to solve problems in the field of agrotechnology by taking into account environmental factors

Content	1. Definition and history of weed science 2. Weed classfication 3. Weed Reproduction, Dispersal and Seedbank 4. Weed Ecosystems - Cultivated Crops, Basic Ecological Concepts and Plant Competition. 5. Characteristics and Competitiveness, Relationship between Weed Density and Production, Duration of Competition. 6. Definition of Invasive and Noxious and Invasive Plant Management. 7. Prevention, Mechanical Weed Control and Technical Culture 8. Prevention, Mechanical Weed Control and Technical Culture (Case Method) 9. Biological and Chemical Weed Control 10. History, Development, and Advantages of Herbicide Use 11. Classification, Formulation, and Application of Herbicides (Projec Base Learning) 12. How Herbicides Work 13. Definition, Evolution, and Classification of Herbicide Resistance 14. Resistance Management
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main : Paiman. 2020. Gulma Tanaman Pangan. UPY Press. ISBN: 978-623-76680-9-1 IOWA State University. 2003. Weed Management for Organic Farmers. PM 1883 August 2003.

	Cobb. A. H., and J.P.H. Reade. 2010. Herbicide and Plant Physiology (Second Edition). ISBN: 978-1-405-12935-0. A John Wiley & Sons, Ltd., Publication Supporter: Kraehmer, H. 2012. Innovation: Changing Trends in Herbicide Discovery. Outlooks on Pest Management – June 2012. Page: 115-118 Duke. S. O. 2012. Why Have No New Herbicide Modes of Action Appeared in Recent Years. Pest Manag Sci 2012; 68: 505-512. Dayan, F. E. 2019. Review: Current Status and Future Prospects in Herbicide Discovery. Plants 2019, 8, 341. Haggblade, S. B. Minten. T. Reardon., and D. Zilberman. 2017. The Herbicide Revolution in Developing Countries: Patterns, Causes, and Implications. The European Journal of Development Research (2017). doi:10.1057/s41287-017-0090-7 Saatkamp, A., P. Poschlod, and L. Venable. 2014. Seeds: The Ecology of Regenaration in Plant Communities, 3rd Edition, Chapter 11. CAB International. Hall, L. 2014. How Herbicides Work. Alberta Agriculture and Rural Development. ISBN 0-7732-6131-1 Purba, E. 2009. Herbicide diversity in weed control overcoming herbicide resistant and tolerant weed populations. Inaugural Speech of Permanent Professor Position, University of North Sumatra, Medan.
Last date of update	July, 2025

6th Semester

AGT 3201 POST-HARVEST AND YIELD MANAGEMENT

Course Name	Post-Harvest and Yield Management
Code	AGT 3201
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Dr. Ir. Hotnida Sinaga
Language	Indonesian or English
Relation to curriculum	Compulsory interest course
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minit) per minggu atau 28 jam per semester • Self-study : (2 x 60 minit) per minggu atau 28 jam per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the scope of postharvest activities, including cleaning, sorting, grading, drying, cooling, grinding and packaging of agricultural products. Determination and combination of appropriate post-harvest handling techniques for each agricultural commodity. The post-harvest and yield management course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system. • Able to solve problems in the field of agrotechnology by taking into account economic, public health and safety, socio-cultural and environmental factors.

Content	1. The properties of horticultural commodities in relation to the process of fresh handling and processing in order to produce products with good quality. 2. Ways of fresh and post-harvest handling of horticultural commodities. 3. Changes that occur after harvest 4. Ways of processing horticultural products 5. Criteria for harvesting oil palm 6. CPO processing stages 7. PKO processing stages 8. processing of derivative products from CPO and PKO 9. Post-harvest process and agricultural product management for coffee commodities. 10. Post-harvest process and management of agricultural products for tea commodities. 11. Product management of agricultural derivatives for coffee and tea commodities 12. Good cocoa fruit harvesting and cocoa bean quality problems and solutions 13. Fermentation and drying techniques for wet cocoa beans and how to implement them. 14. Processing of dried cocoa beans into chocolate products
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main:

	Saidi, I. A., Azara, R., & Yanti, E. 2021. Textbook of Postharvest and Processing of Leaf Vegetables. Umsida Press, 1-123. Hafid, H., & Patriani, P. 2021. Animal Husbandry Post-Harvest Technology. Widina Publisher. Chailani, S. R. 2010. Postharvest Diseases of Food Crops. Brawijaya University Press. Support: Setyono, A. 2010. Improvement of postharvest technology in an effort to reduce rice yield loss. Agricultural innovation development, 3(3), 212-226. Mutiarawati, T. 2007. Post-harvest handling of agricultural products. Bandung. Padjadjaran University, 1- 5. Molenaar, R. 2020. Harvest and postharvest of rice, corn and soybean. EUGENIA, 26(1). Kembaren, E. T., & Muchsin, M. 2021. Post-harvest management of Aceh Gayo Arabica Coffee. Journal of Visionary & Strategic, 10(1). Ginting, E. 2002. Post-harvest handling technology and processing of cassava into intermediate products to support agro-industry. Bulletin of Palawija, (4), 67-83. Sembiring, A. C., Sitanggang, D., & Sinuhaji, N. P. 2020. Empowerment of Karo Coffee Farmers through Post-Harvest Processing. Jurnal Mitra Prima, 2(1), 74-79. Hindarti, S. 2014. Post-harvest institutional development model, product processing and shallot business partnership in production centers through training and mentoring (case study in onion production centers in nganjuk district). AGROMIX, 5(2).
Last date of update	July, 2025

AGT 3202 ADAPTATION PHYSIOLOGY OF TROPICAL PLANTS

Course Name	Adaptation Physiology of Tropical Plants
Code	AGT 3202
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Ir. Nini Rahmawati, S.P., M.Si
Language	Indonesian or English
Relation to curriculum	Compulsory interest courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	
Course Description	This course discusses tolerance zones, factors that affect plant growth and identifies adaptation mechanisms of tropical plants to drought stress in rainfed land, salinity stress, climate change and high temperature stress, acid soil stress, land with low phosphorus availability, and tidal and acid sulfate land as well as physiological perspectives in the development of adaptive plants on sub-optimal land. The physiology of tropical plant adaptation course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create a sustainable agricultural system.

Content	1. Tolerance zones, factors affecting plant growth and adaptation mechanisms of tropical plants in general 2. Adaptation mechanism of drought stress in rainfed land -1 3. Adaptation mechanism of drought stress in rainfed land -2 4. Adaptation mechanism of drought stress in rainfed land - 3 5. Salinity stress adaptation mechanism - 1 6. Adaptation mechanism of salinity stress - 2 7. Plant adaptation mechanisms to climate change and high temperature stress - 1 8. Plant adaptation mechanisms to climate change and high temperature stress - 2 9. Plant adaptation mechanism to acid soil stress - 1 10. Plant adaptation mechanisms to acid soil stress - 2 11. Mechanisms of plant adaptation to land with low phosphorus availability - 1 12. Mechanisms of plant adaptation to land with low phosphorus availability - 2 13. Adaptation mechanism of tidal and acid sulfate soil stress - 1 14. Adaptation mechanism of tidal and acid sulfate stress - 2
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Firdaus, M., Prihanto, A. A., & Nurdiani, R. (2013). Mangrove Plants: Biology and Bioactivity. Brawijaya University Press.

	Latuconsina, H. 2021. Tropical Aquatic Fish Ecology: Biodiversity Adaptation Threats and Management. UGM PRESS. Ernando, R. 2021. Growth Rate and Production of Grand Rapids Curly Lettuce (Lactuca Sativa L.) in the Lowlands: A Study on Plant Adaptation to Climate Change. Support: Servina, Y. 2019. Climate change impacts and adaptation strategies for fruit and vegetable crops in the tropics. Journal of agricultural R&D, 38(2), 65-76. Rindyastuti, R., & Hapsari, L. 2017. Ecophysiological adaptation to dry tropical climate: leaf anatomy study of ten woody plant species. Indonesian Journal of Biology, 13(1). Chairudin, C., Efendi, E., & Sabaruddin, S. 2015. The impact of shade on changes in agronomic characters and leaf morpho-physiology in soybean plants (Glycine max (L.) Merrill). Journal of Floratek, 10(1), 26-35. Tambunan, P. 2016. Isoprene Emission Plants as an Evolution of Gene Molecules and Physiological Adaptations. Journal of Tropical Forests, 4(2), 198-206. Kasi, P. D. 2015. Plant Adaptation to Low Temperature. Dynamics, 4(2). Sihotang, L. 2017. Analysis of stomatal density of antanan (Centella asiatica, L) plants with different light intensities. Journal of Pro-Life, 4(2), 329-338. Butarbutar, T. 2012. Agroforestry for climate change adaptation and mitigation. Journal of Forestry Policy Analysis, 9(1), 1-10.
Last date of update	July, 2025

AGT 3203 PLANT PROPAGATION

Course Name	Plant Propagation
Code	AGT 3203
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Dr. Ir. Mariati, M.Sc
Language	Indonesian or English
Relation to curriculum	Compulsory interest courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class • .
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses several methods of plant propagation and is able to carry out plant propagation properly and correctly in the field and be able to think systematically in developing the concept of plant propagation in accordance with technological developments in the field of plant cultivation. The plant propagation course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system. • Able to create innovations and contribute in the field of agrotechnology by utilizing science and technology.

Content	1. Sexual and asexual propagation of plants, reasons for sexual and asexual propagation 2. Plant propagation using seeds, seedling life cycle, production of flowers, fruit formation, seeds and embryos, fruit development, parthenocarpy fruits, seeds and embryos, Polyembryony and Apomixis seeds 3. Definition, basic principles, advantages and disadvantages, and techniques covered in vegetative plant propagation 4. Plant propagation by cuttings 5. Factors affecting plant regeneration in cuttings 6. Plant propagation with specialized roots and stems 7. Plant propagation by layering (grafting), a plant modification that results in the propagation of plants by means of natural layering 8. Plant propagation by grafting and budding 9. Grafting techniques/methods plant propagation techniques by grafting 10. Technique/Method of plant propagation by budding 11. Plant Propagation by Tissue Culture, how to calculate in making tissue culture media and making tissue culture media 12. Procedures for plant propagation by tissue culture 13. Factors affecting the success of propagation techniques with tissue culture 14. Methods of propagation of various important plant species
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49

Reading list	Main: Zulkarnain, Z. 2009. Plant Tissue Culture: Solutions for cultivating plants. Bumi Aksara. Duaja, M. D., Kartika, E., & GUSNIWATI, G. 2020. Vegetative Plant Breeding. Agromedia, R. 2010. Keys to Successful Plant Propagation. AgroMedia. Supporters: Apriyanto, M., Marlina, M., & Arpah, M. 2020. Vegetative Plant Propagation in Pekan Kamis Village, West Tembilahan Village. Celebes Abdimas: Journal of Community Service, 2(1), 42-46. Baskoro, D., & Purwoko, B. S. 2011. Effect of plant propagation material and type of organic fertilizer on the growth of binahong (Anredera cordifolia (Ten.) Steenis). Journal of Indonesian Horticulture, 2(1), 6-13. Ziraluo, Y. P. B. 2021. Methods of propagating purple sweet potato (Ipomea batatas poiret) plants by tissue culture techniques or planlet cuttings. Journal of Research innovation, 2(3), 1037-1046. Yunita, R., Endang, E., & Lestarai, G. 2011. Plant propagation of Pulai Pandak (Rauwolfia serpentina L.) with tissue culture technique. Journal of Natur Indonesia, 14(1), 68-72. Cahyanti, L. D., & Hamawi, M. 2018. Ibm Vegetative Plant Propagation at Pondok Modern Darussalam Gontor 2 and 3. Journal of Applied Abdimas, 3(1), 54-59. Apriliani, A., Noli, Z. A., & Suwirmen, S. 2015. Giving several types and concentrations of auxins to induce rooting in shoot cuttings of bayur (Pterospermum javanicum jungh.) in an effort to propagate revegetation plants. UNAND Journal of Biology, 4(3). Harahap, F., & Nasution, N. E. A. 2020. Development of an Encyclopedia of Plant Propagation through Tissue Culture as an Additional Learning Source for High School Students. Journal of Pelita Pendidikan, 8(1), 52-61.
Last date of update	July, 2025

AGT 3205 PLANTATION CROPS III (TEA, TOBACCO, COCOA)

Course Name	Plantation Crops III (Tea, Tobacco, Cocoa)
Code	AGT 3205
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Ir. Jonis Ginting, MS
Language	Indonesian or English
Relation to curriculum	Elective courses in interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the cultivation of plantation crops including tea, tobacco and cocoa commodities starting from the preparation of planting materials, tillage, planting, plant maintenance and harvesting. The plantation crops III (tea, tobacco, cocoa) course is organized in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system. • Able to apply agrotechnology theory in the management of plantation commodities, especially oil palm, rubber and coffee in the management of natural resources and human resources. • Able to create businesses in the fields of plantations, food and horticulture on a small and large scale independently.

Content	1. History and basic principles of tea plantation 2. Botany, morphology and growing requirements of tea 3. Tea planting materials and basic principles of tea breeding 4. Aspects of tea plant cultivation 5. Harvesting and post-harvesting of tea 6. History and basic principles of tobacco plantation 7. Botany, morphology and growing conditions of tobacco 8. Tea planting materials and basic principles of tobacco breeding 9. Aspects of tobacco cultivation 10. Harvest and post-harvest of tobacco 11. History and basic principles of cocoa farming 12. Botany, morphology and growing conditions of cocoa 13. Tea planting materials and basic principles of cacao breeding 14. Cultivation and post-harvest aspects of cacao
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Subandi, M. 2011. Cultivation of Plantation Crops: Coffee Plant Section. Rizky, M. A. 2019. Het Deli-Proefstation: The Deli Tobacco Plant Research Center in Medan City 1906-1942 (Doctoral dissertation, University of North Sumatra).

	Darmawan, D., Genua, V., Kristianto, S., & Hutubessy, J. I. 2021. Indonesia's prospective plantation crops. Qiara Media Publisher. Support: Pariamanda, S., Sukmono, A., & Haniah, H. 2016. Analysis of land suitability for coffee plantations in Semarang district. Undip Journal of Geodesy, 5(1), 116-124. Falahudin, I., & Harmeni, L. 2016. Effect of organic fertilizer of coffee skin waste (Coffea arabica L.) on the growth of coffee seedlings. Bioilmi: Journal of Education, 2(2). Risandewi, T. 2013. Analysis of robusta coffee production efficiency in Temanggung district. Journal of Research and Development of Central Java Province, 11(1), 87-102. Dewantara, R. D., & Azis, D. 2021. Evaluation of land suitability for tobacco plantations in central aceh district using geographic information system analysis. Journal of Geosphere Education, 6(1). Handayani, W., & Hani, A. 2021. Land suitability of plant species for agroforestry development on former tea plantation land in Cukangkawung Village, Tasikmalaya Regency. Indonesian Agroforestry Journal, 4(2), 115-130. Paramita, N. L. P. V., Andiani, N. M. D., Putri, I. A. P. Y., Indriani, N. K. S., & Susanti, N. M. P. 2019. Simplisia Characteristics of black tea from camelia sinensis var. Assam mica from bali cahaya amerta tea plantation, angseri village, batu riti sub-district, tabanan district, bali. Journal of chemistry [serial online]. January, 13(1).
Last date of update	July, 2025

AGT 3206 CULTIVATION OF MEDICINAL PLANTS AND SPICES

Course Name	Cultivation of Medicinal Plants and Spices
Code	AGT 3206
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Ir. Haryati, MS
Language	Indonesian or English
Relation to curriculum	Elective courses in interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	
Course Description	Medicinal Plants and Spices This course discusses the cultivation of various types of medicinal plants and spices starting from the preparation of planting materials, tillage, planting, plant maintenance and harvesting. Explains the definition of urban agriculture, dimensions of urban agriculture, constraints and opportunities for urban agriculture, food safety and nutrition and health risk management related to urban agriculture, environmental security studies of urban agriculture types of urban agriculture, socio-economic studies of urban agriculture, urban agriculture policy making. The Cultivation of Medicinal Plants and Spices course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system. • Able to create businesses in the fields of plantations, food and horticulture on a small and large scale independently.

Content	1. Introduction 2. Simplified medicinal plants and spices 3. Featured medicinal plants: Sambiloto 4. Featured medicinal plants: Java chili 5. Flagship medicinal plant: red ginger 6. Family medicinal plants: betel 7. Family medicinal plants: hibiscus 8. Spice family: garlic 9. Superior spice plants: panili 10. Spice of excellence: panili 11. Superior spice plants: cloves 12. Superior spice plants: pepper 13. Superior spice plants: pepper 14. Superior spice plants: cinnamon
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Evizal, R. 2013. Spice and phytopharmaceutical plants. Tarigan, D. 2020. [Medicinal Plants and Spices. Collection of Lecturer Appointment Files. Sastrahidayat, I. R. 2016. Diseases in medicinal plants, spices and stimulants. Brawijaya University Press. Supporter: Kartikawati, A., Trisilawati, O., & Darwati, I. 2017. Utilization of biofertilizer in spice and medicinal plants. Journal of Perspective, 16(1), 33-43. Atmojo, M., & Darumurti, A. 2021. Community Empowerment through Family Medicinal Plants (TOGA). Abdimas BSI Journal: Journal of Community Service, 4(1), 100-109.

	Muttaqin, F. Z., Aligita, W., Muhsinin, S., Juanda, D., & Asnawi, A. 2018. Village partners in cultivating family medicinal plants towards Cibiru Wetan Village as a herbal center. Journal of Community Service, 3(2), 159-164. Sugito, S., Susilowati, S., & Al Kholif, M. 2017. Strategies for utilizing yard land for cultivation of family medicinal plants (TOGA). Journal of Penamas Adi Buana, 2(2), 1-8. Kurnianingsih, A. 2013. Optimization of yard land by cultivating aloe vera plants with medicinal properties in Purna Jaya Village, North Indralaya District, Ogan Ilir Regency. Sriwijaya Devotion Journal, 1(1), 21-24. Sayekti, I., Supriyo, B., Kusumastuti, S., Krishna, B., Kartika, V. S., Utomo, K., ... & Aji, A. F. 2022. Assistance in implementing IoT-based monitoring and watering system technology in family medicinal plant cultivation. ABSYARA: Journal of Community Service, 3(1), 150-158. Winarti, C., & Nurdjanah, N. 2005. Opportunities for spices and medicinal plants as a source of functional food. Journal of Agricultural Research and Development, 24(2), 47-55.
Last date of update	July, 2025

AGT 3207 URBAN AGRICULTURE

Course Name	Urban Agriculture
Code	AGT 3207
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Dr. Ir. Mariati, M.Sc
Language	Indonesian or English
Relation to curriculum	Elective courses in interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minit) per week or 28 hours per semester • Test: • 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Explain the definition of urban agriculture, dimensions of urban agriculture, constraints and opportunities of urban agriculture, food and nutrition safety and health risk management related to urban agriculture, environmental security studies of urban agriculture types of urban agriculture, socio-economic studies of urban agriculture, urban agriculture policy making. Urban agriculture courses are held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system. • Able to solve problems in the field of agrotechnology by taking into account economic, public health and safety, socio-cultural and environmental factors. • Able to create businesses in the fields of plantation, food and horticulture on a small and large scale independently. • Able to create innovations and contribute in the field of agrotechnology by utilizing science and technology.

	• Able to develop global insights for character and potential in accordance with scientific fields and across disciplines.
Content	1. Lecture Contract / Definition, scope (urban food access, land conversion), benefits, basic principles, and various examples of urban agriculture models 2. Urban Agriculture Model and Optimization Narrow land yard (Rooftop Gardening, Vertical Garden, Wall garden, Hanging garden) 3. Plant cultivation with non-circulating hydroponics (Diflow system, wick system, and substrate media) 4. Plant cultivation techniques with circulated hydroponics (NFT, aeroponics) 5. Aquaponic plant cultivation techniques, assembly and aquaponic system, plant & fish maintenance 6. Smart Farming ((Smart phone application to support urban farming)) 7. Vertiminaponics plant cultivation technique 8. Definition, difference between vertiminaponics and aquaponics, how to assemble vertiminaponics 9. Microgreen plant cultivation techniques 10. Art creation of urban farming. 11. Organic urban farming 1 Utilization of organic waste for urban farming) 12. Application of ecoenzymes for urban farming 13. Organic urban farming 2 (Fish waste processing for urban farming nutrition source) 14. Edible landscape design
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59

	E ≤ 49
Reading list	Main: Saribanon, N., Bumayasari, I., Oktavina, A., Andrias, W., Rangkut, F. W., Pebrina, S., ... & Siregar, Z. (2020). Buku: Hidroponik Ramah Lingkungan: Pertanian Perkotaan Inovatif. Sulistyowati, D., & Ilhami, W. T. 2018. Buku Ajar Pertanian Perkotaan. Sudhira, N. P. 2020. TA; Perancangan Buku Ilustrasi Pertanian Perkotaan dengan Teknik Drawing sebagai Kampanye Sosial mengenai Ketahanan Pangan Kota Surabaya (Doctoral dissertation, Universitas Dinamika). Supporters: Fauzi, A. R., Ichniarsyah, A. N., & Agustin, H. 2016. Pertanian perkotaan: urgensi, peranan, dan praktik terbaik. Jurnal Agroteknologi, 10(01), 49-62. Nurjasmi, R. 2021. Potensi Pengembangan Pertanian Perkotaan oleh Lanjut Usia untuk Mendukung Ketahanan Pangan. Jurnal Ilmiah Respati, 12(1), 11-28. Suryani, S., Nurjasmi, R., & Fitri, R. 2020. Pemanfaatan lahan sempit perkotaan untuk kemandirian pangan keluarga. Jurnal Ilmiah Respati, 11(2), 93-102. Hamzens, W. P. S., & Moestopo, M. W. 2018. Pengembangan potensi pertanian perkotaan di kawasan Sungai Palu. Jurnal Pengembangan Kota, 6(1), 75-83. Azis, A. I., Ratih, R., & Andraini, D. E. 2023. Konsep Permakultur Sebagai Metode Pengendalian Serangan Tikus pada Jagung Manis di Pertanian Perkotaan. Perbal: Jurnal Pertanian Berkelanjutan, 11(3), 307-315. Suryandari, R. Y. 2010. Pengembangan Pertanian Perkotaan: Impian Mewujudkan Kota yang Berkelanjutan. Planesa, 1(2), 212980. Handayani, W., Nugroho, P., & Hapsari, D. O. 2018. Kajian potensi pengembangan pertanian perkotaan di kota semarang. Jurnal Riptek, 12(2), 55-68.
Last date of update	July, 2025

AGT 3208 SUSTAINABLE AGRICULTURE SYSTEM

Course Name	Sustainable Agriculture System
Code	AGT 3208
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Dra. Ir. Chairani Hanum, MS
Language	Indonesian or English
Relation to curriculum	Elective courses in interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the scope of sustainable agriculture; Integrated Crop Management includes integrated soil management, integrated pest and disease management, environmental management (ecosystems and agroecosystems); Principles of Sustainable agriculture; Bionergy development and its principles; Market development in sustainable agricultural systems. The sustainable agriculture system course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system. • Able to solve problems in the field of agrotechnology by taking into account economic, public health and safety, socio-cultural and environmental factors. • Able to develop global insights for character and self-potential in accordance with scientific fields and across disciplines.

Content	1. Explanation and scope of sustainable integrated farming systems 2. Concept of sustainable agriculture 3. Organic farming 4. Plant breeding and biodiversity 5. Agricultural production in Indonesia and food and energy needs 6. Natural resource management 7. Waste management/recycling 8. Agroecology Plant diseases 9. Concepts of plant pest, disease and weed control 10. Farming community development 11. Sustainable Agricultural Technology towards Precision agriculture 12. Economic indicators 13. Policies and economic aspects 14. Case studies and field projects
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Firnia, D., Lahati, B. K., Kusumawati, A., Darma, W. A., Umam, C., Jihad, M., ... & Dahliana, B. 2023. Sistem Pertanian Berkelanjutan. Penerbit Tahta Media. Agustina, L. 2011. Teknologi Hijau dalam Pertanian Organik Menuju Pertanian Berkelanjutan. Universitas Brawijaya Press. Miarso, M. 2023. Penerapan Sistem Pertanian Berkelanjutan Dalam Mendukung Produksi Pertanian. AGRONIMAL: Jurnal Ilmiah Pertanian dan Peternakan, 1(1), 23-26.

	Supporters: Efendi, E. 2016. Implementasi sistem pertanian berkelanjutan dalam mendukung produksi pertanian. Warta Dharmawangsa, (47). Ma'ruf, A. 2017. Agrosilvopastura sebagai sistem pertanian terencana menuju pertanian berkelanjutan. Bernas: Jurnal Penelitian Pertanian, 13(1), 81-90. Rachma, N., & Umam, A. S. 2021. Pertanian organik sebagai solusi pertanian berkelanjutan di Era New Normal. Jurnal Pembelajaran Pemberdayaan Masyarakat (JP2M), 1(4), 328-338. Puspitasari, R. D. 2020. Pertanian berkelanjutan berbasis revolusi industri 4.0. Jurnal Layanan Masyarakat (Journal of Public Services), 3(1), 26. Yulianto, K. 2016. Agroekologi: Model pertanian berkelanjutan masa depan. Jurnal Tambora, 1(3). Hidayati, F., Yonariza, Y., Nofialdi, N., & Yuzaria, D. 2019. Intensifikasi lahan melalui sistem pertanian terpadu: Sebuah tinjauan. In Unri Conference Series: Agriculture and Food Security (Vol. 1, pp. 113-119). Ningsih, F., & Syaf, S. 2015. Faktor-faktor yang menentukan keterlibatan pemuda pedesaan pada kegiatan pertanian berkelanjutan. Jurnal Penyuluhan, 11(1).
Last date of update	July, 2025

AGT 3204 FIELD WORK PRACTICES

Course Name	Field Work Practices
Code	AGT 3204
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Ir. Nini Rahmawati, SP., M.Si
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Doing work practices in companies / agencies / business units engaged in agrotechnology. This course teaches about ageotechnology insights: work culture, discipline towards rules and time, work creativity, work motivation, accuracy and thoroughness of work, organizational observation and management observation, productive activities; introduction to production and production machines, production stages and production activities, communication; observation of the communication process, appreciation of the communication process. cooperation, observation of the process of cooperation in the industry, cooperation with workers, supervisors and superiors, planned meetings.
Module objectives/intended learning outcomes	Able to internalize the BINTANG values in developing their ability as a lifelong learner in the field of agrotechnology

Content	1. Research methods to identify problems in the field of agrotechnology 2. Research methods to identify problems in the field of agrotechnology 3. Communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations. agrotechnology both orally and in writing, in academic and non-academic situations. 4. Global insights for character and self-potential in accordance with scientific and cross-disciplinary fields 5. Implementing learning in community groups 6. Solve problems in the field of agrotechnology by taking into account environmental factors 7. Solve problems in the field of agrotechnology by taking into account environmental factors 8. Managing natural resources, especially in the field of plantations 9. Managing human resources, especially in the field of plantation 10. Apply communication theory in Indonesian 11. Apply global insights in various aspects of life within the scope of monodisciplines and interdisciplines scope of monodisciplines and interdisciplines 12. Apply global insights in various aspects of life within the scope of monodisciplines and interdisciplines scope of monodisciplines and interdisciplines 13. Building global-minded characters in scientific and cross-disciplinary fields 14. Building global-minded characters in scientific and cross-disciplinary fields
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74

	C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading ARIFIN, Muhammad. Analisa dan perancangan sistem informasi praktek kerja lapangan pada instansi/perusahaan. Simetris: Jurnal Teknik Mesin, Elektro dan Ilmu Komputer, 2014, 5.1: 49-56. NOVIANTI, Novianti; QASHLIM, A. Akhmad; KAHPI, Ashabul. Sistem Informasi Pendataan dan Penilaian PKL (Praktek Kerja Lapangan) Mahasiswa Berbasis Web. Journal Peqguruang, 2021, 3.2: 579-583. PRIYANTO, Priyanto, et al. PENGARUH PERSEPSI TERHADAP KESIAPAN KERJA MELALUI KEPUASAN PRAKTEK KERJA LAPANGAN MAHASISWA PERGURUAN TINGGI VOKASI PARIWISATA. Jurnal Kepariwisataan, 2023, 22.1: 97-108.
Last date of update	July, 2025

EVEN SEMESTER OUT OF INTEREST OPTION

AGT 3210 PLANTATION PLANT BREEDING

Course Name	Plantation Plant Breeding
Code	AGT 3210
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Ir. Emmy Harso Kardinata, M.Sc
Language	Indonesian or English
Relation to curriculum	Compulsory courses within interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	
Course Description	Plantation plant breeding courses learn about, principles, explain and analyze plantation plants in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Students are able to apply the theory of plant breeding science • Students are able to apply the theory of agrotechnology in the field of plantation • Students are able to manage natural resources and human resources, especially in the field of plantation

Content	1. Describing hevea rubber breeding 2. Apply hevea rubber breeding 3. Describe and apply breeding coffee for sustainable production 4. Describe oil palm breeding 5. Apply oil palm breeding 6. Analyze the success of breeding oil palm (Case method) 7. Describe genetic improvement in Cocoa 8. Apply genetic improvement in Cocoa 9. Describe coconut breeding 10. Apply coconut breeding 11. Analyze the genetic diversity of coconut plants in North Sumatra (Project based learning) 12. Describe and apply tea plant breeding 13. Describe and apply sugarcane plant breeding 14. Describe and apply tobacco plant breeding
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main reading Allard, R.W. 2005. Principles of Plant Breeding. John Wiley & Sons, Inc., New York. Falconer, D.S. 1995. Introduction to Quantitative Genetics. Longman, London. Singh RK, Chaudhary BD (1977). Biometrical methods in quantitative genetics analysis. Kalyani Publishers. Indiana New Delhi. pp. 304. Bacaan Support Pratama et all., 2018. Strategi Program Pemuliaan Tanaman Kelapa Sawit (Elaeis guinensis Jacq.)

	pada Lahan Suboptimal di PT Binasawit Makmur. Jurnal Lahan Suboptimal: Journal of Suboptimal Lands. Vol. 7, No.1: 26-36 Sayekti et all., 2015. Keragaman Genetik Kelapa Sawit (Elaeis guineensis Jacq.) Asal Angola Menggunakan Marka SSR. Keragaman Genetik Kelapa Sawit (Elaeis guineensis Jacq.) Asal Angola Menggunakan Marka SSR Daslin A (2013) Produktivitas klon karet pada berbagai kondisi lingkungan di perkebunan. Agrium 18: 1-6 Daslin A (2014) Perkembangan penelitian klon karet unggul IRR seri 100 sebagai penghasil lateks dan kayu. Warta Perkaretan 33:1-10 Daslin A, Pasaribu SA (2015) Uji adaptasi klon karet IRR seri 100 pada agroklimat kering di kebun Sungei Baleh Kabupaten Asahan Sumatera Utara. J Penelitian Karet 33: 25-34
Last date of update	July, 2025

AGT3212 FOOD CROP BREEDING

Course Name	Food Crop Breeding
Code	AGT3212
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Khairunnisa Lubis, SP. MP.
Language	Indonesian or English
Relation to curriculum	Elective courses in interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit point	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the basic strategies of plant breeding activities in producing superior varieties of Corn, Rice, Soybean and Umbian plants. Knowledge of origin, species, environmental adaptation, cultivation techniques and breeding techniques, plant characters, morphology and physiology and their genetics and the development of breeding superior varieties in 14 face-to-face lectures, structured assignments, case method and project based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• Students are able to apply the theory of plant breeding science • Students are able to apply management theory in plantation

Content	1. Basic strategies of food crop breeding (Maize, Rice, Tuber and Soybean). Breeding activities in developing the potential of food crops. 2. Maize prospects, origin, genetic diversity and cultivation techniques. 3. Maize genetic diversity improvement (conventional and unconventional) 4. Establishment of basic population, plant identification and selection of Maize plant population (PBL) 5. Establishment of basic population, plant identification and selection of Maize plant population 6. Rice prospects, origin, genetic diversity of rice plants and cultivation techniques (CM) 7. Improvement of genetic diversity of Rice plants (Hybridization, Mutation etc.) 8. Establishment of basic population, plant identification and selection methods for breeding materials and establishment of new high yielding varieties of Rice 9. Prospects for Soybean crops, origin, genetic diversity of Soybean crops and cultivation techniques 10. Increased genetic diversity of Soybean crops 11. Establishment of basic populations, plant identification and selection methods for breeding materials and the establishment of new high-yielding varieties of Soybean 12. Prospects for Umbian plants, origin, genetic diversity of Umbian plants and cultivation techniques 13. Increasing the genetic diversity of Umbian plants, Establishment of basic populations, plant identification and selection methods for breeding materials and the formation of new high-yielding varieties of Umbi- tubers 14. Basic strategies for food crop breeding (Maize, Rice, Tubers and Soybeans). Breeding activities in developing the potential of food crops.
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)

Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Allard, R. W. 2005. Principles of Plant Breeding. John Wiley and Sons, New York. Crowder L.V. 1993. Genetika Tumbuhan (terjemahan). Sutarso (ed.). Yogyakarta; Gadjah Mada University Press Jeff L. Bennetzen, Sarah C. Hake. 2009. Handbook of Maize : Genetics and Genomic, Springer. Roy D. 2000. Plant Breeding Analysis and Exploitation of Variation. India: Narosa Publishing House. Syukur M., S. Sujiprihati, R. Yunianti, 2012, Teknik Pemuliaan Tanaman, Penerbit Swadaya, Bogor Sobir, Syukur M. 2015. Genetika Tanaman. IPB Press Supporters: Jurnal-jurnal terkait
Last date of update	July, 2025

AGT 3214 PLANT GROWTH REGULATORS

Course Name	Plant Growth Regulators
Code	AGT 3214
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Luthfi AM Siregar, S.P., M.Sc., Ph.D
Language	Indonesian or English
Relation to curriculum	Compulsory courses in interests Out-of-interest courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the definition of plant growth regulators and hormones, the mechanism of action of hormones, biosynthesis of plant hormones, the role of hormones in plant growth and production, the involvement of hormones in the process of plant adaptation, and the application of ZPT in increasing the production and quality of plant products in 14 face-to-face lectures, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create a sustainable agricultural system.

Content	1. limitations, meaning and scope of ZPT 2. basic understanding of the use of pesticides 3. Definition and history, Molecular structure and types of auxins 4. Biosynthesis, Physiological role and mechanism of action of auxin 5. History and understanding b. Molecular structure and types of gibberellins c. Biosynthesis d. Physiological role and mechanism of action of gibberellins a. Physiological role and mechanism of action of gibberellins 6. physiological role and mechanism of action of other organic compounds that are active examples: Polyamines 7. History and understanding b. Molecular structure and types of cytokinins 8. c. Biosynthesis d. Physiological role and mechanism of action of cytokinins 9. Physiological role and mechanism of action of Retardants 10. Physiological role and mechanism of action of Phenolic 11. Physiological role and mechanism of action of ABA 12. Physiological role and mechanism of action of Ethylene 13. The role of ZPT on vegetative propagules 14. The role of pesticides on generative propagules
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49

Reading list	Al Banna, N. Z., Ilmiyah, N., & Khairunnisa, K. (2023). VALIDITAS DAN KEPRAKTISAN BUKU ILMIAH POPULER LIMBAH AIR KELAPA TUA SEBAGAI ZPT ALAMI PERTUMBUHAN SAWI (Brassica juncea L.). Bioilmi: Jurnal Pendidikan, 9(2), 35-44. Shalehah, A. (2023). Pengembangan Buku Ilmiah Populer (BIP) Digital Pengaruh Pemberian ZPT Ekstrak Kulit Bawang Merah Terhadap Pertumbuhan Sawi Hijau. Novita, A. (2023). [Buku Penuntun Praktikum] Fisiologi Tumbuhan. Kumpulan Berkas Kepangkatan Dosen. Al Banna, N. Z., & Ilmiyah, N. (2023). Pemanfaatan Limbah Air Kelapa Tua Sebagai Zat Pengatur Tumbuh Alami Pertumbuhan Sawi (Brassica juncea L.). Al Kawnu: Science and Local Wisdom Journal, 3(1), 11-20. Fuziani, Z., Utami, E. P., & Rahmadi, A. (2023, December). PENGARUH ZAT PENGATUR TUMBUH THIDIAZURON (TDZ) TERHADAP PEMBENTUKAN TUNAS PROTOCORM LIKE BODY (PLB) ANGGREK Dendrobium DIAN AGRIHORTI PADA BERBAGAI JENIS MEDIA TANAM SECARA IN VITRO. In Gunung Djati Conference Series (Vol. 33, pp. 316-327). Setiawan, M. (2023). Pengaplikasian Zat Pengatur Tumbuh pada Proses Pemeraman Benih Semangka Triploid untuk Persiapan Sampel Pengujian Grow Out Test di PT. East West Seed Indonesia. Mariana, M., Basri, A. H. H., Manullang, W., Harahap, R. T., & Novita, A. (2023). Optimalisasi Zat Pengatur Tumbuh (ZPT) Alami dan Bahan Setek Pada Pertumbuhan Vegetatif Setek Kopi Robusta. AGRIUM: Jurnal Ilmu Pertanian, 26(1). Nurul, A. (2023). Pengaruh Jenis Zat Pengatur Tumbuh Iba, Naa, Iaa Dan Lama Perendaman Terhadap Pertumbuhan Stek Rumput Pakchong (Pennisetum purpureum cv. Thailand). Hutapea, M. S. (2023). Pengaruh Pemberian Zat Pengatur Tumbuh Growtone dan Komposisi Media Tanam terhadap Pertumbuhan Bibit Kelapa Sawit (Elaeis Guineensis Jacq) di Main Nursery. Yuslinawari, Y., Jibril, H. M., Andayani, S. T., Hidayat, S. N., & Nugraha, P. A. (2023). PENGARUH ZAT PENGATUR TUMBUH SINTESIS IAA DAN IBA PADA PERTUMBUHAN SEMAI PRONOJIWO

	(Sterculia javanica R. Br.). Jurnal Pertanian Agros, 25(1), 59-67.
Last date of update	July, 2025

AGT3218 SOIL AND PLANT ANALYSIS

Course Name	Soil and Plant Analysis
Code	AGT3218
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Ir. Mukhlis, MS
Language	Indonesian or English
Relation to curriculum	Elective courses in interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the factors and processes of soil formation, the development of soil classification, and methods of classifying soils according to the soil taxonomy system and national soil classification as well as understanding the characteristics of soil orders in soil taxonomy and anthropogenic soils in 14 face-to-face lectures, structured assignments, case method and project based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theories to create sustainable agricultural systems. • Able to apply research methods to identify problems in the field of agrotechnology.

Content	1. Soil total N analysis 2. Soil total P analysis 3. Soil total K analysis 4. Soil available N analysis 5. Soil available P analysis 6. Soil available K analysis 7. CEC analysis 8. Analysis of pH, Organic C 9. Soil Mg, Al, Na content analysis 10. Soil Aldd analysis 11. Plant N analysis 12. Plant K analysis 13. Plant P analysis 14. Plant Nitrition analysis
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Tioner Purba, Hardian Ningsih, Purwaningsih, Abdus Salam Junaedi, Bambang Gunawan, Junairiah, Refa Firgiyanto, Arsi. 2021. Tanah dan nutrisi tanaman. Yayasan Kita Menulis. 133 hlm. Adhikari, K., & Hartemink, A. E. (2016). Linking soils to ecosystems services. Jurnal Geoderma, vol. 262, hh. 101-111. Agawane, S. B. and Lonkar, P. S. (2004) 'Effect of probiotic containing 'Saccharomyces boulardii on experimental ochratoxicosis in broilers: Hematobiochemical Studies', J. Vet. Sci, 5: 359-367. Agromedia, R. (2007). Petunjuk pemupukan. AgroMedia. Munawar, A. 2011. Kesuburan Tanah Dan Nutrisi Tanaman. Bogor: IPB Press. 57-60hal.

	Notohadiprawiro, T., Soekodarmodjo, S.dan Sukana, E. 2006. Pengelolaan Kesuburan Tanah dan Peningkatan Efisiensi Pemupukan. Yogyakarta: Universitas Gadjah Mada. 01-19hal. Nurida, N. dan Jubaedah. 2014. Konservasi Tanah Menghadapi Perubahan Iklim. Jakarta: IAARD PRESS. 53-55hal. Nursanti, I. 2013. Pengolahan Limbah Cair Pabrik Kelapa Sawit Kolam Anaerob menjadi Pupuk Organik Melalui Peberian Zeolit, Lampung: Seminar Nasional Sains dan Teknologi V Lembaga Penelitian Universitas Lampung. 616-628hal. Nursyamsi, Dedi dan Suprihati. 2005. Sifat- Sifat Kimia dan Mineralogi Tanah serta Kaitanya dengan Kebutuhan Pupuk untuk Padi (Oryza sativa), Jagung (Zae mays), dan Kedelai (Glycine max). Bul.Agron. 33(3). 40 hal. Rachman, L. M., Latifa, N. dan Nurida, N. L. 2015. Efek Sistem Pengolahan Tanah Terhadap Bahan Organik Tanah, Sifat Fisik Tanah, Dan Produksi Jagung Pada Tanah Podsolik Merah Kuning Di Kabupaten Lampung Timur. Palembang. Prosiding Seminar Nasional Lahan Suboptimal 2015.1-9hal.
Last date of update	July, 2025

AGT3219 AGROFORESTRY

Course Name	Agroforestry
Code	AGT3219
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Dr. A Rauf, MP
Language	Indonesian or English
Relation to curriculum	Elective courses in interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study : (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the limits and scope of agroforestry, types (classification) and forms, advantages and disadvantages, suitability of land and plants for agroforestry systems; the effect of agroforestry on soil properties, surface runoff and erosion, biodiversity, microclimate, anhydrology, environmental pollution control, control of greenhouse gas (GHG) emissions, total biomass, and carbon sink of vegetation and soil; Requirements and optimal technology for the application of alley cropping, silvopastural and agrosilvopastural, agroaquaforestry and silvofishery, multispecies tree gardens and apicultural, yard-based agroforestry to support food diversity and security and family income, application of agroforestry systems in efforts to rehabilitate critical land and reclaim former mining land, empowerment of forest areas based on agroforestry systems within the scope of the Forest Management Unit (KPH) in 14 meetings with 1 UTS meeting and 1 UAS meeting.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create sustainable agricultural systems.

	• Able to solve problems in the field of agrotechnology by taking into account economic, public health and safety, socio-cultural and environmental factors. • Able to apply research methods to identify problems in the field of agrotechnology. • Able to develop global insights for character and potential in accordance with scientific fields and across disciplines.
Content	1. Mampu menjelaskan Batasan dan ruang lingkup agroforestry 2. Mampu menjelaskan Jenis (kalasisifikasi), bentuk, keuntungan dan kelemahan agroforestry 3. Mampu menjelaskan Kesesuaian lahan dan tanaman untuk sistem agroforestry 4. Mampu menjelaskan Pengaruh agroforestry terhadap sifat tanah, limpasan permukaan dan erosi 5. Mampu menjelaskan Pengaruh agroforestry terhadap iklim mikro dan hidrologi 6. Mampu memberi contoh dan solusi Penerapan agroforestry guna merehabilitasi lahan kritis dan mereklamasi lahan bekas tambang 7. Mampu menganalisis dan mengevaluasi hubungan Sistem agroforestry dengan pengendalian pencemaran lingkungan 8. Mampu menganalisa dan merencanakan agroforestry berbasis lahan pekarangan mendukung keragaman dan ketahanan pangan 9. Mampu menganalisa dan mengevaluasi pengaruh agroforestry terhadap pendapatan petani 10. Mampu menjelaskan Pengaruh agroforestry terhadap keragaman hayati 11. Mampu menjelaskan Pemberdayaan kawasan hutan berbasis sistem agroforestry dalam lingkup Kesatuan Pengelolaan Hutan (KPH) 12. Mampu menjelaskan Persyaratan dan teknologi optimal penerapan tipe agrosilvikultur dan alley cropping 13. Mampu menganalisa persyaratan dan menerapkan teknologi optimal penerapan tipe silvopastural dan agrosilvopastural 14. Mampu menganalisa persyaratan dan menerapkan teknologi optimal penerapan tipe agroaquaforestry (agroaquasilvikultur) dan silvofishery
Examination forms	• Quiz (5%) • Assignment (10%)

	• Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Nair, PKR. 1993. An Introduction to Agroforestry. Kluwer Academic Publisher in cooperation with ICRAF. Dordrecht, the Netherland. World Agroforestry Center (ICRAF). 2003. Bahan Ajaran Agroforestry I - IX. Bogor, Indonesia. Lahjie AM. 2016. Teknik Agroforestri. Samarinda: Mulawarman University Press. Lahjie AM, Lepong A, Simarangkir BDAS, Kristiningrum R, Ruslim Y. 2018. Community forest management: Comparison of simulated production and financial returns from agarwood, tengkawang and rubber trees in West Kutai, Indonesia. Biodiversitas 19(2). Lisna A, Lahjie AM, Simarangkir BDAS, Yusuf S, Ruslim Y. 2017. Agroforestry System Biodiversity of Arabica Coffe Cultivation in North Toraja District, South Sulawesi, Indonesia. Biodiversitas 18(2). Winarni B, Lahjie AM, Simarangkir BDAS, Yusuf S, Ruslim Y. 2017. Tengkawang cultivation model in community forest using agroforestry systems in West Kalimantan, Indonesia. Biodiversitas 18 (2). Suwarna, W. 2005. Peningkatan produktivitas rumput raja melalui aplikasi teknologi budidaya yang ramah lingkungan. Jurnal Bumi Lestari 5 (1): 23-27 Suwarna, W. 2014. Peternakan yang Menekan Pencemaran. Buku Arti (Arti Foundation), Denpasar Dinas Pertanian Bali. 2010. Kegiatan sistem pertanian terintegrasi (Simantri) di Provinsi Bali. Dinas Pertanian Tanaman Pangan, Provinsi Bali, Denpasar

	Hadisuwito, S., 2012. Membuat Pupuk Organik Cair, Jakarta: PT Agromedia Pustaka. Hardjowigeno, S. 2003. Ilmu Tanah. Jakarta: Akademiko Pressindo.
Last date of update	July, 2025

AGT3225 PLANT CLINIC

Course Name	Plant Clinic
Code	AGT3225
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Dr. Ir. Darma Bakti, MS
Language	Indonesian or English
Relation to curriculum	Compulsory courses of the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Lectures (3 x 50 minutes) per week or 35.00 hours per semester • Self studi: 35 jam • Structured assignment (i.e.: article reading/review and case method): 15.00 hours per semester • Projec base learning : 30 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course explains investigation and diagnosis in a plant health problem and also as a forum for distributing information about its control. The plant clinic also learns the role and function of connecting farmers with experts in their fields in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• Students are able to apply the theory of plant pests and diseases • Students are able to solve problems in the field of agrotechnology by taking into account environmental factors • Students are able to identify problems in the field of agrotechnology

Content	1. Meaning, purpose, and symptoms of damage due to 2. plant pests 3. Symptoms caused by plant pests 4. Symptoms caused by plant pests (continued) 5. Symptoms of damage caused by abiotic factors 6. Symptoms of damage due to soil nutrient deficiency and excess 7. Symptoms of damage due to soil nutrient deficiency and excess (continued) 8. How to make soil healthy (PBL) 9. Symptoms of plant damage caused by nematodes 10. Symptoms of plant damage caused by nematodes (continued) 11. Symptoms of plant damage caused by fungi (CM) 12. Symptoms of plant damage due to fungi (continued) 13. Symptoms of plant damage caused by viruses 14. Symptoms of plant damage due to bacteria
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Habazar, T., Yanti, Y., dan Nasrun. 2015. Bakteriologi Tumbuhan. Bahan Ajar. Minangkabau Press. Hadiastono, T. Virologi Tumbuhan: Identifikasi dan Diagnosis Virus Tumbuhan. Universitas Brawijaya Press. Kelly, P. 2008. Global Plant Clinic: Getting better all the time, farmers and plant doctors talk about their work and plant health problems in Bangladesh Kumar, S., 2020. Abiotic stresses and their effects on plant growth, yield and nutritional quality of

	agricultural produce. Int. J. Food Sci. Agric, 4, pp.367-378. Rajkumar, R. and Anabel, N.J., 2018. Role of Plant Clinics in addressing pest and disease management. CSI Transactions on ICT, 6, pp.279-288. Raskin, I., Ribnicky, D.M., Komarnytsky, S., Ilic, N., Poulev, A., Borisjuk, N., Brinker, A., Moreno, D.A., Ripoll, C., Yakoby, N. and O'Neal, J.M., 2002. Plants and human health in the twenty-first century. TRENDS in Biotechnology, 20(12), pp.522-531. Srivastava, M.P., 2013. Plant clinic towards plant health and food security. International Journal of Phytopathology, 2(3), pp.193-203. Taylor, P. 2015 Plantwise Diagnostic Field Guide. CABI UK Yadav, S., Modi, P., Dave, A., Vijapura, A., Patel, D. and Patel, M., 2020. Effect of abiotic stress on crops. Sustainable crop production, 3
Last date of update	July, 2025

AGT 3227 Plantation Pests and Diseases

Course Name	Plantation Pests and Diseases
Code	AGT 3227
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Amelia Zulianti Siregar, M.Sc., Ph.D
Language	Indonesian or English
Relation to curriculum	Elective courses in interests Out-of-interest electives
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the introduction of important (dominating) pests and diseases in plantation crops accompanied by appropriate management in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exam, and final semester exam.
Module objectives/intended learning outcomes	• Students are able to apply the theory of plant pests and diseases • Students are able to apply the theory of agrotechnology in the field of plantation

Content	1. Important pests of plantation crops 2. Pest bioecology 3. Important pests in Cocoa crops, behavioral bioecology attack symptoms, and control techniques 4. Important pests in Coffee plants, behavioral bioecological attack symptoms, and control techniques 5. Important pests in Tea plants, behavioral bioecological attack symptoms, and control techniques (Case Method) 6. Important pests on Coconut plants, symptoms of attack, behavioral bioecology, and control techniques 7. Important pests in sugarcane and tobacco, symptoms of attack, behavioral bioecology, and control techniques (Case Method) 8. Oil palm plant diseases, history of disease development, symptoms, causes of disease and control techniques 9. Important pests in Coconut plants, symptoms of attack, behavioral bioecology, and control techniques 10. Rubber plant diseases, history of disease development, symptoms, causes of disease and control techniques (Project-based learning) 11. Cocoa plant diseases, history of disease development, symptoms, causes of disease and control techniques 12. Coffee ,history of disease development, symptoms, causes of disease and control techniques 13. Tobacco plant diseases, history of disease development, symptoms, causes of disease and control techniques 14. Sugarcane plant diseases ,history of disease development, symptoms, causes of disease and control techniques
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79

	B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Binns MR, Nyrop JP, and Der Werf WV. 2000. Sampling and Monitoring in Crop Protection: The Theoretical Basis For Developing Practical Decision Guides. New York. CABI Publishing. Boivin G, dan Vincent C. 1987. Sequential Sampling For Pest Control Program. Toronto. Reseach Branch Agriculture Canada. Ciancio A, and Mukerjee KG. 2007. General Concepts in Integrated Pest and Disease Management. Springer Verlag. DeBach P, Schlinger EI (ed). 1973. Biological control of Insect & Weeds. London. Chapman & Hall. Dufour R. 2008. Biointrnsive Integrated Pest Management (IPM), Fundamentals of sustainable agriculture. NCAT Agriculture Specialist Published 2001 Flint ML, and van den Bosch R. 1981. Introduction to Integrated Pest Management. New York. Plenum Press. Norris RF, Caswell-Chen EP, and Kogan, M. 2003. Concepts in integrated Pest Management. New Jersey. Prentice Hall. Oka IN. 2005. Pengendalian Hama Terpadu dan Implementasinya di Indonesia. Gadjah Mada University Press. Yogyakarta. Effendi., dan S. Baehaki. 2009. Strategi Pengendalian Hama Terpadu Tanaman Padi Dalam Perspektif Praktek Pertanian yang baik (Good Agricultural Practices). Pengembangan Inovasi Pertanian. 2(1): 68-78. Agustian A dan Rachman B. 2009. Penerapan Teknologi Pengendalian Hama Terpadu pada Komoditas Perkebunan Rakyat. Perspektif. 8 (1) : 30-41.
Last date of update	July, 2025

TEP 2216 MACHINERY AND EQUIPMENT

Course Name	Machinery and Equipment
Code	TEP 2216
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Taufiq Rizaldi, S,TP, M.Si
Language	Indonesian or English
Relation to curriculum	Elective courses outside the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course explains the scope of machinery and equipment, the definition of agricultural mechanization; explains the sources of agricultural power, motor baker, power and efficiency of motor baker; tillage tools/machines; planting tools/machines; crop care tools/machines; harvesting tools/machines. The machinery and equipment course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to develop global insights for character and potential in accordance with scientific fields and across disciplines.

Content	1. Scope of the subject machinery and equipment, Definition of mechanization as understood by mechanization experts in Indonesia 2. Types of power available in agriculture 3. Difference between gasoline motor and diesel motor 4. Power and efficiency of combustion motors 5. Classification of tractors and additional equipment on tractors 6. Types of tillage tools I and II 7. How to calculate work capacity in tillage, How to calculate power requirements in tillage 8. How to calculate the need for equipment units in tillage 9. Types of tools that can be used for planting crops 10. Types of tools that can be used for plant maintenance 11. Ways to calculate work capacity in planting seeds and calculate the amount of equipment needed 12. Types of tools that can be used for harvesting 13. How to calculate work capacity in harvesting crops with mechanical equipment 14. Selection of agricultural machinery
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Nainggolan, T. 2004. Mekanisasi Pertanian. Prabowo, A. (2013). Kebijakan antisipatif pengembangan mekanisasi pertanian. Analisis Kebijakan Pertanian, 11(1), 27-44.

	Santoso, D. 2023. Transformasi dan Pengembangan Mekanisasi Pertanian di Kawasan Perbatasan. Supporters: Priyanto, A. 1997. Penerapan mekanisasi pertanian. Jurnal Keteknikan Pertanian, 11(1). Djamhari, S. 2009. Kajian Penerapan Mekanisasi Pertanian di Lahan Rawa Lebak Desa Putak-Muara Enim. Jurnal sains dan teknologi Indonesia, 11(3). Humam, A., Mutia Sani, A., Reziati, E., Hurul Islami, F., Laelastuti, F., & Heryani, I. 2018. Efek Ekonomis dari Mekanisasi Pertanian di Wilayah Gedebage aliran sungai Cinambo. Ratnawati, C. 2020. Mekanisasi Usahatani Padi Di Kecamatan Sananwetan Kota Blitar. Manajemen Agribisnis: Jurnal Agribisnis, 20(1), 1-13. Erniati, E., Solahudin, M., Lulung, P., & Wardani, I. K. 2020. Aplikasi Metode Analisis Swot untuk Merumuskan Strategi Pemanfaatan Mekanisasi Pertanian di Kabupaten Kapuas Hulu Provinsi Kalimantan Barat. Jurnal Ilmiah Rekayasa Pertanian dan Biosistem, 8(2), 219-229. Jiwantoro, A., Argo, B. D., & Nugroho, W. A. 2013. Analisis Efektivitas Mesin Penggiling Tebu dengan Penerapan Total Productive Maintenance (In Press, JKPTB Vol 1 No 2). Jurnal Keteknikan Pertanian Tropis dan Biosistem, 1(2). Sugandi, W. K., Yusuf, A., & Saukat, M. 2016. Rancang Bangun Dan Uji Kinerja Mesin Pencacah Rumput Gajah Untuk Pakan Ternak Dengan Menggunakan Pisau Tipe Reel (Construction Design and Test Performance of Elephant Grass for Cattle Feed using Reel Type Knife): Construction Design and Test Performance of Elephant Grass Cutting Machine for Cattle Feed using Reel Type Knife. Jurnal Ilmiah Rekayasa Pertanian dan Biosistem, 4(1), 200-206.
Last date of update	July, 2025

7th Semester

AGT 4201 RESEARCH PROPOSAL SEMINAR

Course Name	Research Proposal Seminar
Code	AGT 4201
Semester (s) in which the module is taught	VIII
Lecturer (Person responsible)	Thesis supervisor
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	Small Group Self-study, Role Play and Simulation, Discovery Learning, Independent Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
Workload (incl. Contact hours, self-study hours)	Workload for 14 weeks or within 1 semester
Credit	1 credits (equivalent with 1.6 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses application of agrotechnology theory in the field of plantation, application of research methods in the field of agrotechnology, identifying problems in the field of agrotechnology, applying communication theory in Indonesian, applying communication theory in writing final assignments and scientific publications in the field of agrotechnology
Module objectives/intended learning outcomes	• Students able to apply research methods to identify problems in the field of agrotechnology • Students able to apply communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations.

Content	1. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 2. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 3. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 4. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 5. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 6. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 7. The research method chosen, and write it up in the proposal seminar 8. The research method chosen, and write it up in the proposal seminar 9. The research method chosen, and write it up in the proposal seminar 10. The research method chosen, and write it up in the proposal seminar 11. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 12. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 13. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references 14. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references
Examination forms	PB = Learning Process, PT = Structured Assignment, KM = Independent Activity PB (30%) PT (40%) KM (30%)

Learning media	Lecture, Reception, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning
Reading list	Reading material is tailored to the research topic taken
Last date of update	July, 2025

AGT 4201 RESULT SEMINAR

Course Name	Result Seminar
Code	AGT 4201
Semester (s) in which the module is taught	VIII
Lecturer (Person responsible)	Thesis supervisor
Language	Indonesia or English
Relation to curriculum	Compulsory courses
Teaching methods	Small Group Self-study, Role Play and Simulation, Discovery Learning, Independent Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
Workload (incl. Contact hours, self-study hours)	Workload for 14 weeks or within 1 semester
Credit points	1 credits (equivalent with 1.6 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses application of agrotechnology theory in the field of plantation, application of research methods in the field of agrotechnology, identifying problems in the field of agrotechnology, applying communication theory in Indonesian, applying communication theory in writing final assignments and scientific publications in the field of agrotechnology
Module objectives/intended learning outcomes	• Students able to apply research methods to identify problems in the field of agrotechnology • Students able to apply communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations.

Content	1. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 2. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 3. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 4. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 5. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 6. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 7. The research method chosen, and write it up in the proposal seminar 8. The research method chosen, and write it up in the proposal seminar 9. The research method chosen, and write it up in the proposal seminar 10. The research method chosen, and write it up in the proposal seminar 11. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 12. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 13. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references 14. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references
Examination forms	PB = Learning Process, PT = Structured Assignment, KM = Independent Activity PB (30%) PT (40%) KM (30%)

Learning media	Lecture, Reception, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning
Reading list	Reading material is tailored to the research topic taken
Last date of update	July, 2025

AGT 4203 THESIS

Course Name	Thesis
Code	AGT 4203
Semester (s) in which the module is taught	VIII
Lecturer (Person responsible)	Thesis suvervisor
Language	Indonesian or English
Relation to curriculum	Compulsory course
Teaching methods	Small Group Self-study, Role Play and Simulation, Discovery Learning, Independent Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
Workload (incl. Contact hours, self-study hours)	Workload for 14 weeks or within 1 semester
Credit	4 credits (equivalent with 6.4 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses and applies research methods in the field of agrotechnology and identify problems in the field of agrotechnology and can also apply communication theory in Indonesian in writing final assignments and scientific publications in the field of agrotechnology are expected to be able to design innovations in the field of agrotechnology by utilizing science and technology..
Module objectives/intended learning outcomes	• Able to apply research methods to identify problems in the field of agrotechnology • Able to apply communication theories in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations. • Able to develop global insights for character and self-potential in accordance with scientific fields and across disciplines

Content	1. Identify problems in the field of agrotechnology that will be raised as a thesis title 2. Identify problems in the field of agrotechnology that will be raised as a thesis title 3. Find solutions to the problems that have been selected, and design solutions or innovations to solve these problems. 4. Find solutions to the problems that have been selected, and design solutions or innovations to solve these problems 5. Apply the chosen research method, and observe the results of the experiment. 6. Apply the chosen research method, and observe the results of the experiment. 7. Apply the chosen research method, and observe the results of the experiment. 8. Apply the chosen research method, and observe the results of the experiment. 9. Apply the chosen research method, and observe the results of the experiment. 10. Apply the chosen research method, and observe the results of the experiment. 11. Make a research report (thesis) in accordance with the writing guidelines and the direction of the supervisor. 12. Make a research report (thesis) in accordance with the writing guidelines and the direction of the supervisor. 13. Make a research report (thesis) that is in accordance with the writing guidelines and supported by appropriate references. 14. Make a research report (thesis) that is in accordance with the writing guidelines and supported by appropriate references.
Examination forms	PB = Learning Process, PT = Structured Assignment, KM = Independent Activity PB (30%) PT (40%) KM (30%)
Learning media	Lecture, Reception, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning
Reading list	Reading material is tailored to the research topic taken
Last date of update	July, 2025

Plant Breeding Interest

5th Semester

AGT 3108 POPULATION AND QUANTITATIVE GENETICS

Course Name	Population and Quantitative Genetics
Code	AGT 3108
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Diana Sofia Hanafiah, S.P., M.P.
Language	Indonesian or English
Relation to curriculum	Compulsory courses in the interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course covers the scope of population genetics and quantitative genetics, as well as understanding the inheritance of phenotypic traits caused by environmental influences or the interaction between genotype and environment, and the progress of selection conducted through 14 face-to-face lectures, structured assignments, Case Method and Project-based learning, practicals, mid-semester exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create sustainable agricultural systems. • Able to implement research methods to identify problems in the field of agrotechnology.

Content	1. Distinguish the concepts/roles of population genetics and quantitative genetics and the roles of population/quantitative genetics 2. Differentiate the concepts of genetic diversity, qualitative traits, and quantitative traits. 3. Identify the applications of the Hardy-Weinberg method. 4. Analyze the concept, calculation method, coefficient, and quantitative effects of inbreeding. 5. Describe the concepts of outbreeding and crossbreeding. 6. Differentiate the concepts of allele frequency and genotype frequency and study their calculations in a population. 7. Identify mutations, migration, and selection. 8. Describe the dynamics of selection and genetic drift. 9. Analyze the calculation of gene frequency changes in small populations. 10. Analyze the calculation of continuous variation. 11. Explain the calculation of the mean value in a population. 12. Analyze the calculation of the size of a variance. 13. Analyze the heritability value of a trait 14. Analyze the calculation of selection value and selection traits.
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Ambarwati, E. (2016). Introduction to Quantitative Genetics. UGM PRESS. Nusifera, S., Alia, Y., Lestari, A. P., & Maulana, M. (2020). Genetic Diversity of Payo Rice (Oryza

sativa L.) Population in Kerinci District, Jambi Province Based on Morphological Markers: Genetic Diversity of Payo Rice (Oryza sativa L.) Population in Kerinci District, Jambi Province Based on Morphological Markers. AGROSAINSTEK: Journal of Agricultural Science and Technology, 4(1), 61-69.

Karyawati, A. S., Sari, G. N., & Waluyo, B. (2019). Genetic variability, heritability, and genetic progress of several quantitative traits in F3 soybean lines resulting from crosses. J. Agro, 6(2), 134-143.

Juliati, F., Sudika, I. W., & Sutresna, I. W. (2023). STUDY OF GENETIC PARAMETERS OF QUANTITATIVE CHARACTERS IN MAIZE (Zea mays L.) IN DRY LAND. AGROTEKSOS, 33(1), 79-87.

Suharnas, E. (2021). STUDY OF QUALITATIVE AND QUANTITATIVE CHARACTERISTICS OF BINUANG BUFFALO IN SOUTH BENGKULU REGENCY, BENGKULU PROVINCE. Journal of Livestock Inspiration, 1(1), 10-21

Khairan, M. Z. (2023). Association of Myostatin (MSTN) Gene Diversity with Quantitative Traits in Kerinci Ducks Using the PCR-RFLP Method (Doctoral dissertation, UNIVERSITAS JAMBI).

Piastuti, D., Kamaliyah, S. N., & Sulistyo, H. E. (2021). Opportunities for Livestock Feed Selection Through Genetic Diversity and Heritability of Quantitative Traits in Komak Forage Production (lablab purpureus). Tropical Livestock Nutrition Journal, 4(2), 117-123.

Sutresna, I. W., Yakop, U. M., Sudika, I. W., & Anugrahwati, D. R. (2022). Estimation of Genetic Parameters for Quantitative Traits of Maize Genotypes in Three Types of Agroecosystem Planting. Proceedings of SAINTEK, 4, 294-301.

Sayurandi, S. (2021). VARIABILITY AND ESTIMATION OF QUANTITATIVE CHARACTER GENE ACTION IN F1 POPULATION OF RUBBER PLANT CROSSBREEDING RRIM 600 X IRR 42. Warta Perkaretan, 40(1), 31-40.

Amalia, A. P., Terryana, R. T., Aswani, N., Nugroho, K., & Lestari, P. Analysis of the Diversity of 8 Chili Varieties Based on Qualitative and Quantitative

	Morphological Characters. Vegetalika, 12(1), 21-35.
Last update of date	July, 2025

AGT 3105 SEED PRODUCTION AND TECHNOLOGY

Course Name	Seed Production and Technology
Code	AGT 3105
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Dr. Ir. Haryati MP
Language	Indonesian or English
Relation to curriculum	Compulsory courses within interests Elective courses outside of interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the understanding of seed technology, seed germination and influencing factors, physical and physiological quality testing of seeds, seed harvesting and processing, seed dormancy, seed storage, seed marketing, seed production and certification in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system • Able to create businesses in the fields of plantations, food and horticulture on a small and large scale independently.

Content	1. Definition and purpose of the role of seed production and technology 2. Definition of seed formation process and structure 3. Definition of germination 4. Harvesting and processing 5. Definition of orthodox, recalcitrant seeds and how to store orthodox and recalcitrant seeds 6. Seed health 7. Seed production and quality control 8. Seed circulation, marketing and distribution 9. Seed certification process 10. Seed institutionalization 11. Seed regulations in Indonesia 12. Genetic conservation and international seed organizations 13. Seed dormancy 14. Physical quality of seed
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Yudono, P. (2023). Science and technology of recalcitrant seeds: fruit and plantation crops. UGM PRESS. Samah, E. (2024). PLANT SEED TECHNOLOGY. Despita, R., & Nizar, A. (2019). Textbook of Plant Seed Production Technology. Tyasmoro, S. Y., Permanasari, P. N., & Saitama, A. (2021). Plantation Crop Production Technology. Brawijaya University Press. Prayoga, A., & Ruwaida, I. P. (2017). Textbook of Food Crop Production Technology. Revian, M. E., Kusuma, R. M., & Nursetyo, K. I. (2020). Development of a Guidebook for Large Production

	Practices in Video Media Development Courses in the Education Technology Study Program at State University of Jakarta. Journal of Innovative Learning, 3(1), 24-35. Farmia, A., & Wartapa, A. (2018). Hybrid Seed Production Practicum Manual. Wahyuni, A., Simarmata, M. M., Isrianto, P. L., Junairiah, J., Koryati, T., Zakia, A., ... & Herawati, J. (2021). Seed Technology and Production. Yayasan Kita Tulis. Husen, S., Sutardjo, H. T., & Aulia Zakia, A. (2021). VEGETABLE CROP PRODUCTION TECHNOLOGY. UMM Press. Fawwas, M. (2023). Effect of Various Seed Priming Materials on Seed Quality and Vegetative Growth of Expired Maize (Zea mays L.) Seeds (Doctoral dissertation, Jember State Polytechnic).
Last date of update	July, 2025

AGT3101 RESEARCH METHODS

Course Name	Research Methods
Code	AGT3101
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Ir. Darma Bakti, MS
Language	Indonesian or English
Relation to curriculum	Compulsory courses of the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The Research Methods course learns about the concepts, principles and stages in research methods, especially in agriculture, both experimental and descriptive research. The research methods course is held in 14 face-to-face meetings, structured assignments, Case Method, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• The ability to apply the theories of agronomy, soil science, plant protection science and plant breeding science for problem solving independently and in groups through active Self-studys in agriculture in an effort to increase productivity and quality of products and create a sustainable agricultural system. • The ability to apply plantation and horticultural problem solving techniques both independently and in groups by taking into account economic, public health and safety, socio-cultural and environmental factors to increase productivity and quality of agricultural products. • Ability to apply the theory of agronomy, soil science, plant protection science and breeding science and plantation management in oil palm, rubber and coffee

	commodities and horticulture to manage natural resources and human resources.

Content	1. Introduction: lecture contract; Science: thinking process and knowledge; theory and facts; values in science; Scientific Method: definition, criteria and steps in the scientific method; scientific and non-scientific approaches 2. Research: definition of research, research chain system, research characteristics, contribution and usefulness of research results; Types of research, 3. Literature Study: Definition, purpose and use, literature study criteria, types of literature studies, how to conduct literature studies 4. Determining the Research Object: Research topic: characteristics of good research topics, considerations for choosing research topics, where research topics are obtained; Problems and Hypotheses: Identifying and Formulating Problems, Formulating and Testing Hypotheses (CM) 5. Research Design: Research planning design, research implementation design 6. Experimental research design 7. Descriptive research implementation design 8. Selecting Variables and Measurement Techniques: Definition of variables, types of variables, methods and measuring instruments, validity of measuring instruments, examples of variables and measurement techniques in research in the field of agricultural science (PBL) 9. Sampling Methods: Purpose and usefulness of the sample. Types of sampling methods Criteria and methods of soil and plant sampling 10. Data analysis and data interpretation in experimental research, conclusions and research implications: Statistical techniques in data analysis: analysis of variance, independent sample t-test, contrast analysis regression and correlation analysis. 11. Data analysis and data interpretation in descriptive research, conclusions and research implications Statistical techniques in descriptive analysis, t test and multivariate analysis 12. Data presentation techniques, reference techniques and bibliography 13. Writing a research report: Systematics of research reports, grammar in scientific writing 14. Slide making technique and research result presentation technique: Slide making techniques in

Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Mohamad Nazir. 1988. Research Methods. Ghalia Indonesia.Jakarta Suharsimi Arikunto. 2013. Research Procedure: a practical approach. Publisher: Rineka Cipta Aji Sastrosupadi. 2000. Practical experimental design in agriculture. Kanisius Publisher, Yogyakarta Gomez, K.A and A.A Gomez. 1995. Statistical procedures for agricultural research. Second Edition. Translator E.Syamsudin and Justika Baharsyah. University of Uyanto, S. 2009. Guidelines for Data Analysis with SPSS. Graha Ilmu USU Faculty of Agriculture. 2008. Thesis writing guidelines Supporter Up-to-date journals.
Last date of update	July, 2025

AGT3107 CYTOGENETICS

Course Name	Cytogenetics
Code	AGT3107
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Diana Sofia Hanafiah, SP, MP
Language	Indonesian or English
Relation to curriculum	Compulsory courses in interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This Cytogenetics course explains the scope of Cytogenetics, the cell cycle, the structure and parts of chromosomes, the stages of cell division in mitosis and meiosis, karyotype analysis, the meaning of mutations and types of mutagens. changes in chromosome structure, aneuploidy and polyploidy, cytoplasmic inheritance and the role of cytogenetics in plant breeding.
Module objectives/intended learning outcomes	After taking this course, students will be able to explain the scope of Cytogenetics, the cell cycle, parts and forms of chromosomes, the structure and stages of cell division in mitosis, structural changes, changes in the number of chromosomes chromosomes, and cytoplasmic inheritance and the role of cytogenetics in agriculture.

Content	1. Mitotic cell cycle 2. Meiosis cell cycle 3. Chromosome Discovery 4. Chromosome structure 5. Chromosome parts, Variation in chromosome type (Polytype chromosomes and chromosomes), Variation in chromosome number 6. Karyotype analysis of chromosomes 7. Definition of mutation and Types of mutagens 8. Chromosome structure changes; Inversion, Deletion, Duplication, Translocation 9. Aneuploidy 10. Polyploid 11. Cytoplasmic inheritance in Chloroplasts 12. Cytoplasmic inheritance in Mitochondria; Male sterility 13. Cytoplasmic inheritance in; a. Pigment colour in Maize Moths, b. Circle of the snail house, c. Sterility in Drosophila fruit flies 14. The Role of Cytogenetics in Supporting the Assembly of Superior Plant Varieties
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Allard, R. W. 2005. Principles of Plant Breeding. John Wiley and Sons, New York.

	Crowder L.V. 1993. Genetika Tumbuhan (terjemahan). Sutarso (ed.). Yogyakarta; Gadjah Mada University Press Suryo H. 2007. Sitogenetika, UGM Press Syukur M., Sastrosumarjo S., 2013, Sitogenetika Tanaman, IPB Press
Last date of update	July, 2025

AGT 3109 CROSSBREEDING DESIGN TECHNIQUES AND ANALYSIS

Course Name	Crossbreeding Design Techniques and Analysis
Code	AGT 3109
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Diana Sofia H, S.P., M.Si
Language	Indonesian or English
Relation to curriculum	Compulsory courses in plant breeding interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses frequency and genotyping, Hardy & Weinberg's law of equilibrium, changes in gene frequency, average and diversity, cultivor development methods, 56 bulk SSD, pedigree, back cross, multi lines population development methods, testing, field techniques, computer simulation, crosswalks in 14 face-to-face lectures, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Students will be able to explain the scope of crossing design techniques and analysis in plant breeding, crossing methods, selection and genetic progress in crossing populations, and data analysis in crossing populations statistically and using computer programs.

Content	1. The meaning/role of crossing design techniques and analysis in plant breeding 2. The meaning of crossing design, one of which is factorial crossing design 3. The design of the Augmented environment 4. The meaning of cross-section in looking at the relationship between the characters observed in the study 5. The Griffing method in diallel crossing (CM) 6. The Hayman method in diallel crossing 7. Analyze crossing data using a computer program (CM) 8. Analyzing the hybrid assembly process and the analysis performed 9. The types of selection on populations 10. The selection intensity in performing selection on a plant population (PBL) 11. Genetic progress after selection treatment is carried out 12. The ring cross method in assembling the base population of superior strains 13. The skewness and kurtosis analysis in crossbred populations 14. The skewness and kurtosis analysis in crossbred populations
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Adawiyyah, Y., & Irvani, A. I. (2022). Analisis Pembelajaran Dengan Desain Didaktik Sharing Task dan Jumping Task pada Materi Persilangan

	Monohibrid. Jurnal Pendidikan UNIGA, 16(2), 592-602. MANIS, J., & SEVERAL, E. T. C. PERTUMBUHAN DAYA HASIL DAN UPAYA PERSILANGAN BEBERAPA AKSESI JAGUNG UNSRI DENGAN. Kamaliah, T. L., Syukur, M., Maharijaya, A., & Hidayat, P. (2023, December). Pengaruh Tetua Betina pada Hasil Persilangan Cabai (Capsicum annuum L.) terhadap Morfologi Daun. In Prosiding Seminar Nasional Perhimpunan Hortikultura Indonesia (Vol. 1, No. 2). Ruth Stella Petrunella Thei, R. S. P. T. Reaksi Ketahanan Beberapa Varietas dan Galur Harapan Padi (Hasil Persilangan Varietas Lokal NTB dan lR 36) Terhadap Penyakit Tungro. Hafsah, S., Masyhurah, R., & Nura, N. Efek Metaxenia terhadap Karakter Buah pada Hasil Persilangan Beberapa Genotipe Cabai Hias (Capsicum annuum L.) IPB. Vegetalika, 12(4), 372-381. Halimi, E. S., Zaidan, Z., Susilawati, S., Adriansyah, F., Cahyani, A. I., Panjaitan, M. S., ... & Nuraini, H. (2023, November). Pertumbuhan Produksi dan Segregasi Tanaman Generasi F3 yang Diseleksi dari Persilangan Cabe Keriting dan Rawit. In Seminar Nasional Lahan Suboptimal (Vol. 11, No. 1, pp. 358-369). Serlin, M., Oematan, G., & Benu, I. (2023). Pengaruh Pemberian Silase Rumput Kume dan Alysicarpus vaginalis dengan Imbangan yang Berbeda Terhadap Total Digestible Nutrien (TDN) dan Retensi Nitrogen pada Sapi Persilangan Ongole Brahman. Animal Agricultura, 1(1), 46-58. Alawiyah, T. (2023). Tinjauan Nilai Estetika Pada Ragam Hias Tenun Songket Melayu Batu Bara Produksi Songket Bersamo Di Desa Padang Genting Kabupaten Batu Bara. Visual Heritage: Jurnal Kreasi Seni dan Budaya, 6(1), 35-45. Adhitya, P. P., Wartomo, W., & Malau, Y. A. (2023). PENGARUH ASAL BIBIT DAN UMUR TANAMAN YANG BERBEDA TERHADAP RENDEMEN MINYAK SAWIT MENTAH. Fruitset Sains: Jurnal Pertanian Agroteknologi, 11(3), 198-203. Pramulia, P., & Yustitia, V. (2023). Empat Pola Pikir Matematika sebagai Teknik Penciptaan Cerita

	Pendek. MENDIDIK: Jurnal Kajian Pendidikan dan Pengajaran, 9(2), 232-242.
Last date of update	July, 2025

6th Semester

PNF306 AGROINDUSTRY

Course Name	Agroindustry
Code	PNF306
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Ir. Terip Karo-Karo, MS
Language	Indonesian or English
Relation to curriculum	Courses of interest Elective course
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	
Course Description	The Agroindustry course provides an overview of the agroindustry concept, including the current challenges and opportunities in the agroindustry. Students are provided with an understanding of the potential and development of agroindustry. To this end, students will be given an understanding of the characteristics of agroindustry raw materials, agroindustry production technology, agroindustry processing transformation, and industrial machinery and technology. This course equips students with the ability to manage agroindustry, including raw material management, operational management, human resource management, technology management, marketing management, and agroindustry quality management.
Module objectives/intended learning outcomes	• Able to develop a global perspective for character and self-potential in accordance with the field of science or across disciplines. • Able to build a character with a global perspective in the field of science or across disciplines.

Content	1. Explaining the definition, general overview, and scope of the agroindustry course 2. Explaining the advantages and disadvantages of agroindustry 3. Explaining agro-industrial development strategies 4. Explaining the rubber agroindustry 5. Explaining agroindustrial regions 6. Explaining the cereal and tuber agroindustry 7. Explaining technological innovations / review 8. Explaining the palm oil agroindustry 9. Explaining the essential oil agroindustry 10. Explaining the sweetener agroindustry 11. Explaining the horticultural and fruit agroindustry 12. Explaining products from the horticultural agroindustry 13. Explaining agroindustry and the scale of agroindustry 14. Explaining agroindustry and the scale of agroindustry
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Handoko, H. T. 1996. Fundamentals of Production and Operations Management. BPFE. Yogyakarta Santoso, I. 2013. Introduction to Agroindustry. Universitas Brawijaya Press Soekartawi. 2000. Introduction to Agroindustry. Raja Grafindo Persada. Jakarta

	Mayers, R. 1982. Production and Operation Management. McGraw-Hill. New York Said, E.G and A.H. Intan. 2001. Agribusiness Management. Ghalia Indonesia. Jakarta
Last update of date	July, 2025

AGR 1206 AGRIBUSINESS SYSTEMS AND ENTERPRISES

Course Name	Agribusiness Systems and Enterprises
Code	AGR 1206
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Ir. Thomson Sebayang MT
Language	Indonesian or English
Relation to curriculum	Courses of interest Elective course
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course studies the concepts, scope, and performance analysis of agribusiness systems; as well as the application of the agribusiness system framework to a wide range of agricultural commodities (agriculture, fisheries, livestock, plantations, and forestry) sustainably within the scope of companies, regions, and nationally.
Module objectives/intended learning outcomes	Able to apply the concepts, scope, and performance analysis of agribusiness systems and the implementation of agribusiness system frameworks across a wide range of agricultural commodities sustainably at the company, regional, and national levels.

Content	1. Understanding and able to explain about the definition and scope of agribusiness both as a business and as a system 2. Understanding and able to explain the role of the Agro-Input subsystem in the complex agribusiness system of agricultural commodities in general 3. Understanding and able to explain the role of the Agro-Production subsystem in the complex agribusiness system for agricultural commodities in general 4. Understanding and able to explain the role of the Agro-Industry subsystem in the complex agribusiness system for agricultural commodities in general 5. Understanding and able to explain the role of the Agro-Marketing subsystem in the complex agribusiness system for agricultural commodities in general 6. Understanding and able to explain the role of the Agro-Supporting subsystem in the complex agribusiness system for agricultural commodities in general 7. Understanding and able to explain and correlate the patterns and models of Cooperation in complex agribusiness systems from the perspectives of Vertical Backward, Vertical Forward, and Horizontal Linkage 8. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading horticultural, food, and secondary agricultural commodities 9. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading plantation agricultural commodities 10. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading plantation agricultural commodities 11. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading livestock and fishery commodities 12. Understanding and able to explain and correlate the performance of all agribusiness subsystems in

	complex agribusiness ventures on various leading livestock and fishery commodities 13. Understanding and able to explain and correlate business performance and agribusiness systems as drivers of development that support sustainable development 14. Understanding and able to explain and correlate business performance and agribusiness systems as drivers of development that support sustainable development

Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Barnard, F., Akridge, J., Dooley, F dan Foltz, J. 2012. Agribusiness Management. Fourth Edition. US:Routledge.Asie, E. R. (2023). Vegetable Crop Production Technology. Publisher P4I.
Last update of date	July, 2025

AGT 3208 SUSTAINABLE AGRICULTURE SYSTEM

Course Name	Sustainable Agriculture System
Code	AGT 3208
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Ir. Chairani Hanum, M.Si
lenguage	Indonesian or English
Relation to curriculum	Elective courses in specialization
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minit) per minggu atau 28 jam per semester • Self-study : (2 x 60 minit) per minggu atau 28 jam per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
(Pre-requisite courses) Required and recommended prerequisites for joining the module	
Description	This course discusses the scope of sustainable agriculture; Integrated Crop Management includes integrated soil management, integrated pest and disease management, environmental management (ecosystems and agroecosystems); Principles of Sustainable agriculture; Bionergy development and its principles; Market development in sustainable agricultural systems. The sustainable agriculture system course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Students are able to apply agrotechnology theory to create sustainable agricultural systems. • Students are able to solve problems in the field of agrotechnology by paying attention to economic, public health and safety, socio-cultural and environmental factors. • Students are able to develop global insights for character and self-potential in accordance with scientific fields and across disciplines.

Content	1. Explanation and scope of sustainable integrated farming systems 2. The concept of sustainable agriculture 3. Organic Agriculture 4. Plant breeding and biodiversity 5. Agricultural production in Indonesia and food and energy needs 6. Natural resource management 7. Waste management/recycling 8. Agroecology Plant diseases 9. Concepts of controlling crop pests, diseases and weeds 10. Farming community development 11. Sustainable Agriculture Technology towards Precision agriculture 12. Economic indicators 13. Policies and economic aspects 14. Case studies and field projects
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Firnia, D., Lahati, B. K., Kusumawati, A., Darma, W. A., Umam, C., Jihad, M., ... & Dahliana, B. 2023. Sistem Pertanian Berkelanjutan. Penerbit Tahta Media. Agustina, L. 2011. Teknologi Hijau dalam Pertanian Organik Menuju Pertanian Berkelanjutan. Universitas Brawijaya Press.

	Miarso, M. 2023. Penerapan Sistem Pertanian Berkelanjutan Dalam Mendukung Produksi Pertanian. AGRONIMAL: Jurnal Ilmiah Pertanian dan Peternakan, 1(1), 23-26. Support: Efendi, E. 2016. Implementasi sistem pertanian berkelanjutan dalam mendukung produksi pertanian. Warta Dharmawangsa, (47). Ma'ruf, A. 2017. Agrosilvopastura sebagai sistem pertanian terencana menuju pertanian berkelanjutan. Bernas: Jurnal Penelitian Pertanian, 13(1), 81-90. Rachma, N., & Umam, A. S. 2021. Pertanian organik sebagai solusi pertanian berkelanjutan di Era New Normal. Jurnal Pembelajaran Pemberdayaan Masyarakat (JP2M), 1(4), 328-338. Puspitasari, R. D. 2020. Pertanian berkelanjutan berbasis revolusi industri 4.0. Jurnal Layanan Masyarakat (Journal of Public Services), 3(1), 26. Yulianto, K. 2016. Agroekologi: Model pertanian berkelanjutan masa depan. Jurnal Tambora, 1(3). Hidayati, F., Yonariza, Y., Nofialdi, N., & Yuzaria, D. 2019. Intensifikasi lahan melalui sistem pertanian terpadu: Sebuah tinjauan. In Unri Conference Series: Agriculture and Food Security (Vol. 1, pp. 113-119). Ningsih, F., & Syaf, S. 2015. Faktor-faktor yang menentukan keterlibatan pemuda pedesaan pada kegiatan pertanian berkelanjutan. Jurnal Penyuluhan, 11(1).
Last update of date	July, 2025

TEP 2216 MACHINERY AND EQUIPMENT

Course Name	Machinery and Equipment
Code	TEP 2216
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Taufik Rizaldi
Language	Indonesian or English
Relation to curriculum	Elective courses outside the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minit) per minggu atau 28 jam per semester • Self-study : (2 x 60 minit) per minggu atau 28 jam per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course explains the scope of machinery and equipment, the definition of agricultural mechanization; explains the sources of agricultural power, motor baker, power and efficiency of motor baker; tillage tools / machines; planting tools / machines; plant care tools / machines; harvesting tools / machines. The machinery and equipment course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Students are able to develop global insights for character and potential in accordance with scientific fields and across disciplines.

Content	1. Scope of the subject of machinery and equipment, Definition of mechanization as understood by mechanization experts in Indonesia 2. Types of labor available in agriculture 3. Difference between gasoline motor and diesel motor 4. Power and efficiency of combustion motors 5. Classification of tractors and auxiliary equipment on tractors 6. Types of tillage tools I and II 7. How to calculate work capacity in tillage, How to calculate labor requirements in tillage 8. How to calculate equipment unit requirements in tillage 9. Types of tools that can be used for plant cultivation 10. Types of tools that can be used for plant maintenance 11. Ways to calculate work capacity in seed planting and calculate the amount of equipment Compulsory 12. Types of tools that can be used for harvesting 13. How to calculate work capacity in crop harvesting with mechanized tools 14. Selection of agricultural machinery
Examination forms	• Quiz (10%) • Assignment (20%) • Midterm Exam (35%) • Final Exam (35%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Primary: Nainggolan, T. 2004. Mekanisasi Pertanian. Prabowo, A. 2013. Kebijakan antisipatif pengembangan mekanisasi pertanian. Analisis Kebijakan Pertanian, 11(1), 27-44. Santoso, D. 2023. Transformasi dan Pengembangan Mekanisasi Pertanian di Kawasan Perbatasan. Secondary:

	Priyanto, A. 1997. Penerapan mekanisasi pertanian. Jurnal Keteknikan Pertanian, 11(1). Djamhari, S. 2009. Kajian Penerapan Mekanisasi Pertanian di Lahan Rawa Lebak Desa Putak-Muara Enim. Jurnal sains dan teknologi Indonesia, 11(3). Humam, A., Mutia Sani, A., Reziati, E., Hurul Islami, F., Laelastuti, F., & Heryani, I. 2018. Efek Ekonomis dari Mekanisasi Pertanian di Wilayah Gedebage aliran sungai Cinambo. Ratnawati, C. 2020. Mekanisasi Usahatani Padi Di Kecamatan Sananwetan Kota Blitar. Manajemen Agribisnis: Jurnal Agribisnis, 20(1), 1-13. Erniati, E., Solahudin, M., Lulung, P., & Wardani, I. K. 2020. Aplikasi Metode Analisis Swot untuk Merumuskan Strategi Pemanfaatan Mekanisasi Pertanian di Kabupaten Kapuas Hulu Provinsi Kalimantan Barat. Jurnal Ilmiah Rekayasa Pertanian dan Biosistem, 8(2), 219-229. Jiwantoro, A., Argo, B. D., & Nugroho, W. A. 2013. Analisis Efektivitas Mesin Penggiling Tebu dengan Penerapan Total Productive Maintenance (In Press, JKPTB Vol 1 No 2). Jurnal Keteknikan Pertanian Tropis dan Biosistem, 1(2). Sugandi, W. K., Yusuf, A., & Saukat, M. 2016. Rancang Bangun Dan Uji Kinerja Mesin Pencacah Rumput Gajah Untuk Pakan Ternak Dengan Menggunakan Pisau Tipe Reel (Construction Design and Test Performance of Elephant Grass for Cattle Feed using Reel Type Knife): Construction Design and Test Performance of Elephant Grass Cutting Machine for Cattle Feed using Reel Type Knife. Jurnal Ilmiah Rekayasa Pertanian dan Biosistem, 4(1), 200-206.
Last date of update	July 2025

AGT 3210 PLANTATION CROP BREEDING

Course Name	Plantation Crop Breeding
Code	AGT 3210
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Luthfi A. M. Siregar, S.P., M.Sc., Ph.D.
Language	Indonesian or English
Relation to curriculum	Compulsory courses in plant breeding interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Plantation plant breeding courses learn about, principles, explain and analyze plantation plants in 14 face-to-face lectures, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Students are able to apply the theory of plant breeding science • Students are able to apply the theory of agrotechnology in the field of plantation • Students are able to manage natural resources and human resources, especially in the field of plantation

Content	1. Describing hevea rubber breeding 2. Applying breeding hevea rubber 3. Describe and apply coffee breeding for sustainable production 4. Describe oil palm breeding 5. Applying oil palm breeding 6. Analyze the success of oil palm plant breeding (CM) 7. Describe genetic improvement in Cocoa (PBL) 8. Applying genetic improvement in Cocoa 9. Describing coconut breeding 10. Applying coconut breeding 11. Analyzing the genetic diversity of coconut plants in North Sumatra 12. Describe and apply tea plant breeding (CM) 13. Describe and apply sugarcane plant breeding (CM) 14. Applying and practicing tobacco plant breeding (PBL)
Examination forms	• Quiz (5%) • Assignment (10%) • Mid semester exam (20%) • Final semester exam (20%) • Project base learning (30%) • Case methods (15%)
Learning Media	Power point, Screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading: Allard, R.W. 2005. Principles of Plant Breeding. John Wiley & Sons, Inc., New York. Falconer, D.S. 1995. Introduction to Quantitative Genetics. Longman, London. Singh RK, Chaudhary BD. 1977. Biometrical methods in quantitative genetics analysis. Kalyani Publishers. Indiana New Delhi. pp. 304. Supporting Reading

	Pratama et al., 2018. Strategi Program Pemuliaan Tanaman Kelapa Sawit (Elaeis guinensis Jacq.) pada Lahan Suboptimal di PT Binasawit Makmur. Jurnal Lahan Suboptimal: Journal of Suboptimal Lands. Vol. 7, No.1: 26-36 Sayekti et al., 2015. Keragaman Genetik Kelapa Sawit (Elaeis guineensis Jacq.) Asal Angola Menggunakan Marka SSR. Keragaman Genetik Kelapa Sawit (Elaeis guineensis Jacq.) Asal Angola Menggunakan Marka SSR Daslin A. 2013. Produktivitas klon karet pada berbagai kondisi lingkungan di perkebunan. Agrium 18: 1-6 Daslin A. 2014. Perkembangan penelitian klon karet unggul IRR seri 100 sebagai penghasil lateks dan kayu. Warta Perkaretan 33:1-10 Daslin A, Pasaribu SA. 2015. Uji adaptasi klon karet IRR seri 100 pada agroklimat kering di kebun Sungei Baleh Kabupaten Asahan Sumatera Utara. J Penelitian Karet 33: 25-34
Last date of update	July, 2025

AGT3229 PLANT CLINIC

Course Name	Plant Clinic
Code	AGT3229
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Lisnawita SP., M.Si.
Language	Indonesian or English
Relation to curriculum	Compulsory courses of the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course explains investigation and diagnosis in a plant health problem and also as a forum for distributing information about its control. The plant clinic also learns the role and function of connecting farmers with experts in their fields in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	Students are able to apply the theory of plant pests and diseases Students are able to solve problems in the field of agrotechnology by taking into account environmental factors Students are able to identify problems in the field of agrotechnology

Content	1. Explain and understand the meaning, purpose, and symptoms of damage caused by plant pests 2. Explain and differentiate the symptoms caused by plant pests (PBL) 3. Explain and distinguish symptoms caused by plant pests (continued) (CM) 4. Explain the symptoms of damage due to abiotic factors (CM) 5. Explain the symptoms of damage due to soil nutrient deficiency and excess 6. Explain the symptoms of damage due to soil nutrient deficiency and excess (continued) 7. Explain how to nourish the soil 8. Explain the symptoms of plant damage caused by nematodes (PBL) 9. Explain the symptoms of plant damage due to nematodes (continued) (PBL) 10. Explain the symptoms of plant damage caused by fungi 11. Explain the symptoms of plant damage caused by fungi (continued) (PBL) 12. Explain the symptoms of plant damage due to viruses (PBL) 13. Explain the symptoms of plant damage due to bacteria 14. Explain the symptoms of damage caused by nematodes, fungi, viruses and bacteria and how to diagnose them (review) (CM)
Examination forms	• Mid Semester Exam (20%) • Final Semester Exam (20%) • Project base learning (35%) • 4. Case methods (25%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Habazar, T., Yanti, Y., dan Nasrun. 2015. Bakteriologi Tumbuhan. Bahan Ajar. Minangkabau Press.

	Hadiastono, T. Virologi Tumbuhan: Identifikasi dan Diagnosis Virus Tumbuhan. Universitas Brawijaya Press. Kelly, P. 2008. Global Plant Clinic: Getting better all the time, farmers and plant doctors talk about their work and plant health problems in Bangladesh Kumar, S., 2020. Abiotic stresses and their effects on plant growth, yield and nutritional quality of agricultural produce. Int. J. Food Sci. Agric, 4, pp.367-378. Rajkumar, R. and Anabel, N.J., 2018. Role of Plant Clinics in addressing pest and disease management. CSI Transactions on ICT, 6, pp.279-288. Raskin, I., Ribnicky, D.M., Komarnytsky, S., Ilic, N., Poulev, A., Borisjuk, N., Brinker, A., Moreno, D.A., Ripoll, C., Yakoby, N. and O'Neal, J.M., 2002. Plants and human health in the twenty-first century. TRENDS in Biotechnology, 20(12), pp.522-531. Srivastava, M.P., 2013. Plant clinic towards plant health and food security. International Journal of Phytopathology, 2(3), pp.193-203. Taylor, P. 2015 Plantwise Diagnostic Field Guide. CABI UK Yadav, S., Modi, P., Dave, A., Vijapura, A., Patel, D. and Patel, M., 2020. Effect of abiotic stress on crops. Sustainable crop production, 3
Last date of update	July, 2025

AGT3213 PLANT BREEDING STRESSED ENVIRONMENT

Course Name	Plant Breeding Stressed Environment
Code	AGT3213
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Khairunnisa Lubis SP., MP
Language	Indonesian or English
Relation to curriculum	Elective course in interests of plant breeding
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Plant breeding in stressed environments course studies plant breeding efforts to improve resistance to various types of environmental stresses, both biotic (for example, pest and disease attacks) and abiotic (such as drought, salinity, extreme temperatures, or nutrient deficiencies). The course is organized in 14 face-to-face sessions, structured assignments, case method, project-based learning, and practicum. Evaluation is carried out by conducting mid- and end-of-semester exams.
Module objectives/intended learning outcomes	• Students are able to apply the theory of plant breeding science • Students are able to identify problems in the field of agrotechnology

Content	1. Introduction to plant breeding in stressful environments 2. Abiotic stress 3. Biotic stress 4. Breeding strategies for stress resistance (CM) 5. Mechanisms of plant resistance to stress 6. Use of modern technology in plant resistance breeding 7. Use of modern technology in plant resistance breeding 8. Plant breeding for environmental stress resistance in the context of climate change 9. Plant breeding for environmental stress resistance in the context of climate change 10. Crop evaluation and resistance testing 11. Development of stress-resistant crop varieties for food security (CM) 12. Development of stress-resistant crop varieties for food security 13. Application of plant resistance breeding in various agricultural sectors (PBL) 14. Challenges and prospects for plant breeding in stressful environments
Examination forms	1. Quiz (20%) 2. Mid Term Examination (20%) 3. Final Examination (20%) 4. Project based learning (20%) 5. Case methods (20%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Adiredjo, A.L., Lita, S., Parnidi. 2021. Pemuliaan Ketahanan Genetik Tanaman. Malang (ID): UB Press. Sopandie, D. 2014. Fisiologi Adaptasi Tanaman Terhadap Cekaman Abiotuk pada Agroekosistem Tropika. Bogor (ID): IPB Press.

	Syukur, M., Sriani, S., Rahmi, Y. 2015. Teknik Pemuliaan Tanaman. Jakarta (ID): Penebar Swadaya.
Last date of update	July, 2025

AGT3222 ORGANIC FARMING

Course Name	Organic Farming
Code	AGT3222
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Ir. T. Sabrina M.Agr.Sc., Ph.D.
Language	Indonesian or English
Relation to curriculum	Elective course out of agronomy, plant breeding and plant protection interest Elective course in soil science interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course explains organic agriculture, ecological principles, roles and objectives of organic agriculture, organic fertilizers, soil biota and soil management for organic agriculture, the role of biofertilizers in supporting organic agriculture, organic pest and disease and weed control, the advantages of organic agricultural products, organic agricultural production and management aspects, the study of social, cultural and economic aspects of organic agriculture, the development of organic agriculture in Asia and Australia, standardization, quality assurance and certification of organic agricultural products, policies and regulations in marketing organic agricultural products and the development of organic agriculture in Africa.
Module objectives/intended learning outcomes	Students are able to apply the theory of the basic principles of sustainable agricultural systems

	Students are able to solve problems in the field of agrotechnology by taking into account environmental factors Students are able to identify problems in the field of agrotechnology Students are able to design innovations in the field of agrotechnology by utilizing science and technology
Content	1. Definitions of organic and natural farming, ecological principles of organic farming, roles and objectives of organic farming as well as concepts and strategies for achieving them in terms of management and practices 2. Potential and application of organic fertilizer in supporting agriculture 3. Function and role of soil biota and soil management for organic farming 4. Opportunities, utilization and barriers as well as the successful use of biofertilizers in supporting organic farming (CM) 5. Introduction of pesticide production systems and organic farming as well as the scope of biological control and its problems in organic farming (CM) 6. Development and progress of organic farming around the world (CM) 7. Advantages of organic agricultural products from all aspects (CM) 8. Organic agricultural production and management aspects 9. Social, cultural and economic aspects of organic farming 10. Development of organic farming in Asia 11. The development of organic farming in Australia 12. A study of the social, cultural and economic aspects of organic farming (PBL) 13. Standardization, quality assurance and certification/legislation organic agricultural products (PBL) 14. Policies and regulations in marketing organic agricultural products (PBL)
Examination forms	1. Quiz (5%) 2. Mid Term Examination (15%) 3. Final Examination (20%) 4. Project based learning (30%) 5. Case methods (30%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)

Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Altieri, M. A. (2012). Agroecology: The Science of Sustainable Agriculture. CRC Press. Benbrook, C. M. (2012). Organic farming and the future of agriculture: A review. Agronomy for Sustainable Development, 32(1), 83-93. Food and Agriculture Organization (FAO). (2018). The State of Food and Agriculture 2018: Leveraging Food Systems for Inclusive Rural Transformation. FAO. Lampkin, N., & Padel, S. (1994). The Economics of Organic Farming: An International Perspective. CAB International. Reganold, J. P., & Wachter, J. M. (2016). Organic Farming in the Twenty-First Century. Nature Plants, 2(2), 15221. Hole, D. G., et al. (2005). Does organic farming benefit biodiversity?. Biological Conservation, 122(1), 113-130. Smith, L. (2020). The Role of Organic Farming in Sustainable Agriculture. Journal of Sustainable Agriculture, 42(3), 145-162.
Last date of update	July, 2025

AGT 3211 MOLECULAR GENETICS

Course Name	Molecular Genetics
Code	AGT 3211
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Ir. I.M. Revandi Damanik, M.Sc
Language	Indonesian or English
Relation to curriculum	Compulsary course in Plant Breeding interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minit) per minggu atau 28 jam per semester • Self-study : (2 x 60 minit) per minggu atau 28 jam per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Molecular genetics course discusses the history and scope of molecular genetics which includes genetic material and genome organisation, central dogma of molecular biology, mendelian genetics and gene interaction, mutation and DNA repair, PCR and sequencing techniques, molecular genetics application techniques, genetic engineering techniques and bioinformatics. The course is organised in 14 face-to-face meetings, structured assignments, case method, practicum, midterm and semester exams.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create a sustainable agricultural system.

Content	1. Lecture and practical contract, History of molecular genetics, Scope of molecular genetics 2. DNA, RNA, DNA Replication 3. Chromosomes, Extra chromosomal genome 4. Transcription, Translation, Gene expression 5. Mendel's Laws I & II Pseudo deviations of Mendel's Laws (epistasis-hypostasis, atavism, polytomy, cryptomy, complementary genes) 6. Mendel's Laws I & II Pseudo deviations of Mendel's Laws (epistasis-hypostasis, atavism, polytomy, cryptomy, complementary genes) 7. DNA Mutation DNA repair 8. PCR Techniques Sequencing 9. PCR Techniques Sequencing 10. Northern blot, southern blot, and western blot application techniques RAPD, SSR and microsatellite molecular markers 11. Northern blot, southern blot, and western blot application techniques RAPD, SSR and microsatellite molecular markers 12. Genetic engineering techniques Genetic manipulation techniques (recombinant DNA) 13. Genetic engineering techniques Genetic manipulation techniques (recombinant DNA) 14. Bioinformatics techniques
Examination forms	1. Quiz (15%) 2. Assignment (10%) 3. Midterm exam (20%) 4. Final exam (20%) 5. Projec base learning (15%) 6. Case methods (20%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59

	E ≤ 49
Reading list	Main : Kar,D.K.,Halder, S. 2019. Cell Biology, Genetics and Molecular Biology. New Central Book Agency. Primrose, S.B. and R.M.Twyman. 2006. Principles of Gene Manipulation and Genomics. Blackwell Publishing. Oxford. Allison, L. 2007. Fundamental Molecular Biology. Blackwell Publishing. Oxford. Support : Lodish, H., Berk, A., Matsudaira, P., Kaiser, C.A., Krieger, M., Scott, M.P., Zipursky, L., Darnell, J. 2004. Molecular Cell Biology. W.H. Yuwono, T. 2006. Biologi Molekuler. Penerbit Erlangga. Jakarta.
Last date of update	July, 2025

AGT 3204 FIELD WORK PRACTICES

Course Name	Field Work Practices
Code	AGT 3204
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Nini Rahmawati, SP., M.Si
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Fieldwork (2 x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Doing work practices in companies / agencies / business units engaged in agrotechnology. This course teaches about ageotechnology insights: work culture, discipline towards rules and time, work creativity, work motivation, accuracy and thoroughness of work, organizational observation and management observation, productive activities; introduction to production and production machines, production stages and production activities, communication; observation of the communication process, appreciation of the communication process. cooperation, observation of the process of cooperation in the industry, cooperation with workers, supervisors and superiors, planned meetings.
Module objectives/intended learning outcomes	Able to internalize the BINTANG values in developing their ability as a lifelong learner in the field of agrotechnology
Content	1. Research methods to identify problems in the field of agrotechnology
	2. Research methods to identify problems in the field of agrotechnology

	3. Communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations. agrotechnology both orally and in writing, in academic and non-academic situations.
	4. Global insights for character and self-potential in accordance with scientific and cross-disciplinary fields
	5. Implementing learning in community groups
	6. Solve problems in the field of agrotechnology by taking into account environmental factors
	7. Solve problems in the field of agrotechnology by taking into account environmental factors
	8. Managing natural resources, especially in the field of plantations
	9. Managing human resources, especially in the field of plantation
	10. Apply communication theory in Indonesian
	11. Apply global insights in various aspects of life within the scope of monodisciplines and interdisciplines scope of monodisciplines and interdisciplines
	12. Apply global insights in various aspects of life within the scope of monodisciplines and interdisciplines scope of monodisciplines and interdisciplines
	13. Building global-minded characters in scientific and cross-disciplinary fields
	14. Building global-minded characters in scientific and cross-disciplinary fields
Examination forms	• Attitute (7%) • Dissiplinity (5%) • Practical works (28%) • Final report (25%) • Final examination (seminar) (10%) • Video project (25%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64

	D = 50-59 E ≤ 49
Reading list	Arifin, Muhammad. Analisa dan perancangan sistem informasi praktek kerja lapangan pada instansi/perusahaan. Simetris: Jurnal Teknik Mesin, Elektro dan Ilmu Komputer, 2014, 5.1: 49-56. Novianti, Novianti; Qashlim, A. Akhmad; Kahpi, Ashabul. Sistem Informasi Pendataan dan Penilaian PKL (Praktek Kerja Lapangan) Mahasiswa Berbasis Web. Journal Peqguruang, 2021, 3.2: 579-583. Priyanto, Priyanto, et al. Pengaruh Persepsi Terhadap Kesiapan Kerja Melalui Kepuasan Praktek Kerja Lapangan Mahasiswa Perguruan Tinggi Vokasi Pariwisata. Jurnal Kepariwisataan, 2023, 22.1: 97-108.
Last date of update	July, 2025

7th Semester

HPT 3210 BENEFICIAL INSECT

Course Name	BENEFICIAL INSECT
Code	HPT 3210
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Ameilia Zulyanti Siregar, M.Sc, Ph.D
Language	Indonesian or English
Relation to curriculum	Elective course in plant protection interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course provides knowledge about the scope, benefits, characteristics of beneficial insects, classifying beneficial insects, and the ability to breed insects as livestock with the aim of producing commodities such as silk, honey, lac, and tea, which are used as food and feed, as well as detecting insects as indicators of pollution.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create sustainable agricultural systems. • Able to implement research methods to identify problems in the field of agrotechnology.

Content	1. Explaining the scope of Useful Insect Science (UIS) and its benefits in life 2. Describing and explaining the utilization of insects in human life 3. Describing and explaining entomopathogens and their bioecology 4. Describing and explaining the biology of honey bees 5. Describing and explaining honey bee farming 6. Describing and explaining the biology of crickets 7. Describe the dynamics of Describing and explaining the biology of silkworms 8. Describing and explaining the precise processing of insects 9. Describing and explaining the biology of dragonflies 10. Describing and explaining dragonfly rearing 11. Describing and explaining the processing of insects as a source of food 12. Describing and explaining the processing of insects as a source of medicine 13. Describing and explaining the processing of insects as cosmetic tools 14. Describing and explaining insects as indicators of pollution
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Adihendro. 1999. The Secret to Breeding Crickets. Ardy Agensy, Jakarta. pp. 1-69. Ameilia Z.S. 2009. Beneficial Agricultural Insects. USU Press, Medan. 183 pages. Arnett Russ, HJR., Richard L., & Jacques, JR.

	1981. Guía de Insectos. Nueva York, Simon and Schuster Inc, 68p. Bambang, AM. 1991. Keeping Honey Bees. Kanisius. Jakarta. 63 pages. Christian, W y G. Gottsberger. 2000. La diversidad en la polinización de cultivos. Crop Science 40 (5): 1209-1222. Driesche, R.GV y Bellows, Jr TS. 1996. Control Biológico. Chapman and Hall, Boston-Amerika. Kalshoven, LGE. 1981. Hama Tanaman di Indonesia. Revisado y traducido por van Derlaan. Ikhnar Baru, Jakarta. 386-397p. Kusumah, E. 1994. Economic Impact of the Implementation of the PHT Concept on Highland Vegetable Farmers. Workshop on the Socio-Economic Impact of the PHT Program. Center for Agricultural Socio-Economic Research. Bogor, March 7-9, 1994. 10 pages. Paimin, F., B. Pudjiastuti, and Erniwati. 1999a. Success in Cricket Farming. Penebar Swadaya Jakarta. pp. 1-65 Nazaruddin. 1993. Silkworm Cultivation. pp. 30-40. Paimin, FB. 1999b. Successfully Overcoming Problems in Cricket Farming. Penebar Swadaya Jakarta. pp. 1-72. Rismunandar. 1981. Bees: Versatile Insects. CV Masa Baru. Jakarta. Pages 13-20. Sumopratowo, CDA and RA Suprapto. 1978. Beekeeping. Kanisius, Jakarta. Siregar, AZ. 2001. Silkworm Farming. Iptek Waspada. Wednesday, December 5, 2001. Siregar, AZ. 2009. Dragonfly Predator in Agriculture. USU Press, Medan Siregar, A. Z., Che Salmah Md. Rawi, and Zulkifli Nasution. 2009. Un estudio de odonatos en un campo de arroz de montaña en Manik Rambung, Siantar, al norte de Sumatra. Kultivar Journal 1 (3): 21-30. Taufik, RMS. 1991. Raising Silk-producing Caterpillars. Suara Karya. February 19, 1991.
Last date of update	July, 2025

AGT 3104 PLANT BREEDING OF HORTICULTURAL PLANTS

Course Name	Plant Breeding of Horticultural Plants
Code	AGT 3104
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Dr. Ir. Revandy Iskandar Muda Damanik, M.Si, M.Sc. Ph.D
Language	Indonesian or English
Relation to curriculum	Elective course in plant breeding interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class • .
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the principles and strategies in the breeding of horticultural plants (vegetables, fruits, and ornamental plants), as well as their propagation methods through 14 face-to-face lectures, structured assignments, Case Method and Project-based learning, practical sessions, mid-semester exams, and final exams.
Module objectives/intended learning outcomes	Able of applying agrotechnology theory to create sustainable agricultural systems.

Content	1. Understanding the principles and strategies of plant breeding, the importance of plant diversity as a fundamental basis in plant breeding 2. Understanding the principles and strategies of plant breeding, the importance of plant diversity as a fundamental basis in plant breeding 3. Understanding plant breeding assisted by tissue culture 4. Understanding plant breeding assisted by tissue culture 5. Understanding the breeding of various types of vegetable plants (Chili, onion, tomato, lettuce) 6. Understanding the breeding of various types of vegetable plants (Chili, onion, tomato, lettuce) 7. Understanding the breeding of various types of vegetable plants (Chili, onion, tomato, lettuce) 8. Understanding the breeding of various types of fruit plants (Orange, watermelon/papaya, durian, passion fruit) 9. Understanding the breeding of various types of fruit plants (Orange, watermelon/papaya, durian, passion fruit) 10. Understanding the breeding of various types of fruit plants (Orange, watermelon/papaya, durian, passion fruit) 11. Understanding the breeding of various types of ornamental plants (Orchid, chrysanthemum group, foliage group, palm group) 12. Understanding the breeding of various types of ornamental plants (Orchid, chrysanthemum group, foliage group, palm group) 13. Understanding the breeding of various types of ornamental plants (Orchid, chrysanthemum group, foliage group, palm group) 14. Understanding the breeding of various types of ornamental plants (Orchid, chrysanthemum group, foliage group, palm group)
Examination forms	1. Essays questions (5%) 2. Assignment (10%) 3. Mid term exam (20%) 4. Final exam (20%) 3. Projec base learning (30%) 4. Case methods (15%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions.

	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Yuniwati, E. D. (2024). Utilization of the University Food Garden as a Means of Teaching Horticulture: Learning from Project Experience. Classroom Action Research Journal, 1(3), 135-143. Asie, E. R. (2023). Vegetable Crop Production Technology. Publisher P4I. Fatmawati, A., Mulyanti, D. R., Hasmidar, H., Nasution, A. H., & Muala, B. (2023). AGRICULTURAL ECONOMICS: Introduction and Basic Concepts of Agricultural Economics in Indonesia. PT. Sonpedia Publishing Indonesia. Prastyana, H. Y. (2023). Performance of Large Chili Plants (Capsicum annuum L.) Introduction Varieties/Strains in the Lowland Area of Karanggintung Village, Sumbang District (Doctoral dissertation, Universitas Jenderal Soedirman). Susilastuti, D. (2023, November). Analysis of Biodiversity in Banana Plants (Musa paradisiaca L.). In the Proceedings of the National Seminar of Borobudur University, Publication of Research and Community Service Results (Vol. 2, No. 1, pp. 21-31). HUMAIZAH, N. Induction of Callus and Regeneration of Tomato Plants (Lycopersicum esculantum Mill.) Rempai Variety with a Combination of 2, 4-D and BAP Hormones In Vitro. Megasari, R., Harahap, D. E., Syahadat, R. M., Wattimena, S., Angelia, I. O., Prasetyo, A., ... & Hati, R. P. (2023). HORTICULTURE. Malonga, W. A. M., & Sandra, E. (2024). Subculture Techniques in In Vitro Tissue Culture of Ki Aksara Orchid (Macodes petola). Journal of Indonesian Flora and Fauna, 1(1), 15-23. Putra, A., Hayati, E., & Kesumawati, E. (2023). Identification of Qualitative Characters of Several Genotypes of Chili Plants (Capsicum annuum L)

	F4 in the Midland. Agricultural Student Scientific Journal, 8(2), 73-80. Rais, M. I. A. (2023). Morphological Characterization And Yield Of Ten Genotypes Of Large Chili (Capsicum annuum L.) (Doctoral dissertation, UPN Veteran Yogyakarta).
Last date of update	July, 2025

AGT 4110 PLANT GENETIC ENGINEERING

Course Name	Plant genetic engineering
Code	AGT 4110
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Dr. Dolly Sojuangan Siregar, S.P., M.P.
Language	Indonesian or English
Relation to curriculum	Elective course in plant breeding interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The genetic engineering course discusses the history and scope of plant genetic engineering, the role of genetic engineering in the field of agriculture, the stages in plant genetic engineering, genetic material and recombinant DNA technology, cloning vectors, sources of transgenes and transformation techniques, tissue culture techniques, molecular techniques to detect the presence and expression of transgenes, pros and cons of genetic engineering products. genetically modified products. This course is organized in 14 face-to-face meetings, structured assignments, case method, practicum, mid-term and semester exams.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system. • Able to create innovations and contribute in the field of agrotechnology by utilizing science and technology.

Content	1. History, scope and role of genetic engineering in agriculture 2. Stages in plant genetic engineering 3. Genetic material and sources of transgenes 4. Types of Vectors and their Characteristics 5. Plasmid and Plant DNA Isolation Techniques 6. Recombinant DNA Technology: DNA Libraries, Selection and Recombinant Expression 7. Tissue culture techniques in producing transgenic plants 8. Transformation techniques into Plant Genome 9. Molecular Techniques to detect the presence of Transgenes and evaluate Transgene Expression. 10. Pros and cons of genetically modified products
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm Exam (20%) • Final Exam (20%) • Project base learning (30%) • Case methods (15%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Kar,D.K.,Halder, S. (2019). Cell Biology, Genetics and Molecular Biology. New Central Book Agency. Primrose, S.B. and R.M.Twyman. 2006. Principles of Gene Manipulation and Genomics. Blackwell Publishing. Oxford. Allison, L. 2007. Fundamental Molecular Biology. Blackwell Publishing. Oxford. Sing. R.J (2017). Plant Cytogenetics Third Edition, CRC Press Taylor and Francis. New York. USA. Support : Lodish, H., Berk, A., Matsudaira, P., Kaiser, C. A., Krieger, M., Scott, M.P., Zipursky, L., Darnell, J. 2004. Molecular Cell Biology. W.H.

	Yuwono, T. 2006. Bioteknologi Pertanian. UGM Press, Yogyakarta Nasir, M. 2002. Bioteknologi Molekuler Teknik Rekayasa Genetik Tanaman. Citra Aditya Bhakti. Bandung
Last date of update	May 2025

AGT3212 FOOD CROP BREEDING

Course Name	Food Crop Breeding
Code	AGT3212
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Dr. Khairunnisa Lubis, SP. MP.
Language	Indonesian or English
Relation to curriculum	Elective courses in plant breeding interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	
Course Description	The food crop breeding course studies the understanding and objectives of the basic strategies of food crop breeding (Maize, Rice, Tubers and Soybeans) including understanding the differences in self-pollinated and cross-pollinated plant breeding methods in food crops. Knowing the role and function, prospects for food crop development in Indonesia, origin, adaptation, botany, physiology, genetics and cultivation techniques. Understand the role of germplasm, the formation of basic populations and breeding techniques including activities to increase genetic diversity, identification of plants resulting from increased genetic diversity, choosing appropriate selection methods and understanding the activities of forming new superior varieties of rice, corn, rice, soybeans and tubers.
Module objectives/intended learning outcomes	Students are able to explain the basic strategies of food crop breeding including food crops from cereals (rice, corn), legumes (soybeans) and tubers. The Self-study includes the role and function, development prospects in Indonesia, origin and adaptation, botany, physiology, plant genetics, environment and growing conditions and cultivation techniques. Breeding includes increasing genetic diversity,

	identification and selection of breeding materials, selection methods and the formation of new superior varieties.
Content	1. Basic strategies of food crop breeding (Maize, Rice, Tuber and Soybean). Breeding activities in developing the potential of food crops. 2. Maize prospects, origin, genetic diversity and cultivation techniques. 3. Maize genetic diversity improvement (conventional and unconventional) 4. Establishment of basic population, plant identification and selection of Maize plant population (PBL) 5. Establishment of basic population, plant identification and selection of Maize plant population 6. Rice prospects, origin, genetic diversity of rice plants and cultivation techniques (CM) 7. Improvement of genetic diversity of Rice plants (Hybridization, Mutation etc.) 8. Establishment of basic population, plant identification and selection methods for breeding materials and establishment of new high yielding varieties of Rice 9. Prospects for Soybean crops, origin, genetic diversity of Soybean crops and cultivation techniques 10. Increased genetic diversity of Soybean crops 11. Establishment of basic populations, plant identification and selection methods for breeding materials and the establishment of new high-yielding varieties of Soybean 12. Prospects for Umbian plants, origin, genetic diversity of Umbian plants and cultivation techniques 13. Increasing the genetic diversity of Umbian plants, Establishment of basic populations, plant identification and selection methods for breeding materials and the formation of new high-yielding varieties of Umbi- tubers 14. Basic strategies for food crop breeding (Maize, Rice, Tubers and Soybeans). Breeding activities in developing the potential of food crops.
Examination forms	1. Quiz (5%) 2. Assignment (10%) 3. Midterm exam (20%) 4. Final exam (20%)

	3. Projec base learning (30%) 4. Case methods (15%)
Media employed	Power point (LCD), whiteboard, e-learning
Reading list	Main: Allard, R. W. 2005. Principles of Plant Breeding. John Wiley and Sons, New York. Crowder L.V. 1993. Genetika Tumbuhan (terjemahan). Sutarso (ed.). Yogyakarta; Gadjah Mada University Press Jeff L. Bennetzen, Sarah C. Hake. 2009. Handbook of Maize : Genetics and Genomic, Springer. Roy D. 2000. Plant Breeding Analysis and Exploitation of Variation. India: Narosa Publishing House. Syukur M., S. Sujiprihati, R. Yunianti, 2012, Teknik Pemuliaan Tanaman, Penerbit Swadaya, Bogor Sobir, Syukur M. 2015. Genetika Tanaman. IPB Press
Last date of update	July, 2025

AGT3209 INFORMATICS IN PLANT BREEDING

Course Name	Informatics in Plant Breeding
Code	AGT3209
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Prof. Dr. Diana Sofia Hanafiah, SP, MP.,
Language	Indonesian or English
Relation to curriculum	Compulsory courses in plant breeding interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Discusses methods of assembling adaptive and stable superior cultivars effectively and efficiently, including the stages of genetic diversity formation, selection and testing, conservation techniques for breeding germplasm resources, and the use of biotechnology in plant breeding.
Module objectives/intended learning outcomes	• Students are able to apply the theory of plant breeding science • Students are able to apply the theory of agrotechnology in the field of plantation • Students are able to apply research methods in the field of agrotechnology

Content	1. Explain the meaning of informatics techniques in plant breeding 2. Explain the introduction of the Internet of Things in the field of plant breeding 3. Explain epignetic analysis, climate smart crops, understanding environmental stress and the use of related tools. 4. Explain about Multi Omics/Platform System Biology 5. Explain about analyzing and identifying plants on the understanding and use of Machine Learning. 6. Explain about analyzing and identifying plants in the understanding and use of Expert Systems. 7. Explain paper/journal review with Self-study process and presentation in class 8. Explain Artificial Intelligence (AI) in plant breeding 9. Explain the definition and utilization of bioimformatics (CM) 10. Explain bioinformatics applications/software (CM) 11. Explain Genome editing techniques (CM) 12. Explain molecular markers in plant breeding (CM) 13. Explain the use of various software in data analysis (CM) 14. Explain paper/journal review with Self-study process and presentation in class (CM)
Examination forms	• Quiz (5%) • Assignment(10%) • Midterm exam (20%) • Final exam (20%) • 3. Project base learning (30%) • 4. Case methods (15%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Allard, R.W. 2005. Principles of Plant Breeding. John Wiley & Sons, Inc., New York. Falconer, D.S. 1995. Introduction to Quantitative Genetics. Longman, London.

	Syukur M., S. Sujiprihati, R. Yunianti, 2012, Teknik Pemuliaan Tanaman, Penerbit Swadaya, Bogor Support: Naqvi RZ, Siddiqui HA, Mahmood MA, Najeebullah S, Ehsan A, Azhar M, Farooq M, Amin I, Asad S, Mukhtar Z, Mansoor S and Asif M (2022) Smart breeding approaches in post-genomics era for developing climate-resilient food crops. Front. Plant Sci. 13:972164. doi: 10.3389/fpls.2022.972164. Sheikh, M., Iqra, F., Ambreen, H., Pravin, K. A., Ikra, M and Chung, Y. S.2024. Integrating artificial intelligence and high-throughput phenotyping for crop improvement. Journal of Integrative Agriculture, 23(6): 1787–180. https://doi: 10.1016/j.jia.2023.10.019 Tyagi, A., Mir, Z.A., Almalki, M.A., Deshmukh, R., Ali, S. 2024. Genomics-Assisted Breeding: A Powerful Breeding Approach for Improving Plant Growth and Stress Resilience. Agronomy 2024, 14, 1128. https://doi.org/10.3390/ agronomy14061128. Xu, Y., Zhang, X., Li, H., Zheng, H., Zhang, J., Olsen, M., Varshne, R. K., Prasanna, M. B and Qia, Q. 2022. Smart breeding driven by big data, artificial intelligence, and integrated genomic-enviromic prediction. Cell Press Journal. https://doi.org/10.1016/j.molp.2022.09.001.
Last date of update	July, 2025

AGT4116 BIOFERTILIZERS AND THEIR USE

Course Name	Biofertilizers and Their Use
Code	AGT4116
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Prof. Ir. T. Sabrina, M.Agr.Sc., Ph.D.
Language	Indonesian or English
Relation to curriculum	Elective course out of plant breeding Elective course in soil science
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The biofertilizer and its development course studies the concepts, principles, and activities that can be carried out to develop biofertilizers to support sustainable agriculture. The course is organized in 14 face-to-face meetings, structured assignments, case method, project-based learning, and practicum. Evaluation is done by conducting mid and end of semester exams.
Module objectives/intended learning outcomes	• Students are able to apply the theory of plant pests and diseases • Students are able to solve problems in the field of agrotechnology by taking into account environmental factors
Content	1. Concepts and principles of microbes as the fertilizer and energy of the future 2. Concepts and principles of N in soil 3. Principles and concepts of symbiotic and non-symbiotic nitrogen-fixing microbes 4. Application of symbiotic and non-symbiotic nitrogen-fixing microbes (PBL)

	5. Propagation of symbiotic and non-symbiotic nitrogen-fixing microbes 6. Principles and concepts of microbial decomposers 7. Isolation and testing of potential microbial decomposers 8. Principles and concepts of P nutrients in soil 9. Principles and concepts of phosphate-solubilizing bacteria and fungi (CM) 10. Isolation and potential test of phosphate-solubilizing microbes 11. Mycorrhiza principles and concepts 12. Types of mycorrhiza (CM) 13. Concepts, principles, applications and development in agriculture (development of microbes as biofertilizers) 14. Concepts, principles, applications and development in agriculture (development of microbes as biofertilizers)
Examination forms	• Quiz (25%) • Mid Term Exam (20%) • Final Exam (20%) • Project based learning (15%) • Case methods (20%)
Learning Media	Power point (LCD), whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main : Mateusz Mącik, Agata Gryta, Magdalena Frąc. 2020. Biofertilizers in agriculture: An overview on concepts, strategies and effects on soil microorganisms. Elsevier Inc. Ewald Schnug. Luit J. De Kok, 2016. Phosphorus in Agriculture: 100 % Zero. Springer. Microorganisms for Sustainability Deepak G. Panpatte · Yogeshvari K. Jhala. Harsha N. Shelat · Rajababu V. Vyas. 2018. Microorganisms for Green. India

	Mariani Sembiring*, T. Sabrina and Mukhlis. 2020. Phosphate solubilizing microbes and coffee skin compost to increase Robusta coffee plant growth in Andisol of Mount Sinabung Area. Bulgarian Journal of Agricultural Science, 26 (No 4) 2020, 766–771 MARIANI SEMBIRING, T. SABRINA. Diversity of non-symbiotic nitrogen-fixing bacteria and their potential in andisols affected by the eruption of Mount Sinabung, North Sumatra, Indonesia. BIODIVERSITAS ISSN: 1412-033X. Volume 22, Number 8, August 2021. Sembiring, M., Elfi ati, D., Sutarta, E. S., & Sabrina, T. (2017). Phosphate solubilization agents in increasing potatoes production on Andisol Sinabung area. Asian Journal of Plant Sciences,16(3),141-148.
Last date of update	July, 2025

AGT 4106 AGROTECHNOLOGY

Course Name	Agrotechnology
Code	AGT 4106
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Prof. Ir. Edison Purba, Ph.D
Languange	Indonesian or English
Relation to curriculum	Elective course in all interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Agrotechnology courses learn about modern agricultural technology, focusing on innovations to improve productivity, sustainable farming systems and efficiency in agriculture. Topics include precision agriculture, smart farming, advances in biotechnology and sustainable farming systems.
Module objectives/intended learning outcomes	Students are able to explain the scope of agrotechnology and the differences between conventional and modern agricultural systems.
Content	1. Explain the scope scope agrotechnology and the difference between agricultural systems conventional and modern farming systems. 2. Explained modern agriculture smart agriculture efforts to anticipate climate change 3. Explain efficient agribusiness supply chain management 4. Explain the technology-based precision agriculture approach 5. Definition of smart farming, use of IoT and remote sensing principles 6. Definition and challenges of sustainable agriculture and agroforestry systems

	7. Utilization of renewable technology using autonomous tractors and agricultural robots. 8. The role of Biotechnology in sustainable agriculture systems, GMOs technology, genetic engineering and CRISPR 9. Apply the concept of challenges and opportunities of the agricultural sector in the future 10. Explain the utilization of Big Data and agricultural software in supporting sustainable agricultural systems 11. Utilization of remote sensing for plant pest and disease detection 12. Utilization of remote sensing for plant pest and disease detection (continue) 13. Students are able to apply technology utilization through innovation and collaboration for sustainable agricultural systems 14. Students are able to apply technology utilization through innovation and collaboration for sustainable agricultural systems (continue)
Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • Projec base learning (30%) • Case methods (15%)
Learning Media	Power point (LCD), whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Precision Agriculture Technology for Crop Farming by Qin Zhang Smart Agriculture: The Future of Food Production by A. Yousef Biotechnology in Agriculture and Food Processing by Keith W. Waldron
Last date of update	July, 2025

8th Semester

AGT 4201 RESEARCH PROPOSAL SEMINAR

Course Name	Research Proposal Seminar
Code	AGT 4201
Semester (s) in which the module is taught	VIII
Lecturer (Person responsible)	Thesis supervisor
Language	Indonesian or English
Relation to curriculum	Compulsory course
Teaching methods	• Small Group Self-study • Role Play and Simulation • Discovery Learning • Independent Learning • Cooperative Learning • Collaborative Learning • Contextual Learning • Project Based Learning • other equivalent methods
Workload (incl. Contact hours, self-study hours)	Workload for 14 weeks or within 1 semester
Credit points	1 credits (equivalent with 1.6 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses application of agrotechnology theory in the field of plantation, application of research methods in the field of agrotechnology, identifying problems in the field of agrotechnology, applying communication theory in Indonesian, applying communication theory in writing final assignments and scientific publications in the field of agrotechnology
Module objectives/intended learning outcomes	Students able to apply research methods to identify problems in the field of agrotechnology Students able to apply communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations.
Content	1. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 2. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 3. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar

	4. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 5. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 6. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 7. The research method chosen, and write it up in the proposal seminar 8. The research method chosen, and write it up in the proposal seminar 9. The research method chosen, and write it up in the proposal seminar 10. The research method chosen, and write it up in the proposal seminar 11. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 12. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 13. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references 14. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references
Examination forms	• PB = Learning Process, • PT = Structured Assignment, • KM = Independent Activity • PB (30%) • PT (40%) • KM (30%)
Learning Media	Lecture, Reception, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning
Study and examination requirements	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74

	C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Reading material is tailored to the research topic taken
Last date of update	July, 2025

AGT 4202 RESULT SEMINAR

Course Name	Result Seminar
Code	AGT 4202
Semester (s) in which the module is taught	VIII
Lecturer (Person responsible)	Thesis supervisor
Language	Indonesia and English
Relation to curriculum	Compulsory courses
Teaching methods	• Small Group Self-study • Role Play and Simulation • Discovery Learning • Independent Learning • Cooperative Learning • Collaborative Learning • Contextual Learning • Project Based Learning • other equivalent methods
Workload (incl. Contact hours, self-study hours)	Workload for 14 weeks or within 1 semester
Credit points	1 credits (equivalent with 1.6 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses application of agrotechnology theory in the field of plantation, application of research methods in the field of agrotechnology, identifying problems in the field of agrotechnology, applying communication theory in Indonesian, applying communication theory in writing final assignments and scientific publications in the field of agrotechnology
Module objectives/intended learning outcomes	Students able to apply research methods to identify problems in the field of agrotechnology Students able to apply communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations.
Content	1. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 2. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 3. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar

	4. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 5. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 6. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 7. The research method chosen, and write it up in the proposal seminar 8. The research method chosen, and write it up in the proposal seminar 9. The research method chosen, and write it up in the proposal seminar 10. The research method chosen, and write it up in the proposal seminar 11. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 12. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 13. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references 14. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references
Examination forms	• PB = Learning Process, • PT = Structured Assignment, • KM = Independent Activity • PB (30%) • PT (40%) • KM (30%)
Learning Media	Lecture, Reception, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning
Study and examination requirements	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74

	C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Reading material is tailored to the research topic taken
Last date of update	July, 2025

AGT 4203 THESIS

Course Name	Thesis
Code	AGT 4203
Semester (s) in which the module is taught	VIII
Lecturer (Person responsible)	Thesis Suvervisor
Language	Indonesian or English
Relation to curriculum	Compulsory course
Teaching methods	• Small Group Self-study • Role Play and Simulation • Discovery Learning • Independent Learning • Cooperative Learning • Collaborative Learning • Contextual Learning • Project Based Learning • Other equivalent methods
Workload (incl. Contact hours, self-study hours)	Workload for 14 weeks or within 1 semester
Credit points	4 credits (equivalent with 6.4 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses and applies research methods in the field of agrotechnology and identify problems in the field of agrotechnology and can also apply communication theory in Indonesian in writing final assignments and scientific publications in the field of agrotechnology are expected to be able to design innovations in the field of agrotechnology by utilizing science and technology..
Module objectives/intended learning outcomes	Able to apply research methods to identify problems in the field of agrotechnology Able to apply communication theories in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations. Able to develop global insights for character and self-potential in accordance with scientific fields and across disciplines
Content	1. Identify problems in the field of agrotechnology that will be raised as a thesis title 2. Identify problems in the field of agrotechnology that will be raised as a thesis title

	3. Find solutions to the problems that have been selected, and design solutions or innovations to solve these problems. 4. Find solutions to the problems that have been selected, and design solutions or innovations to solve these problems 5. Apply the chosen research method, and observe the results of the experiment. 6. Apply the chosen research method, and observe the results of the experiment. 7. Apply the chosen research method, and observe the results of the experiment. 8. Apply the chosen research method, and observe the results of the experiment. 9. Apply the chosen research method, and observe the results of the experiment. 10. Apply the chosen research method, and observe the results of the experiment. 11. Make a research report (thesis) in accordance with the writing guidelines and the direction of the supervisor. 12. Make a research report (thesis) in accordance with the writing guidelines and the direction of the supervisor. 13. Make a research report (thesis) that is in accordance with the writing guidelines and supported by appropriate references. 14. Make a research report (thesis) that is in accordance with the writing guidelines and supported by appropriate references.
Examination forms	• PB = Learning Process, • PT = Structured Assignment, • KM = Independent Activity • PB (30%) • PT (40%) • KM (30%)
Learning Media	Lecture, Reception, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning
Study and examination requirements	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59

	$E \leq 49$
Reading list	Reading material is tailored to the research topic taken
Last date of update	July, 2025

Soil Science Interests

5th Semester

AGT3114 SOIL GENESIS AND CLASSIFICATION

Course Name	Soil Genesis and Classification
Code	AGT3114
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Dr. Ir. Muchlis, M.Si
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the process of soil formation, including influencing factors such as climate, topography, parent materials, organisms and time. Students will study various types of pedogenesis processes, such as physical and chemical weathering, and the influence of human activities on soil development. The Soil Genesis and Classification course is held in 14 face-to-face meetings, structured assignments, Case Method and Project based learning, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create a sustainable agricultural system. Able to apply research methods to identify problems in the field of agrotechnology.
Content	1. Lecture contract, basic concepts of soil genesis, the relationship of soil genesis with soil classification and land evaluation. 2. the main soil-forming process, transformation of minerals and organic matter, eluviation and iluviation process
	3. Processes of argiluviation, podsolization, laterization, andisolization, paludization, gleysation, calcification,

	sulfidization and sulfurization, salinization, solinization, solodization, pedoturbation 4. Processes of argiluviation, podsolization, laterization, andisolization, paludization, gleysation, calcification, sulfidization and sulfurization, salinization, solinization, solodization, pedoturbation 5. why soils are classified, basic principles of soil classification, uses of soil classification 6. natural & engineering soil classification, Indonesian soil classification system, world soil classification system 7. classification system, difference between mineral soil and organic soil, horizons and characteristic properties, moisture and temperature regimes, identification of soil taxonomic classes 8. observation of soil distribution in the field with a drill, soil profile description 9. basic concepts of soil order, pedogenic process, classification, soil potential 10. taxonomic classification of soils, national soil classification 11. basic concepts of soil order, pedogenic process, classification, soil potential 12. basic concepts of soil, pedogenic process, classification, soil potential 13. Physical analysis parameters, Chemical analysis parameters
Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • Projec base learning (30%) • Case methods (15%)
Learning Media	Power point (LCD), whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Brady, N. C., & Weil, R. R. (2010). The Nature and Properties of Soils (14th ed.). Pearson.

	Buol, S. W., Southard, R. J., Graham, R. C., & McDaniel, P. A. (2011). Soil Genesis and Classification (6th ed.). Wiley-Blackwell. Jenny, H. (1941). Factors of Soil Formation: A Systematic Approach to Pedology. Dover Publications. Lal, R. (2015). "Restoring Soil Quality to Mitigate Soil Degradation." Sustainable Agriculture Reviews, 15, 101-134. Ritchie, J. C., & McCarty, G. W. (2003). "Soil Quality Indicators for Assessing Soil Health." Agronomy Journal, 95(1), 1-9. Schoeneberger, P. J., Wysocki, D. A., Benham, E. C., & Soil Survey Staff. (2012). Field Book for Describing Soils(3rd ed.). USDA Natural Resources Conservation Service. World Reference Base for Soil Resources (WRB). (2014). World Reference Base for Soil Resources 2014: International Soil Classification System for Naming Soils and Creating Legends for Soil Maps. FAO.
Last Update	July, 2025

AGT 3115 SOIL AND WATER CONSERVATION

Course Name	Research Methods
Code	AGT3101
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Ir. Darma Bakti, MS
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The Research Methods course learns about the concepts, principles and stages in research methods, especially in agriculture, both experimental and descriptive research. The research methods course is held in 14 face-to-face meetings, structured assignments, Case Method, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• The ability to apply the theories of agronomy, soil science, plant protection science and plant breeding science for problem solving independently and in groups through active Self-studys in agriculture in an effort to increase productivity and quality of products and create a sustainable agricultural system. • The ability to apply plantation and horticultural problem solving techniques both independently and in groups by taking into account economic, public health and safety, socio-cultural and environmental factors to increase productivity and quality of agricultural products. • Ability to apply the theory of agronomy, soil science, plant protection science and breeding science and plantation management in oil palm, rubber and coffee

	commodities and horticulture to manage natural resources and human resources.
Content	1. Introduction: lecture contract; Science: thinking process and knowledge; theory and facts; values in science; Scientific Method: definition, criteria and steps in the scientific method; scientific and non-scientific approaches 2. Research: definition of research, research chain system, research characteristics, contribution and usefulness of research results; Types of research, 3. Literature Study: Definition, purpose and use, literature study criteria, types of literature studies, how to conduct literature studies 4. Determining the Research Object: Research topic: characteristics of good research topics, considerations for choosing research topics, where research topics are obtained; Problems and Hypotheses: Identifying and Formulating Problems, Formulating and Testing Hypotheses (CM) 5. Research Design: Research planning design, research implementation design 6. Experimental research design 7. Descriptive research implementation design 8. Selecting Variables and Measurement Techniques: Definition of variables, types of variables, methods and measuring instruments, validity of measuring instruments, examples of variables and measurement techniques in research in the field of agricultural science (PBL) 9. Sampling Methods: Purpose and usefulness of the sample. Types of sampling methods Criteria and methods of soil and plant sampling 10. Data analysis and data interpretation in experimental research, conclusions and research implications: Statistical techniques in data analysis: analysis of variance, independent sample t-test, contrast analysis regression and correlation analysis. 11. Data analysis and data interpretation in descriptive research, conclusions and research implications Statistical techniques in descriptive analysis, t test and multivariate analysis 12. Data presentation techniques, reference techniques and bibliography 13. Writing a research report: Systematics of research reports, grammar in scientific writing

	14. Slide making technique and research result presentation technique: Slide making techniques in power point, Presentation structure, and Presentation technique
Examination forms	• Quiz (5%) • Assignment (5%) • Study Case Method (30%) • Mid-terms (30%) • Final Exam (30%)
Learning Media	Power point (LCD), whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main : Mohamad Nazir. 1988. Research Methods. Ghalia Indonesia.Jakarta Suharsimi Arikunto. 2013. Research Procedure: a practical approach. Publisher: Rineka Cipta Aji Sastrosupadi. 2000. Practical experimental design in agriculture. Kanisius Publisher, Yogyakarta Gomez, K.A and A.A Gomez. 1995. Statistical procedures for agricultural research. Second Edition. Translator E.Syamsudin and Justika Baharsyah. University of Indonesia Publisher Uyanto, S. 2009. Guidelines for Data Analysis with SPSS. Graha Ilmu USU Faculty of Agriculture. 2008. Thesis writing guidelines Supporter Up-to-date journals.
Last date of update	July, 2025

AGT3101RESEARCH METHODS

Course Name	Research Methods
Code	AGT3101
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Ir. Darma Bakti, MS
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The Research Methods course learns about the concepts, principles and stages in research methods, especially in agriculture, both experimental and descriptive research. The research methods course is held in 14 face-to-face meetings, structured assignments, Case Method, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• The ability to apply the theories of agronomy, soil science, plant protection science and plant breeding science for problem solving independently and in groups through active Self-studys in agriculture in an effort to increase productivity and quality of products and create a sustainable agricultural system. • The ability to apply plantation and horticultural problem solving techniques both independently and in groups by taking into account economic, public health and safety, socio-cultural and environmental factors to increase productivity and quality of agricultural products. • Ability to apply the theory of agronomy, soil science, plant protection science and breeding science and plantation management in oil palm, rubber and coffee

	commodities and horticulture to manage natural resources and human resources.
Content	1. Introduction: lecture contract; Science: thinking process and knowledge; theory and facts; values in science; Scientific Method: definition, criteria and steps in the scientific method; scientific and non-scientific approaches 2. Research: definition of research, research chain system, research characteristics, contribution and usefulness of research results; Types of research, 3. Literature Study: Definition, purpose and use, literature study criteria, types of literature studies, how to conduct literature studies 4. Determining the Research Object: Research topic: characteristics of good research topics, considerations for choosing research topics, where research topics are obtained; Problems and Hypotheses: Identifying and Formulating Problems, Formulating and Testing Hypotheses (CM) 5. Research Design: Research planning design, research implementation design 6. Experimental research design 7. Descriptive research implementation design 8. Selecting Variables and Measurement Techniques: Definition of variables, types of variables, methods and measuring instruments, validity of measuring instruments, examples of variables and measurement techniques in research in the field of agricultural science (PBL) 9. Sampling Methods: Purpose and usefulness of the sample. Types of sampling methods Criteria and methods of soil and plant sampling 10. Data analysis and data interpretation in experimental research, conclusions and research implications: Statistical techniques in data analysis: analysis of variance, independent sample t-test, contrast analysis regression and correlation analysis. 11. Data analysis and data interpretation in descriptive research, conclusions and research implications Statistical techniques in descriptive analysis, t test and multivariate analysis 12. Data presentation techniques, reference techniques and bibliography 13. Writing a research report: Systematics of research reports, grammar in scientific writing

	14. Slide making technique and research result presentation technique: Slide making techniques in power point, Presentation structure, and Presentation technique
Examination forms	• Quiz (5%) • Assignment (5%) • Study Case Method (30%) • Mid-terms (30%) • Final Exam (30%)
Learning Media	Power point (LCD), whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main : Mohamad Nazir. 1988. Research Methods. Ghalia Indonesia.Jakarta Suharsimi Arikunto. 2013. Research Procedure: a practical approach. Publisher: Rineka Cipta Aji Sastrosupadi. 2000. Practical experimental design in agriculture. Kanisius Publisher, Yogyakarta Gomez, K.A and A.A Gomez. 1995. Statistical procedures for agricultural research. Second Edition. Translator E.Syamsudin and Justika Baharsyah. University of Indonesia Publisher Uyanto, S. 2009. Guidelines for Data Analysis with SPSS. Graha Ilmu USU Faculty of Agriculture. 2008. Thesis writing guidelines Supporter Up-to-date journals.
Last date of update	July, 2025

AGT 3112 SOIL PHYSICS

Course Name	Soil Physics
Code	AGT 3112
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Dr.Kemala Sari Lubis, SP, MP
Language	Indonesian or English
Relation to curriculum	Compulsory Interest Courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Soil Physics course is the study of the physical properties of soil and its interaction with water, air, and organisms. The Soil Physics course is organised in 14 face-to-face meetings, structured assignments, case method and project-based learning, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Students are able to apply soil science theory
Content	1. Lecture contract, Soil Physics as a Branch of Pedology, Soil Physics and its Relationship to Basic and Applied Sciences 2. Soil Physical Properties and Processes in Relation to Agriculture, Engineering and Environmental Quality 3. Soil as a Three-Phase System, Volume and Mass Relationship of Soil Materials 4. Water Properties in Relation to Porous Media 5. Texture, Size, Particle Shape and Surface Specificity of Soil 6. Clay and Colloidal Components
	7. Structure, Soil Aggregation and Aggregate Stability 8. Soil Temperature and Heat Flow

	9. Soil Air and Soil Aeration 10. Penetration Resistance and Soil Consistency 11. Soil Density 12. Water Flow in Saturated Soil 13. Water flow in unsaturated soil 14. Solute transport and retention in soil
Examination forms	• Assigment (5%) • Quiz (5%) • Mid semester Exam (20%) • Final semester Exam (20%) • Projec base learning (25%) • Case methods (25%)
Learning Media	Power point (LCD), whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Baver, L. D., W. H. Gardner and W. R. Gadner, 1972. Soil Physics. John Wiley and Sons. Hillel, L. D. 1982. Fundamental of Soil Physics. Academic Press Inc, Orlando, Florida.463 pages. Khonke, H. 1968. Soil Physics. McGraw Hill Inc, USA.224 pages. Lal, R and Shukla, M.K. 2004. Principle of Soil Pysics. Marcell Dekker Inc, New York-Basel.682 pages. Lubis, K.S. 2015. Pengantar Fisika Tanah. USU Press, Medan. 132 halaman. Shukla,M.K. 2014. Soil Physics An Introduction.CRC Press. New York 443 pages Support : Textbooks and related journals
Last date of update	July, 2025

6th Semester

PNF306 AGROINDUSTRY

Course Name	Agroindustry
Code	PNF306
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Ir. Terip Karo-Karo, MS
Language	Indonesian or English
Relation to curriculum	Courses of interest outside the program study Elective courses in soil science
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	2 credits (equivalent with 3.2 ECTS)
Prerequisite	-
Course Description	The Agroindustry course provides an overview of the agroindustry concept, including the current challenges and opportunities in the agroindustry. Students are provided with an understanding of the potential and development of agroindustry. To this end, students will be given an understanding of the characteristics of agroindustry raw materials, agroindustry production technology, agroindustry processing transformation, and industrial machinery and technology. This course equips students with the ability to manage agroindustry, including raw material management, operational management, human resource management, technology management, marketing management, and agroindustry quality management.
Module objectives/intended learning outcomes	• Able to develop a global perspective for character and self-potential in accordance with the field of science or across disciplines. • Able to build a character with a global perspective in the field of science or across disciplines.
Content	1. Explaining the definition, general overview, and scope of the agroindustry course

	2. Explaining the advantages and disadvantages of agroindustry 3. Explaining agro-industrial development strategies 4. Explaining the rubber agroindustry 5. Explaining agroindustrial regions 6. Explaining the cereal and tuber agroindustry 7. Explaining technological innovations / review 8. Explaining the palm oil agroindustry 9. Explaining the essential oil agroindustry 10. Explaining the sweetener agroindustry 11. Explaining the horticultural and fruit agroindustry 12. Explaining products from the horticultural agroindustry 13. Explaining agroindustry and the scale of agroindustry 14. Explaining agroindustry and the scale of agroindustry
Examination forms	1. Quiz (5%) 2. Assignment (10%) 3. Midterm exam (20%) 4. Final exam (20%) 3. Projec base learning (30%) 4. Case methods (15%)
Learning Media	Power point (LCD), whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Handoko, H. T. 1996. Fundamentals of Production and Operations Management. BPFE. Yogyakarta Santoso, I. 2013. Introduction to Agroindustry. Universitas Brawijaya Press Soekartawi. 2000. Introduction to Agroindustry. Raja Grafindo Persada. Jakarta Mayers, R. 1982. Production and Operation Management. McGraw-Hill. New York Said, E.G and A.H. Intan. 2001. Agribusiness Management. Ghalia Indonesia. Jakarta
Last update of date	July, 2025

AGT 3217 LAND MANAGEMENT

Course Name	Land Management
Code	AGT 3217
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Dr.Ir.Abdul Rauf, MP.
Language	Indonesian or English
Relation to curriculum	Compulsory courses in land management
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Lectures (3 x 50 minutes) per week or 35.00 hours per semester • Self studi: 35 jam • Structured assignment (i.e.: article reading/review and case method): 15.00 hours per semester • Projec base learning : 30 hours per semester • Test: • 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the Boundaries and Scope of Land Management, Issues and basic principles of dry land management, Management of highland dry land (volcanic and non-volcanic), lowland dry land (Ultisol, Inceptisol), issues and basic principles of wetland management, Management of highland and lowland rice fields, management of highland and lowland swamp land, Management of tidal and brackish land, Management of peatland, Reclamation and management of former mining land, Reclamation and management of land contaminated with hazardous waste, Management of karst land (Vertisol) and sandy land (Entisol) as well as spodosol land (Spodosol), Reclamation and management of marginal land (fragile land) and critically eroded land, and Management of sustainable plantation land. 14 face-to-face lectures, structured assignments, Case Method and Project-based learning, practicals, mid-semester exam, and semester exam.
Module objectives/intended learning outcomes	• Capable of applying agrotechnology theory to create sustainable agricultural systems

	• Capable of solving problems in the field of agrotechnology by considering economic factors, public health and safety, socio-cultural aspects, and the environment. • Capable of applying agrotechnology theory in plantation commodity management especially palm oil, rubber, and coffee in the management of natural resources and human resources.
Content	1. Explaining the Boundaries and Scope of Land Management 2. Explaining the issues and basic principles of dry land management 3. Students are able to explain the management of dry land in highlands (volcanic and non-volcanic). 4. Students are able to explain the management of dry land in the highlands lowland (Ultisol, Inceptisol) 5. Explaining the problems and basic principles of wetland management 6. Explaining the management of highland and lowland rice fields 7. Explaining Management of highland and lowland swamp land 8. Explaining the management of tidal land and peatland 9. Explaining Peatland management 10. Explaining reclamation and management of former mining land 11. Explaining the reclamation and management of land contaminated with hazardous waste 12. Explaining the management of karst land (Vertisol) and sandy land (Entisol) as well as spodosol land (Spodosol) 13. Explaining reclamation and management of marginal land (fragile land) and heavily eroded critical land 14. Explaining the management of sustainable plantation land
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Projec base learning (30%) • Case methods (15%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)

Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main : Adimihardja, A, Mappaona, and A. Saleh, 2002. Technology for Managing Dry Land. Towards Productive and Environmentally Friendly Agriculture. Agricultural Research and Development Center and Agroclimate. BPPP Deptan. Bogor. Agus, F and Widianto, 2004. Practical Guidelines for Soil Conservation in Dryland Agriculture. World Agroforestry Center. Bogor Blanco, H and R. Lal, 2008. Prinsip-prinsip Konservasi dan Pengelolaan Tanah. Springer. Didi Ardi, et al. 2006. Characteristics and management of swamp land. Agricultural Land Resource Research and Development Institute, Ministry of Agriculture. Bogor. The World Bank. 2006. Pengelolaan Lahan Berkelanjutan. Bank Internasional untuk Rekonstruksi dan Pembangunan/Bank Dunia. Washington. Tim Pusat Penelitian Tanah dan Agroklimat, 2000. Indonesia's Land Resources and Their Management. Puslittan and agroclimate BPPP Deptan. Bogor.
Last update of date	July, 2025

AGR 1206 AGRIBUSINESS SYSTEMS AND ENTERPRISES

Course Name	Agribusiness Systems and Enterprises
Code	AGR 1206
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Ir. Thomson Sebayang MT
Language	Indonesian or English
Relation to curriculum	Course of interest Elective course in agribusiness system and enterprises
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course studies the concepts, scope, and performance analysis of agribusiness systems; as well as the application of the agribusiness system framework to a wide range of agricultural commodities (agriculture, fisheries, livestock, plantations, and forestry) sustainably within the scope of companies, regions, and nationally.
Module objectives/intended learning outcomes	Able to apply the concepts, scope, and performance analysis of agribusiness systems and the implementation of agribusiness system frameworks across a wide range of agricultural commodities sustainably at the company, regional, and national levels.
Content	1. Understanding and able to explain about the definition and scope of agribusiness both as a business and as a system

	2. Understanding and able to explain the role of the Agro-Input subsystem in the complex agribusiness system of agricultural commodities in general 3. Understanding and able to explain the role of the Agro-Production subsystem in the complex 4. agribusiness system for agricultural commodities in general 5. Understanding and able to explain the role of the Agro-Industry subsystem in the complex agribusiness system for agricultural commodities in general 6. Understanding and able to explain the role of the Agro-Marketing subsystem in the complex agribusiness system for agricultural commodities in general 7. Understanding and able to explain the role of the Agro-Supporting subsystem in the complex agribusiness system for agricultural commodities in general 8. Understanding and able to explain and correlate the patterns and models of Cooperation in complex agribusiness systems from the perspectives of Vertical Backward, Vertical Forward, and Horizontal Linkage 9. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading horticultural, food, and secondary agricultural commodities 10. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading plantation agricultural commodities 11. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading plantation agricultural commodities 12. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading livestock and fishery commodities 13. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading livestock and fishery commodities
	14. Understanding and able to explain and correlate business performance and agribusiness systems as

	drivers of development that support sustainable development 15. Understanding and able to explain and correlate business performance and agribusiness systems as drivers of development that support sustainable development
Examination forms	• Quiz (15 %) • Assignment (15%) • Design assignment (15%) • Book Review/ Midterm Exam (Individual) (20%) • 5. Final Semester Exam (35%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main : Barnard, F., Akridge, J., Dooley, F dan Foltz, J. 2012. Agribusiness Management. Fourth Edition. US:Routledge.Asie, E. R. (2023). Vegetable Crop Production Technology. Publisher P4I
Last update of date	July, 2025

AGT 3208 SUSTAINABLE AGRICULTURE SYSTEM

Course Name	Sustainable Agriculture System
Code	AGT 3208
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Chairani Hanum
Language	Indonesia and English
Relation to curriculum	Elective courses in sustainable agriculture system
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minit) per minggu atau 28 jam per semester • Self-study : (2 x 60 minit) per minggu atau 28 jam per semester • Test: • 60 minutes x 2 times = 120 minutes = 2 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Description	This course discusses the scope of sustainable agriculture; Integrated Crop Management includes integrated soil management, integrated pest and disease management, environmental management (ecosystems and agroecosystems); Principles of Sustainable agriculture; Bionergy development and its principles; Market development in sustainable agricultural systems. The sustainable agriculture system course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• Students are able to apply agrotechnology theory to create sustainable agricultural systems. • Students are able to solve problems in the field of agrotechnology by paying attention to economic, public health and safety, socio-cultural and environmental factors. • Students are able to develop global insights for character and self-potential in accordance with scientific fields and across disciplines.

Content	1. Explanation and scope of sustainable integrated farming systems 2. The concept of sustainable agriculture 3. Organic Agriculture 4. Plant breeding and biodiversity 5. Agricultural production in Indonesia and food and energy needs 6. Natural resource management 7. Waste management/recycling 8. Agroecology Plant diseases 9. Concepts of controlling crop pests, diseases and weeds 10. Farming community development 11. Sustainable Agriculture Technology towards Precision agriculture 12. Economic indicators 13. Policies and economic aspects 14. Case studies and field projects
Examination forms	1. Quiz (5%) 2. Assignmant (10%) 3. Ujian Mid semester (20%) 4. Ujian akhir semester (20%) 3. Projec base learning (30%) 4. Case methods (15%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main : Firnia, D., Lahati, B. K., Kusumawati, A., Darma, W. A., Umam, C., Jihad, M., ... & Dahliana, B. 2023. Sistem Pertanian Berkelanjutan. Penerbit Tahta Media. Agustina, L. 2011. Teknologi Hijau dalam Pertanian Organik Menuju Pertanian Berkelanjutan. Universitas Brawijaya Press. Miarso, M. 2023. Penerapan Sistem Pertanian Berkelanjutan Dalam Mendukung Produksi

	Pertanian. AGRONIMAL: Jurnal Ilmiah Pertanian dan Peternakan, 1(1), 23-26. Support: Efendi, E. 2016. Implementasi sistem pertanian berkelanjutan dalam mendukung produksi pertanian. Warta Dharmawangsa, (47). Ma'ruf, A. 2017. Agrosilvopastura sebagai sistem pertanian terencana menuju pertanian berkelanjutan. Bernas: Jurnal Penelitian Pertanian, 13(1), 81-90. Rachma, N., & Umam, A. S. 2021. Pertanian organik sebagai solusi pertanian berkelanjutan di Era New Normal. Jurnal Pembelajaran Pemberdayaan Masyarakat (JP2M), 1(4), 328-338. Puspitasari, R. D. 2020. Pertanian berkelanjutan berbasis revolusi industri 4.0. Jurnal Layanan Masyarakat (Journal of Public Services), 3(1), 26. Yulianto, K. 2016. Agroekologi: Model pertanian berkelanjutan masa depan. Jurnal Tambora, 1(3). Hidayati, F., Yonariza, Y., Nofialdi, N., & Yuzaria, D. 2019. Intensifikasi lahan melalui sistem pertanian terpadu: Sebuah tinjauan. In Unri Conference Series: Agriculture and Food Security (Vol. 1, pp. 113-119). Ningsih, F., & Syaf, S. 2015. Faktor-faktor yang menentukan keterlibatan pemuda pedesaan pada kegiatan pertanian berkelanjutan. Jurnal Penyuluhan, 11(1).
Last date of update	July, 2025

TEP 2216 MACHINERY AND EQUIPMENT

Course Name	Machinery and Equipment
Code	TEP 2216
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Taufik Rizaldi
Language	Indonesian or English
Relation to curriculum	Elective courses outside the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minit) per minggu atau 28 jam per semester • Self-study : (2 x 60 minit) per minggu atau 28 jam per semester • Test: • 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Description	This course explains the scope of machinery and equipment, the definition of agricultural mechanization; explains the sources of agricultural power, motor baker, power and efficiency of motor baker; tillage tools / machines; planting tools / machines; plant care tools / machines; harvesting tools / machines. The machinery and equipment course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams..
Module objectives/intended learning outcomes	Students are able to develop global insights for character and potential in accordance with scientific fields and across disciplines.
Content	1. Scope of the subject of machinery and equipment, Definition of mechanization as understood by mechanization experts in Indonesia 2. Types of labor available in agriculture 3. Difference between gasoline motor and diesel motor 4. Power and efficiency of combustion motors 5. Classification of tractors and auxiliary equipment on tractors

	6. Types of tillage tools I and II 7. How to calculate work capacity in tillage, How to calculate labor requirements in tillage 8. How to calculate equipment unit requirements in tillage 9. Types of tools that can be used for plant cultivation 10. Types of tools that can be used for plant maintenance 11. Ways to calculate work capacity in seed planting and calculate the amount of equipment Compulsory 12. Types of tools that can be used for harvesting 13. How to calculate work capacity in crop harvesting with mechanized tools 14. Selection of agricultural machinery
Examination forms	• Quiz (10%) • Assignment (20%) • Midterm Exam (35%) • Final Exam (35%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main : Nainggolan, T. 2004. Mekanisasi Pertanian. Prabowo, A. (2013). Kebijakan antisipatif pengembangan mekanisasi pertanian. Analisis Kebijakan Pertanian, 11(1), 27-44. Santoso, D. 2023. Transformasi dan Pengembangan Mekanisasi Pertanian di Kawasan Perbatasan. Sekunder: Priyanto, A. 1997. Penerapan mekanisasi pertanian. Jurnal Keteknikan Pertanian, 11(1). Djamhari, S. 2009. Kajian Penerapan Mekanisasi Pertanian di Lahan Rawa Lebak Desa Putak-Muara Enim. Jurnal sains dan teknologi Indonesia, 11(3). Humam, A., Mutia Sani, A., Reziati, E., Hurul Islami, F., Laelastuti, F., & Heryani, I. 2018. Efek Ekonomis

	dari Mekanisasi Pertanian di Wilayah Gedebage aliran sungai Cinambo. Ratnawati, C. 2020. Mekanisasi Usahatani Padi Di Kecamatan Sananwetan Kota Blitar. Manajemen Agribisnis: Jurnal Agribisnis, 20(1), 1-13. Erniati, E., Solahudin, M., Lulung, P., & Wardani, I. K. 2020. Aplikasi Metode Analisis Swot untuk Merumuskan Strategi Pemanfaatan Mekanisasi Pertanian di Kabupaten Kapuas Hulu Provinsi Kalimantan Barat. Jurnal Ilmiah Rekayasa Pertanian dan Biosistem, 8(2), 219-229. Jiwantoro, A., Argo, B. D., & Nugroho, W. A. 2013. Analisis Efektivitas Mesin Penggiling Tebu dengan Penerapan Total Productive Maintenance (In Press, JKPTB Vol 1 No 2). Jurnal Keteknikan Pertanian Tropis dan Biosistem, 1(2). Sugandi, W. K., Yusuf, A., & Saukat, M. 2016. Rancang Bangun Dan Uji Kinerja Mesin Pencacah Rumput Gajah Untuk Pakan Ternak Dengan Menggunakan Pisau Tipe Reel (Construction Design and Test Performance of Elephant Grass for Cattle Feed using Reel Type Knife): Construction Design and Test Performance of Elephant Grass Cutting Machine for Cattle Feed using Reel Type Knife. Jurnal Ilmiah Rekayasa Pertanian dan Biosistem, 4(1), 200-206.
Last date of Update	July, 2025

AGT 3204 FIELD WORK PRACTICES

Course Name	Field Work Practices
Code	AGT 3204
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Nini Rahmawati, SP., M.Si
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Doing work practices in companies / agencies / business units engaged in agrotechnology. This course teaches about ageotechnology insights: work culture, discipline towards rules and time, work creativity, work motivation, accuracy and thoroughness of work, organizational observation and management observation, productive activities; introduction to production and production machines, production stages and production activities, communication; observation of the communication process, appreciation of the communication process. cooperation, observation of the process of cooperation in the industry, cooperation with workers, supervisors and superiors, planned meetings.
Module objectives/intended learning outcomes	Able to internalize the BINTANG values in developing their ability as a lifelong learner in the field of agrotechnology
Content	1. research methods to identify problems in the field of agrotechnology 2. research methods to identify problems in the field of agrotechnology 3. communication theory in the application of information technology and publications in the field of

	agrotechnology both orally and in writing, in academic and non-academic situations. agrotechnology both orally and in writing, in academic and non-academic situations. 4. global insights for character and self-potential in accordance with scientific and cross-disciplinary fields 5. implementing learning in community groups 6. solve problems in the field of agrotechnology by taking into account environmental factors 7. solve problems in the field of agrotechnology by taking into account environmental factors 8. managing natural resources, especially in the field of plantations 9. managing human resources, especially in the field of plantation 10. apply communication theory in Indonesian 11. apply global insights in various aspects of life within the scope of monodisciplines and interdisciplines scope of monodisciplines and interdisciplines 12. apply global insights in various aspects of life within the scope of monodisciplines and interdisciplines scope of monodisciplines and interdisciplines 13. building global-minded characters in scientific and cross-disciplinary fields 14. building global-minded characters in scientific and cross-disciplinary fields
Examination forms	• Quiz (7%) • Assignment (5%) • Practical works (28%) • Final report (25%) • Final examination (seminar) (10%) • Video project (25%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading

	ARIFIN, Muhammad. Analisa dan perancangan sistem informasi praktek kerja lapangan pada instansi/perusahaan. Simetris: Jurnal Teknik Mesin, Elektro dan Ilmu Komputer, 2014, 5.1: 49-56. NOVIANTI, Novianti; QASHLIM, A. Akhmad; KAHPI, Ashabul. Sistem Informasi Pendataan dan Penilaian PKL (Praktek Kerja Lapangan) Mahasiswa Berbasis Web. Journal Peqguruang, 2021, 3.2: 579-583. PRIYANTO, Priyanto, et al. PENGARUH PERSEPSI TERHADAP KESIAPAN KERJA MELALUI KEPUASAN PRAKTEK KERJA LAPANGAN MAHASISWA PERGURUAN TINGGI VOKASI PARIWISATA. Jurnal Kepariwisataan, 2023, 22.1: 97-108.
Last date of update	July, 2025

AGT3215 SOIL SURVEY AND LAND EVALUATION

Course Name	Soil Survey and Land Evaluation
Code	AGT3215
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Ir. Zulkifli Nasution, MSc., PhD.
Language	Indonesian or English
Relation to curriculum	Compulsory interest courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The soil survey and land evaluation course learns about the basics of conducting soil surveys, land evaluation, classification of soil fertility capability, land capability and suitability classes, and their management actions. The course is organized in 14 face-to-face meetings, structured assignments, case method, project-based learning, and practicum. Evaluation is carried out by conducting mid and final semester exams.
Module objectives/intended learning outcomes	Able to apply research methods to identify problems in the field of agrotechnology Students are able to apply soil science theory Students are able to identify problems in the field of agrotechnology
Content	1. Explain the scope and history of land surveying. 2. Explain the use of land maps. 3. Explain about the description and types of land surveying. 4. Explain the principles and methods of land surveying. 5. Explain about pre-survey activities and when conducting land surveys. 6. Explain about post land survey activities.

	7. Explain the use of geographic information systems for land surveying activities. 8. Explain about the differences, quality and characteristics of land. 9. Explain about land evaluation principles 10. Explain about land evaluation methods. 11. Explain about land capability class. 12. Explain about the classification of soil fertility capability. 13. Explain about physical land suitability class 14. Determine about economic land suitability class
Examination forms	1. Quiz (5%) 2. Assignment (10%) 3. Ujian Mid semester (20%) 4. Ujian akhir semester (20%) 3. Projec base learning (30%) 4. Case methods (15%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Soil Science Division Staff. 2017. Soil survey manual. C. Ditzler, K. Scheffe, and H.C. Monger (eds.). USDA Handbook 18. Government Printing Office, Washington, D.C. Guidelines for Surveying Soil and Land Resources.2008. NJ McKenzie, MJ Grundy, R Webster, AJ Ringrose-Voase. 2008. CSIRO PUBLISHING. The Soil Survey Manual. 2008. The Soil Survey Division Staff. Bureau of Soils and Water Management Technical Publication no 2. Land Evaluation. Part 1: Principles in land evaluation and crop production calculations. 1991 a . Sys, C., Van Ranst, E., Debaveye, J. General Administration for Development Cooperation (GADC), Agricultural Publications No 7. Brussels, Belgium. 274p

	Land Evaluation. Part 2: Methods in land evaluation.1991 b. Sys, C., Van Ranst, E., Debaveye, J. General Administration for Development Cooperation (GADC), Agricultural Publications No 7. Brussels, Belgium. 247p. FAO, 1976. A framework for land evaluation system. Soil Bulletin No. 32, Food and Agriculture Organization, Rome, Italy. 72p. Petunjuk Teknis Evaluasi Lahan Untuk Komoditas Pertanian. 2011. Djaenudin, D., Marwan, H., Subagjo, H., dan A. Hidayat. Balai Besar Litbang Sumberdaya Lahan Pertanian, Badan Litbang Pertanian, Bogor. 36p
Last date of update	July, 2025

AGT3229 PLANT CLINIC

Course Name	Plant Clinic
Code	AGT3229
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Irda Safni SP., MCP, Ph.D
Language	Indonesian or English
Relation to curriculum	Compulsory course within interests in plant protection Elective courses outside of interests in soil science
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course explains investigation and diagnosis in a plant health problem and also as a forum for distributing information about its control. The plant clinic also learns the role and function of connecting farmers with experts in their fields in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• Students are able to apply the theory of plant pests and diseases • Students are able to solve problems in the field of agrotechnology by taking into account environmental factors • Students are able to identify problems in the field of agrotechnology
Content	1. Explain and understand the meaning, purpose, and symptoms of damage caused by plant pests
	2. Explain and differentiate the symptoms caused by plant pests (PBL) 3. Explain and distinguish symptoms caused by plant pests (continued) (CM)

	4. Explain the symptoms of damage due to abiotic factors (CM) 5. Explain the symptoms of damage due to soil nutrient deficiency and excess 6. Explain the symptoms of damage due to soil nutrient deficiency and excess (continued) 7. Explain how to nourish the soil 8. Explain the symptoms of plant damage caused by nematodes (PBL) 9. Explain the symptoms of plant damage due to nematodes (continued) (PBL) 10. Explain the symptoms of plant damage caused by fungi 11. Explain the symptoms of plant damage caused by fungi (continued) (PBL) 12. Explain the symptoms of plant damage due to viruses (PBL) 13. Explain the symptoms of plant damage due to bacteria 14. Explain the symptoms of damage caused by nematodes, fungi, viruses and bacteria and how to diagnose them (review) (CM)
Examination forms	1. Quiz (20%) 2. Final Exam (20%) 3. Project base learning (35%) 4. Case methods (25%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main : Habazar, T., Yanti, Y., dan Nasrun. 2015. Bakteriologi Tumbuhan. Bahan Ajar. Minangkabau Press. Hadiastono, T. Virologi Tumbuhan: Identifikasi dan Diagnosis Virus Tumbuhan. Universitas Brawijaya Press. Kelly, P. 2008. Global Plant Clinic: Getting better all the time, farmers and plant doctors talk about their work and plant health problems in Bangladesh

	Kumar, S., 2020. Abiotic stresses and their effects on plant growth, yield and nutritional quality of agricultural produce. Int. J. Food Sci. Agric, 4, pp.367-378. Rajkumar, R. and Anabel, N.J., 2018. Role of Plant Clinics in addressing pest and disease management. CSI Transactions on ICT, 6, pp.279-288. Raskin, I., Ribnicky, D.M., Komarnytsky, S., Ilic, N., Poulev, A., Borisjuk, N., Brinker, A., Moreno, D.A., Ripoll, C., Yakoby, N. and O'Neal, J.M., 2002. Plants and human health in the twenty-first century. TRENDS in Biotechnology, 20(12), pp.522-531. Srivastava, M.P., 2013. Plant clinic towards plant health and food security. International Journal of Phytopathology, 2(3), pp.193-203. Taylor, P. 2015 Plantwise Diagnostic Field Guide. CABI UK Yadav, S., Modi, P., Dave, A., Vijapura, A., Patel, D. and Patel, M., 2020. Effect of abiotic stress on crops. Sustainable crop production, 3
Last date of update	July, 2025

AGT3222 ORGANIC FARMING

Course Name	Organic Farming
Code	AGT3222
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Ir. T. Sabrina M.Agr.Sc., Ph.D
Language	Indonesian or English
Relation to curriculum	Elective course of agronomy, plant breeding and plant protection Elective course in soil science
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course explains organic agriculture, ecological principles, roles and objectives of organic agriculture, organic fertilizers, soil biota and soil management for organic agriculture, the role of biofertilizers in supporting organic agriculture, organic pest and disease and weed control, the advantages of organic agricultural products, organic agricultural production and management aspects, the study of social, cultural and economic aspects of organic agriculture, the development of organic agriculture in Asia and Australia, standardization, quality assurance and certification of organic agricultural products, policies and regulations in marketing organic agricultural products and the development of organic agriculture in Africa.
Module objectives/intended learning outcomes	• Students are able to apply the theory of the basic principles of sustainable agricultural systems • Students are able to solve problems in the field of agrotechnology by taking into account environmental factors

	• Students are able to identify problems in the field of agrotechnology • Students are able to design innovations in the field of agrotechnology by utilizing science and technology
Content	1. Definitions of organic and natural farming, ecological principles of organic farming, roles and objectives of organic farming as well as concepts and strategies for achieving them in terms of management and practices 2. Potential and application of organic fertilizer in supporting agriculture 3. Function and role of soil biota and soil management for organic farming 4. Opportunities, utilization and barriers as well as the successful use of biofertilizers in supporting organic farming (CM) 5. Introduction of pesticide production systems and organic farming as well as the scope of biological control and its problems in organic farming (CM) 6. Development and progress of organic farming around the world (CM) 7. Advantages of organic agricultural products from all aspects (CM) 8. Organic agricultural production and management aspects 9. Social, cultural and economic aspects of organic farming 10. Development of organic farming in Asia 11. The development of organic farming in Australia 12. A study of the social, cultural and economic aspects of organic farming (PBL) 13. Standardization, quality assurance and certification/legislation organic agricultural products (PBL) 14. Policies and regulations in marketing organic agricultural products (PBL)
Examination forms	1. Quiz (5%) 2. Mid Term Examination (15%) 3. Final Examination (20%) 4. Project based learning (30%) 5. Case methods (30%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79

	B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main : Altieri, M. A. (2012). Agroecology: The Science of Sustainable Agriculture. CRC Press. Benbrook, C. M. (2012). Organic farming and the future of agriculture: A review. Agronomy for Sustainable Development, 32(1), 83-93. Food and Agriculture Organization (FAO). (2018). The State of Food and Agriculture 2018: Leveraging Food Systems for Inclusive Rural Transformation. FAO. Lampkin, N., & Padel, S. (1994). The Economics of Organic Farming: An International Perspective. CAB International. Reganold, J. P., & Wachter, J. M. (2016). Organic Farming in the Twenty-First Century. Nature Plants, 2(2), 15221. Hole, D. G., et al. (2005). Does organic farming benefit biodiversity?. Biological Conservation, 122(1), 113-130. Smith, L. (2020). The Role of Organic Farming in Sustainable Agriculture. Journal of Sustainable Agriculture, 42(3), 145-162.
Last date of update	July, 2025

AGT3216 GEOGRAPHIC INFORMATION SYSTEM

Course Name	Geographic Information System
Code	AGT3216
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Ir. Zulkifli Nasution, M.Sc., Ph.D
Language	Indonesian or English
Relation to curriculum	Compulsory courses in soil science
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course will discuss, explain and work on the concepts and definitions of Geographic Information Systems, determine / organize spatial-based data, process and display spatial data in GIS format.
Module objectives/intended learning outcomes	• Students are able to apply soil science theory • Students are able to apply agrotechnology theory in the field of plantations • Students are able to design innovations in the field of agrotechnology by utilizing science and technology
Content	1. Definition and scope of SGI, history and development of SGI 2. SGI Components 3. SGI data source 4. Projection system (PBL) 5. Spatial data model (PBL) 6. Software SGI 7. SGI work stages (PBL) 8. Remote sensing 9. SGI data analysis (PBL) 10. Vector data analysis (PBL) 11. Raster data analysis (PBL)

	12. Various examples of SGI utilization in agriculture (PBL) 13. Various examples of SGI utilization in the field of natural resources (PBL) 14. SGI website (CM)
Examination forms	1. Quiz (5%) 2. Mid Term Examination (30%) 3. Final Examination (30%) 4. Project based learning (15%) 5. Case methods (20%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main : Chang, Kang-Tsung. 2016. Introduction to geographic information systems. University of Idaho.Eighth edition Konecny G. 2014. Geoinformation : Remote Sensing, Photogrammetry, and Geographic Information Systems. CRC Press. Sulistianto. 2021. Sistem Informasi Geografis Teori dan Praktek dengan Quantum GIS. Penerbit Ahlimedia Malang Zia Uddin Ahmed, Timothy J. Krupnik and Mustafa Kamal. 2018. Introduction to basic GIS and spatial analysis using QGIS: Applications in Bangladesh. International Maize and Wheat Improvement Center (CIMMYT) Bangladesh
Last date of update	July, 2025

7th Semester

HPT 3210 BENEFICIAL INSECT

Course Name	BENEFICIAL INSECT
Code	HPT 3210
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Ameilia Zulyanti Siregar, M.Sc, Ph.D
Language	Indonesian or English
Relation to curriculum	Elective course in plant protection interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course provides knowledge about the scope, benefits, characteristics of beneficial insects, classifying beneficial insects, and the ability to breed insects as livestock with the aim of producing commodities such as silk, honey, lac, and tea, which are used as food and feed, as well as detecting insects as indicators of pollution.
Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create sustainable agricultural systems. • Able to implement research methods to identify problems in the field of agrotechnology.

Content	15. Explaining the scope of Useful Insect Science (UIS) and its benefits in life 16. Describing and explaining the utilization of insects in human life 17. Describing and explaining entomopathogens and their bioecology 18. Describing and explaining the biology of honey bees 19. Describing and explaining honey bee farming 20. Describing and explaining the biology of crickets 21. Describe the dynamics of Describing and explaining the biology of silkworms 22. Describing and explaining the precise processing of insects 23. Describing and explaining the biology of dragonflies 24. Describing and explaining dragonfly rearing 25. Describing and explaining the processing of insects as a source of food 26. Describing and explaining the processing of insects as a source of medicine 27. Describing and explaining the processing of insects as cosmetic tools 28. Describing and explaining insects as indicators of pollution
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Adihendro. 1999. The Secret to Breeding Crickets. Ardy Agensy, Jakarta. pp. 1-69.

	Ameilia Z.S. 2009. Beneficial Agricultural Insects. USU Press, Medan. 183 pages. Arnett Russ, HJR., Richard L., & Jacques, JR. 1981. Guía de Insectos. Nueva York, Simon and Schuster Inc, 68p. Bambang, AM. 1991. Keeping Honey Bees. Kanisius. Jakarta. 63 pages. Christian, W y G. Gottsberger. 2000. La diversidad en la polinización de cultivos. Crop Science 40 (5): 1209-1222. Driesche, R.GV y Bellows, Jr TS. 1996. Control Biológico. Chapman and Hall, Boston-Amerika. Kalshoven, LGE. 1981. Hama Tanaman di Indonesia. Revisado y traducido por van Derlaan. Ikhnar Baru, Jakarta. 386-397p. Kusumah, E. 1994. Economic Impact of the Implementation of the PHT Concept on Highland Vegetable Farmers. Workshop on the Socio-Economic Impact of the PHT Program. Center for Agricultural Socio-Economic Research. Bogor, March 7-9, 1994. 10 pages. Paimin, F., B. Pudjiastuti, and Erniwati. 1999a. Success in Cricket Farming. Penebar Swadaya Jakarta. pp. 1-65 Nazaruddin. 1993. Silkworm Cultivation. pp. 30-40. Paimin, FB. 1999b. Successfully Overcoming Problems in Cricket Farming. Penebar Swadaya Jakarta. pp. 1-72. Rismunandar. 1981. Bees: Versatile Insects. CV Masa Baru. Jakarta. Pages 13-20. Sumopratowo, CDA and RA Suprapto. 1978. Beekeeping. Kanisius, Jakarta. Siregar, AZ. 2001. Silkworm Farming. Iptek Waspada. Wednesday, December 5, 2001. Siregar, AZ. 2009. Dragonfly Predator in Agriculture. USU Press, Medan Siregar, A. Z., Che Salmah Md. Rawi, and Zulkifli Nasution. 2009. Un estudio de odonatos en un campo de arroz de montaña en Manik Rambung, Siantar, al norte de Sumatra. Kultivar Journal 1 (3): 21-30. Taufik, RMS. 1991. Raising Silk-producing Caterpillars. Suara Karya. February 19, 1991.
Last date of update	July, 2025

AGT4115 WATERSHED MANAGEMENT

Course Name	Watershed Management
Code	AGT4115
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Prof. Dr. Ir. Abdul Rauf, MP.
Language	Indonesian or English
Relation to curriculum	Elective course in soil science interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Land management courses learn about the concepts and principles of land management. The Land Management course is held in 14 face-to-face meetings, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	• After completing the 7th semester watershed management course, Agrotechnology Study Program, Faculty of Agriculture, University of North Sumatra, students are expected to be able to apply soil science theory. • After completing the 7th semester watershed management course, Agrotechnology Study Program, Faculty of Agriculture, University of North Sumatra, students are expected to be able to apply the theory of the basic principles of sustainable agricultural systems. • After completing the watershed management course, 7th semester students, Agrotechnology Study Program, Faculty of Agriculture,

	University of North Sumatra are expected to be able to solve problems in the field of agrotechnology by taking into account environmental factors. • After completing the watershed management course, 7th semester students, Agrotechnology Study Program, Faculty of Agriculture, University of North Sumatra are expected to be able to apply research methods in the field of agrotechnology. • After completing the watershed management course, 7th semester students, Agrotechnology Study Program, Faculty of Agriculture, University of North Sumatra are expected to be able to identify problems in the field of agrotechnology.

Content	1. Lecture Contract, Limitation/definition of watershed ecosystem; Sub-watershed and Sub-sub-watershed; Hydrological system in the watershed ecosystem Watershed; Watershed Concept versus Regional Concept Administrative System division and types of watersheds 2. Watershed components; Biotic components (vegetation, organisms, animals, humans); Abiotic components (springs, rivers, streams, climatic elements, water systems); Interactions between watershed components; Watershed patterns based on rainfall distribution and surface runoff; Nature and characteristics of watersheds (upstream, middle, downstream). 3. Processes in a watershed ecosystem; Soil infiltration; Surface runoff; Percolation; Soil water holding capacity; Evaporation-transpiration; Interception, Erosion and sedimentation in a watershed 4. Processes in a watershed ecosystem; Soil infiltration; Surface runoff; Percolation; Soil water holding capacity; Evaporation-transpiration; Interception, Erosion and sedimentation in a watershed 5. Drainage patterns in watershed ecosystems; Drainage density; Sub-watershed order; Stream flow classification 6. Characteristics of watershed stability and damage; Factors driving watershed stability; Factors causing watershed damage; Balance of subsystems in watersheds 7. Steps for assessment/identification of watershed stability/damage; Identification and inventory survey of natural resources; Analysis of water potential and quality; Analysis of erosion and sedimentation; Evaluation of human/mechanized activities in land use/clearing in the watershed ecosystem.

	8. Watershed management as a regional development planning system; Steps and elements in watershed management 9. Watershed management in the concept of multipurpose (socio-cultural and economic); Economic analysis of watersheds; Spatial distribution of community income in watersheds; Integrated management in watershed areas 10. Related policies in watershed management; Institutions and institutions of watershed management (formal and non-formal); Watershed Management Program by the Government 11. Concept of spatial planning and commodity regionalization; Land Resource Empowerment based on land capability classification. 12. Environmentally sound project (development); Watershed ecosystem as monitoring unit 13. evaluation of the implementation of environmentally sound projects/development; Watershed Protection and Rehabilitation; Watershed linkages with the preservation of biological resources (Flora and Fauna). 14. Watershed management in the prevention of land degradation (Erosion, landslides and floods); Watershed management in relation to biodiversity; Watershed management in relation to groundwater reserves; Watershed management in relation to consumptive water reserves (industrial and household).

Examination forms	Case method 20% Project base learning 30% Assignment 5% Quiz 5% Midterm exam 20% Final Exam 20%
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Arsyad, S. 2000. Konservasi Tanah dan Air. Cetakan ke 3. IPB Press, Bogor Balai Penelitian Tanah. 2003. Petunjuk Teknis Evaluasi Lahan untuk Komoditas Pertanian. PUSLITANAK Bogor. Datta, R and R.S. Meena (Ed). 2021. Soil Carbon Stabilization to Mitigate Climate Change. Springer Nature Singapore Pte Ltd. Lal, R. 1995. Sustainable Management of Soil Resources in the Humid Tropics. United Nation University Press, Tokyo. Lal, R (Editor), 2000, Integrated watershed management in the global ecosystem, CRC Press LLC Morgan, R.P.C. 2005. Soil Erosion and Conservation. 3rd Ed. Blackwell Publishing Ltd. Paimin, Irfan B,P., Purwanto, dan Dewi R.I., 2012. Sistem Perencanaan Pengelolaan Daerah Aliran Sungai. Pusat Penelitian dan Pengembangan Konservasi dan Rehabilitasi (P3KR). Bogor Rauf, A. 2009. Profil Arboretum USU (2006-2008). USU Press, Medan Rauf, A. 2011. Sistem Agroforestry; Upaya pemberdayaan Lahan Secara Berkelanjutan. USU Press. Medan

	Rauf, A. 2011. Dasar-Dasar Pengelolaan Daerah Aliran Sungai. USU Press, Medan Troeh, F.R., ., J. Hobbs, R. L. Donahue. 2004. Soil and water conservation for productivity and environmental protection. 4th ed. Prentice Hall Upper Saddle River, New Jersey.
Last date of update	July, 2025

AGT 4113 SOIL AND WATER CONSERVATION

Course Name	Soil and Water Conservation
Code	AGT 4113
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Dr. Ir. Mukhlis, M.Si.
Language	Indonesian or English
Relation to curriculum	Compulsory course
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The soil quality and health course learns about the principles of soil quality and the skills to assess and manage the quality of a soil. The course is organised in 14 face-to-face meetings, structured assignments, case method, project-based learning, and practicum. Evaluation is carried out by conducting mid- and end-of-semester examinations.
Module objectives/intended learning outcomes	Students are able to apply soil science theory

Content	1. Implementation, Rules, Soil quality lecture grading system. 2. Definition of soil quality and health 3. Soil quality indicators 4. Biological indicators and their measurement. 5. Chemical indicators and their measurement. 6. Physical indicators and their measurement. 7. Soil quality assessment method 8. Soil quality assessment procedure 9. Soil quality management for crop production. 10. Soil Quality Management for Water Quality. 11. Soil quality management for air quality. 12. Soil quality management for livestock health 13. Soil quality management for human health. 14. Soil quality management for human health.
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • 3. Project base learning (30%) • 4. Case methods (15%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Bunemann, E.K., Giulia, B., Zhanguo, B., Rachel E.C., Gerlinde, D., Ron, G., Luuk, F., Violette, G., Thom, W.K., Paul, M., Mirjam, P., Wijnand, S., Jan, W.G., Lijbert, B. 2018. Soil Quality-A Critical Review. Soil Biology and Biochemistry. 120: 105-125. Garrigues, E., Michael, S.C., Denis, A.A., Hayo, M.G., Christian, W. 2012. Soil quality in Life Cycle Assessment: Towards development of an indicator. Ecological Indicators. 18: 434-442. Nurhidayati. 2017. Kesuburan dan Kesehatan Tanah, Suatu Pengantar Penilaian Kualitas Tanah Menuju

	Pertanian Berkelanjutan. Jakarta (ID): Penerbit Intimedia. Winarso, S. 2017. Kesuburan Tanah Dasar Kesehatan dan Kualitas Tanah. Yogyakarta (ID): Penerbit Gava Media. Soetedjo, P., Elias, S.O.N. 2019. Kualitas Tanah dan Pengelolaannya yang Berkelanjutan. Jakarta (ID): CV Uwais Ispirasi Indoenesia, Support : Journals related to soil survey and soil quality and health
Last date of update	July, 2025

AGT4117 PRECISION AGRICULTURE

Course Name	Precision Agriculture
Code	AGT4117
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Prof. Ir. Zulkifli Nasution, M.Sc., Ph.D.
Language	Indonesian or English
Relation to curriculum	Elective course out of agronomy interest Elective course in soil science and plant protection interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study : (2 x 60 minutes) per week or 28 hours per semester • Test: 60 minutes x 2 times = 120 minutes = 2 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course will discuss the development of agriculture including the concept of precision agriculture (definition, scope, interaction, process cycle, method, equipment), the benefits of precision agriculture, precision agriculture applications, the development of precision agriculture in the world and Indonesia, and the prospects for precision agriculture.
Module objectives/intended learning outcomes	• Students are able to apply the theory of the basic principles of sustainable agricultural systems • Students are able to design innovations in the field of agrotechnology by utilizing science and technology

Content	1. Background, development goals and scope of precision agriculture 2. Conceptual foundation of precision agriculture, empirical review, countries implementing precision agriculture, tangible evidence of precision agriculture development 3. Development Model, Precision Agriculture Model, Land Acquisition (site plan) (CM) 4. Land mapping precision, GIS utilization, map accuracy and detailed mapping (PBL) 5. Land mapping precision, GIS utilization, map accuracy and detailed mapping (continued) (PBL) 6. Evaluation of land suitability for food crops, plantations and horticulture 7. Pesticide fertilizer seed/seed production system (CM) 8. Agricultural irrigation, evaluation of irrigation techniques, irrigation structures, water use efficiency 9. Agricultural irrigation, evaluation of irrigation techniques, irrigation structures, water use efficiency (continued) 10. Agricultural tools and machinery, seed planting equipment, fertilization mechanization 11. Harvest mechanization, development of tools and mechanization according to location 12. Post-harvest and processing (PBL) 13. Finished goods-based production system (downstream agricultural products) 14. Distribution and marketing of green and blue carbon economy
Examination forms	• Midterm exam (5%) • Final exam (5%) • Project based learning (55%) • 4. Case methods (35%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main:

	Sondakh, J., & Rembang, J. H. (2020). Karakteristik, potensi generasi milenial dan perspektif pengembangan pertanian presisi di Indonesia. In Forum Penelitian Agro Ekonomi (Vol. 38, No. 2, pp. 155-166). Saydi, R. (2021). Monitoring Curah Hujan dan Kelengasan Tanah Lahan Pertanian Menggunakan Sensor Berbasis Internet of Things (IoT) sebagai Dasar Pertanian Presisi. Jurnal Ilmiah Teknologi Pertanian Agrotechno, 6(1), 25. Data, M., Yahya, W., & Kurniawan, A. (2020). Implementasi Teknologi Virtualisasi Berbasis Kontainer untuk Perangkat Internet of Things pada Pertanian Presisi. CYBERNETICS, 3(01), 1-7. Manalu, L. P. Aplikasi Kontrol Digital Untuk Pemupukan Secara Variable Rate Pada Sistem Pertanian Presisi Digital Control Application for The Variable Rate Fertilization On Precision Farming System.
Last date of update	July, 2025

AGT4112 FERTILIZATION RECOMMENDATIONS FOR FOOD AND PLANTATION CROPS

Course Name	Fertilization Recommendations for Food and Plantation Crops
Code	AGT4112
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Dr. Ir. Sarifuddin, MP.
Language	Indonesian or English
Relation to curriculum	Compulsory course
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The course of fertilization recommendations for food crops and horticulture studies about fertilization recommendations for food crops and horticulture and their management of agricultural crops. The course of fertilization recommendations for food crops and horticulture is held in 14 face-to-face meetings, structured assignments, case method and or project-based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	• The ability to apply the theories of agronomy, soil science, plant protection science and plant breeding science for problem solving independently and in groups through active Self-studys in agriculture in an effort to increase productivity and quality of results and create a sustainable agricultural system. • The ability to apply food and horticultural problem-solving techniques both independently and in groups by taking into account economic, public health and safety, socio-cultural and environmental factors to increase productivity and quality of agricultural products. • The ability to apply the theories of agronomy science, soil science, plant protection science and breeding science and

	agricultural management to food crop and horticultural commodities to manage natural resources and human resources.
Content	1. Understand and explain the importance of fertilization in food crops and horticulture basic principles and objectives of fertilization recommendations 2. Understand and explain the relationship between soil fertility status and fertilization as well as evaluation of soil fertility status and fertilization recommendation methods 3. Understand and explain soil and crop analysis for fertilizer recommendations and soil and crop sampling methods for fertilizer recommendations 4. Understand and calculate plant nutrient requirements based on the results of soil and plant analysis and convert soil and plant nutrient values to the amount of inorganic and organic fertilizers 5. Understand and explain the fertilization recommendation methods for annual crops: food crops and horticultural crops. 6. Understand and explain about fertilization of rice, corn, soybean crops 7. Understand and explain about the fertilization of tuber crops; cassava, cassava, taro legume crops: soybeans, green beans 8. Understand and explain about fertilizing horticultural crops: Vegetables (kale, mustard greens, spinach, long beans etc.) 9. Understand and explain about fertilization of horticultural crops: Fruits (mango, durian, rambutan etc.) 10. Understand and explain the use of organic fertilizers for food crops and horticulture 11. Understand and explain the use of biofertilizers for food and horticultural crops 12. Understand and explain about the Utilization of Precision Agriculture through GIS for the diagnosis of nutrient status of Food Crops and Horticulture 13. Understand, explain the use of DRIS method in evaluating nutrient status for fertilization 14. Make and present assignments / Case Study (Case Method) related to fertilization recommendations in food crops and horticulture
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%)

	• Project base learning (30%) • Case methods (15%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Fertilizer Recommendations Guide. Jim Gerwing, Ron Gelderman (2005) Jason Clark (revision). Department of Agronomy, Horticulture & Plant Science College of Agriculture, Food & Environmental Sciences. South Dakota State University Extension Fertlilizer Recommendation Guide-2028. Bangladesh Agriculture Reseach Council. www. Barc.gov.bd Support: Journals and other related reading materials
Last date of update	July, 2025

AGT4116 BIOFERTILIZERS AND THEIR USE

Course Name	Biofertilizers and Their Use
Code	AGT4116
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Prof. Ir. T. Sabrina, M.Agr.Sc., Ph.D. Prof. Dr. Ir. Asmarlalili Sahar, MS., DAA. Dr. Mariani Sembiring, S.P., M.P.
Language	Indonesian or English
Relation to curriculum	Elective course out of plant breeding Elective course in soil science
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The biofertilizer and its development course studies the concepts, principles, and activities that can be carried out to develop biofertilizers to support sustainable agriculture. The course is organized in 14 face-to-face meetings, structured assignments, case method, project-based learning, and practicum. Evaluation is done by conducting mid and end of semester exams.
Module objectives/intended learning outcomes	• Students are able to apply the theory of plant pests and diseases • Students are able to solve problems in the field of agrotechnology by taking into account environmental factors

Content	1. Concepts and principles of microbes as the fertilizer and energy of the future 2. Concepts and principles of N in soil 3. Principles and concepts of symbiotic and non-symbiotic nitrogen-fixing microbes 4. Application of symbiotic and non-symbiotic nitrogen-fixing microbes (PBL) 5. Propagation of symbiotic and non-symbiotic nitrogen-fixing microbes 6. Principles and concepts of microbial decomposers 7. Isolation and testing of potential microbial decomposers 8. Principles and concepts of P nutrients in soil 9. Principles and concepts of phosphate-solubilizing bacteria and fungi (CM) 10. Isolation and potential test of phosphate-solubilizing microbes 11. Mycorrhiza principles and concepts 12. Types of mycorrhiza (CM) 13. Concepts, principles, applications and development in agriculture (development of microbes as biofertilizers) 14. Concepts, principles, applications and development in agriculture (development of microbes as biofertilizers)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Mateusz Mącik, Agata Gryta, Magdalena Frąc. 2020. Biofertilizers in agriculture: An overview on concepts, strategies and effects on soil microorganisms. Elsevier Inc. Ewald Schnug. Luit J. De Kok, 2016. Phosphorus in Agriculture: 100 % Zero. Springer. Microorganisms for Sustainability

	Deepak G. Panpatte · Yogeshvari K. Jhala. Harsha N. Shelat · Rajababu V. Vyas. 2018. Microorganisms for Green. India Mariani Sembiring*, T. Sabrina and Mukhlis. 2020. Phosphate solubilizing microbes and coffee skin compost to increase Robusta coffee plant growth in Andisol of Mount Sinabung Area. Bulgarian Journal of Agricultural Science, 26 (No 4) 2020, 766–771 MARIANI SEMBIRING, T. SABRINA. Diversity of non-symbiotic nitrogen-fixing bacteria and their potential in andisols affected by the eruption of Mount Sinabung, North Sumatra, Indonesia. BIODIVERSITAS ISSN: 1412-033X. Volume 22, Number 8, August 2021. Sembiring, M., Elfi ati, D., Sutarta, E. S., & Sabrina, T. (2017). Phosphate solubilization agents in increasing potatoes production on Andisol Sinabung area. Asian Journal of Plant Sciences,16(3),141-148.
Last date of update	July, 2025

AGT 4106 AGROTECHNOLOGY

Course Name	Agrotechnology
Code	AGT 4106
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Prof. Ir. Edison Purba, Ph.D.
Language	Indonesian or English
Relation to curriculum	Choice in interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 60 minutes x 2 times = 120 minutes = 2 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Agrotechnology courses learn about modern agricultural technology, focusing on innovations to improve productivity, sustainable farming systems and efficiency in agriculture. Topics include precision agriculture, smart farming, advances in biotechnology and sustainable farming systems.
Module objectives/intended learning outcomes	Students are able to explain the scope of agrotechnology and the differences between conventional and modern agricultural systems.

Content	1. Explain the scope scope agrotechnology and the difference between agricultural systems conventional and modern farming systems. 2. Explained modern agriculture smart agriculture efforts to anticipate climate change 3. Explain efficient agribusiness supply chain management 4. Explain the technology-based precision agriculture approach 5. Definition of smart farming, use of IoT and remote sensing principles 6. Definition and challenges of sustainable agriculture and agroforestry systems 7. Utilization of renewable technology using autonomous tractors and agricultural robots. 8. The role of Biotechnology in sustainable agriculture systems, GMOs technology, genetic engineering and CRISPR 9. Apply the concept of challenges and opportunities of the agricultural sector in the future 10. Explain the utilization of Big Data and agricultural software in supporting sustainable agricultural systems 11. Utilization of remote sensing for plant pest and disease detection 12. Utilization of remote sensing for plant pest and disease detection (continue) 13. Students are able to apply technology utilization through innovation and collaboration for sustainable agricultural systems 14. Students are able to apply technology utilization through innovation and collaboration for sustainable agricultural systems (continue)
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Projec base learning (30%) • Case methods (15%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74

	C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Precision Agriculture Technology for Crop Farming by Qin Zhang Smart Agriculture: The Future of Food Production by A. Yousef Biotechnology in Agriculture and Food Processing by Keith W. Waldron
Last date of update	July, 2025

AGT 3105 SEED PRODUCTION AND TECHNOLOGY

Course Name	Seed Production and Technology
Code	AGT 3105
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Dr. Ir. Haryati MP.
Language	Indonesian or English
Relation to curriculum	Compulsory course in agronomy interest Elective course in soil science interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the understanding of seed technology, seed germination and influencing factors, physical and physiological quality testing of seeds, seed harvesting and processing, seed dormancy, seed storage, seed marketing, seed production and certification in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	1. Able to apply agrotechnology theory to create a sustainable agricultural system 2. Able to create businesses in the fields of plantations, food and horticulture on a small and large scale independently.

Content	1. Definition and purpose of the role of seed production and technology 2. Definition of seed formation process and structure 3. Definition of germination 4. Harvesting and processing 5. Definition of orthodox, recalcitrant seeds and how to store orthodox and recalcitrant seeds 6. Seed health 7. Seed production and quality control 8. Seed circulation, marketing and distribution 9. Seed certification process 10. Seed institutionalization 11. Seed regulations in Indonesia 12. Genetic conservation and international seed organizations 13. Seed dormancy 14. Physical quality of seed
Examination forms	• Case methods (25%) • Projec base learning (25%) • Midterm exam (15%) • Final exam (15%) • Assignment (10%) • Quiz (10%)
Learning Media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Yudono, P. (2023). Science and technology of recalcitrant seeds: fruit and plantation crops. UGM PRESS. Samah, E. (2024). PLANT SEED TECHNOLOGY. Despita, R., & Nizar, A. (2019). Textbook of Plant Seed Production Technology. Tyasmoro, S. Y., Permanasari, P. N., & Saitama, A. (2021). Plantation Crop Production Technology. Brawijaya University Press. Prayoga, A., & Ruwaida, I. P. (2017). Textbook of Food Crop Production Technology.

	Revian, M. E., Kusuma, R. M., & Nursetyo, K. I. (2020). Development of a Guidebook for Large Production Practices in Video Media Development Courses in the Education Technology Study Program at State University of Jakarta. Journal of Innovative Learning, 3(1), 24-35. Farmia, A., & Wartapa, A. (2018). Hybrid Seed Production Practicum Manual. Wahyuni, A., Simarmata, M. M., Isrianto, P. L., Junairiah, J., Koryati, T., Zakia, A., ... & Herawati, J. (2021). Seed Technology and Production. Yayasan Kita Tulis. Husen, S., Sutardjo, H. T., & Aulia Zakia, A. (2021). VEGETABLE CROP PRODUCTION TECHNOLOGY. UMM Press. Fawwas, M. (2023). Effect of Various Seed Priming Materials on Seed Quality and Vegetative Growth of Expired Maize (Zea mays L.) Seeds (Doctoral dissertation, Jember State Polytechnic).
Last date of update	July, 2025

AGT3116 PLANT PESTS AND DISEASES

Course Name	Plant Pests and Diseases
Code	AGT3116
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Lisnawita, SP. M,.Si
Language	Indonesian or English
Relation to curriculum	Choice in interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended s for joining the module	-
Course Description	This course discusses the history of plant pests and diseases, the concept of the emergence of disturbances in plants, the biological characteristics of insect pests and microorganisms (bacteria, fungi, viruses, nematodes), the concept of pest blasting, the concept of disease occurrence, the development of insect pests and plant diseases, the influence of the environment on pests and diseases and ways of controlling plant pests and diseases. In addition, it discusses the basic principles of infectious diseases and the mechanism of pathogenicity of microorganisms 14 face-to-face meetings, structured assignments, Case Method and Project-based learning, practicum, midterm exams, and semester exams.

Module objectives/intended learning outcomes	• Able to apply agrotechnology theory to create a sustainable agricultural system • Able to apply agrotechnology theory in the management of plantation commodities, especially oil palm, rubber and coffee in the management of natural resources and human resources.
Content	1. Explain the meaning of ecosystem as a management unit for plant-building organisms 2. Explain the control of plant-disrupting organisms by Integrated Pest Management 3. Explaining insecticides in traditional pest management and integrated pest management 4. Explain monitoring, observation and sampling in the application of integrated pest management 5. Explain the scope of application of integrated pest management 6. Explain decision models for using pesticides 7. Explaining the new paradigm of integrated pest management in sustainable agriculture 8. Explain the development of integrated pest management of a pest in crops 9. Explain the application of integrated pest management in various rice crops 10. Explain the use of color and scent traps in the application of integrated pest management in citrus crops. 11. Explaining the application of integrated pest management of Oryctes rhinoceros pests in oil palm plants 12. Explaining entomopathogens in the application of integrated pest management 13. Explain the challenges and opportunities of integrated pest management in the future 14. Explain the challenges and opportunities of integrated pest management in the future
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)

Learning media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	(Main) Binns MR, Nyrop JP, and Der Werf WV. 2000. Sampling and Monitoring in Crop Protection: The Theoretical Basis For Developing Practical Decision Guides. New York. CABI Publishing. Boivin G, dan Vincent C. 1987. Sequential Sampling For Pest Control Program. Toronto. Reseach Branch Agriculture Canada. Ciancio A, and Mukerjee KG. 2007. General Concepts in Integrated Pest and Disease Management. Springer Verlag. DeBach P, Schlinger EI (ed). 1973. Biological control of Insect & Weeds. London. Chapman & Hall. Dufour R. 2008. Biointrnsive Integrated Pest Management (IPM), Fundamentals of sustainable agriculture. NCAT Agriculture Specialist Published 2001 Flint ML, and van den Bosch R. 1981. Introduction to Integrated Pest Management. New York. Plenum Press. Norris RF, Caswell-Chen EP, and Kogan, M. 2003. Concepts in integrated Pest Management. New Jersey. Prentice Hall. Oka IN. 2005. Pengendalian Hama Terpadu dan Implementasinya di Indonesia. Gadjah Mada University Press. Yogyakarta
Last date of update	July, 2025

AGT3102 PLANTATION CROPS II (COFFEE, SUGARCANE, COCONUT)

Course Name	Plantation Crops II (Coffee, Sugarcane, Coconut)
Code	AGT3102
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Ir. Jonis Ginting, MS.
Language	Indonesian or English
Relation to curriculum	Compulsory interest courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended s for joining the module	-
Course Description	This course discusses the cultivation of plantation crops including coffee, sugar cane and coconut commodities starting from the preparation of planting materials, tillage, planting, plant maintenance and harvesting in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	Students are able to apply the theory of agronomy, students are able to apply the theory of agrotechnology in the field of plantation, students are able to apply management theory in plantations and students are able to apply the science of entrepreneurship in the fields of food, plantations and horticulture

Content	1. Explain the history, role and prospects of coffee in Indonesia. 2. Explained the biology, taxonomy, morphology of coffee (root, stem, leaf, flower and fruit) and explained the names and types of coffee. 3. Explain the growing requirements, planting materials, seedlings, and maintenance of coffee 4. Explained about harvesting, processing, and analyzing coffee farming. (PBL) 5. Explained the history, morphology and growing requirements of sugarcane. 6. Explains seed preparation, land preparation, plant spacing, planting holes and sugarcane planting. 7. Explains crop maintenance, weeding, fertilization, bumbun, and klentek cane. 8. Explain the principles and concepts of pest, disease and weed management (CM) 9. Explain about harvesting, processing and analyzing sugarcane farming business. (CM) 10. Explain the history, morphology and growing requirements of coconut. 11. Explain about planting materials, seed quality requirements, nurseries and seedlings, land preparation, and coconut cultivation. 12. Explains about making planting holes, planting, maintenance, fertilization, pest, disease and weed control. 13. Explain the principles of fruit picking and coconut processing 14. Explain about coconut farming business analysis
Examination forms	• Quiz (15%) • Assignment (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (15%) • Case methods (20%)
Learning Media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79

	B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Palma Plant Research Center.2015. Technical Guidelines for the Cultivation of Inner Coconut Plants. Agricultural Research and Development Center. Plantation Research and Development Center. Regulation of the Minister of Agriculture. Number. 49/Permentan/OT.140/4/2014. Technical Guidelines for Good Agriculture Practices on coffee cultivation. Ministry of Agriculture Directorate General of Plantation RI. Najiati. S and Danarti. 1990. Coffee. Cultivation and After-Harvest Handling. Penebar Swadaya. Indrawanto, C; Purwono; Siswanto; Syakir. M and W. Rumini. 2010. Cultivation and Post-Harvest of Sugarcane. Publisher. ESKA Media. Jakarta. Regulation of the Minister of Agriculture of the Republic of Indonesia. Number. 130. MOA/OT.140/12/2013. Guidelines for Good Coconut Cultivation. Ministry of Agriculture. Directorate General of Plantation. Journals related to Coffee, sugarcane and coconut commodities. Supporter Related journals
Last date of update	July, 2025

AGT 3116 PESTICIDES AND APPLICATION TECHNIQUES

Course Name	Pesticides and Application Techniques
Code	AGT 3116
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Lisnawita SP., M.Si
Language	Indonesian or English
Relation to curriculum	Mandatory plant protection interest course Out-of-interest options in agronomy and soil science
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended s for joining the module	-
Course Description	This course discusses the proper and correct management of pesticides and is able to analyze real problems and recommend appropriate solutions, especially those related to pesticide management applications, has the ability to work in the field both in teams / alone, discuss with farmers, and have high activity and be able to develop pesticide use practices in the concept of sustainable agriculture in 14 face-to-face lectures, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Students are expected to be able to explain the definition, history, development, status and current market of chemical and biological pesticides, pesticide formulation codes, toxicology, and pesticide regulations. In addition, by utilizing science and technology, students are able to carry out mixing techniques, application techniques, and pesticide calibration, know pesticide safety equipment, understand the causes and symptoms of poisoning due to pesticides so that they are able to take first aid measures for poisoning in pesticide applications.

Content	1. Definition of pesticides, history, current status and market of pesticides 2. Pesticide use regulations and the meaning of labels on pesticide packages (PBL) 3. Definition of biological pesticides, development history of biological pesticides, and different types of biological pesticides 4. Biological pesticide infection mechanism and biological pesticide manufacturing techniques 5. Pesticide Formulation and Mixing Techniques (PBL) 6. Division, toxicology and mechanism of action or mode of action of fungicides 7. Definition, development and role of herbicides in agriculture 8. Herbicide classification 9. Mechanism of action (mode of action) of herbicides 10. Herbicide application (PBL) 11. Insecticides, classes of insecticides and how insecticides work to kill insect pests 12. Dosage, concentration, spray volume, and calibrate pesticides (CM) 13. Equipment such as tools, clothes used and know how to use them 14. Causes, symptoms and can perform first aid in case of poisoning due to pesticide use (CM)
Examination forms	• Quiz (5%) • Midterm exam (20%) • Final exam (20%) • Project based learning (35%) • 5. Case methods (20%)
Learning Media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading: Nasution, L., & Si, S. M. (2022). Buku Ajar Pestisida dan Teknik Aplikasi. umsu press.

	Ardiansyah, R. (2022). Teknik Aplikasi Pestisida Nabati Micessla Pada Tanaman jagung (Zea mays L.) di Balai Besar Pelatihan Petanian Ketindan. Hidayat, F., Khamidi, T., & Wiyono, S. (2010). Pengetahuan, sikap dan tindakan petani di kabupaten tegal dalam penggunaan pestisida dan kaitannya dengan tingkat keracunan terhadap pestisida. Bumi Lestari Journal of Environment, 10(1). Safira, E. R. (2023). Teknik Aplikasi Pestisida Daun Mimba Untuk Pengendalian Hama Walang Sangit Di Gapoktan Al Barokah Bondowoso. Kurnia, H. H. A. P. (2018). Pengendalian Hama dan Penyakit Tanaman Selada (Lactuca sativa L.) yang diberi Pestisida Nabati dengan Teknik Ekstraksi dan Konsentrasi Berbeda (Doctoral dissertation, Universitas Islam Negeri Sultan Syarif Kasim Riau). Wibowo, P., & Kalatham, T. P. (2017). Panduan Praktis Penggunaan Pupuk dan Pestisida. Penebar Swadaya Grup. Dani, U., Sumekar, Y., Widayat, D., Yuwariah, Y., Kurniadie, D., & Umiyati, U. (2024). Pelatihan Teknik Kalibrasi, Penentuan Dosis dan Aplikasi Pestisida. BERNAS: Jurnal Pengabdian Kepada Masyarakat, 5(1), 934-942. Andini, P. R. (2023). Teknik Aplikasi Herbisida Berbahan Aktif Propyrisulfuron Pada Tanaman Padi (Oryza sativa L.) di PT. BASF Indonesia. Istianah, I., & Yuniastuti, A. (2017). Hubungan masa kerja, lama menyemprot, jenis pestisida, penggunaan APD dan pengelolaan pestisida dengan kejadian keracunan pada petani di Brebes. Public Health Perspective Journal, 2(2). Simarmata, M., & Suprijono, E. (2023). Teknik Aplikasi Herbisida dalam Pengendalian Gulma. Deepublish.
Last date of update	July, 2025

AGT3101 FOOD CROPS II (SORGHUM, LEGUMES, AND TUBER)

Course Name	Food Crops II (Sorghum, Legumes, and Tuber)
Code	AGT3101
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Ir. Yaya Hasanah, M.Si
Language	Indonesian or English
Relation to curriculum	Mandatory agronomy interest course Out-of-interest options in soil science, plant protection and plant breeding
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended s for joining the module	-
Course Description	This course describes the history, uses and development of production, climate and soil growing conditions, classification, botany/morphology, growth phases, varieties, seed / planting material preparation and tillage, spacing and planting, fertilization, control of plant pests and weeds, harvest and post-harvest, farm business analysis for crop cultivation, sorghum, legumes and tuber crops. The language of instruction used is Indonesian. Assessment is done by quizzes, assignments, UTS and UAS, CM and PBL.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create a sustainable agricultural system. Able to create businesses in the fields of plantations, food and horticulture on a small and large scale independently.

Content	1. Definition and scope of food crops (sorghum, legumes and tubers) 2. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of mung bean (CM) 3. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of mung bean 4. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of groundnut 5. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of groundnut 6. Bogor bean cultivation (PBL) 7. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of sweet potato 8. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of sweet potato 9. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of taro (PBL) 10. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of porang 11. History, growing conditions, classification, botany, morphology, growth phases and high-yielding varieties and cultivation of ganyong 12. History, growing conditions, classification, botany, morphology, growth phases and high-yielding varieties and cultivation of arrowroot 13. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of sorghum 14. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of sorghum (CM)
Examination forms	• Quiz (10%) • Midterm exam (15%) • Final exam (15%) • Project based learning (30%) • 5. Case methods (30%)
Learning Media	Power point, screen, whiteboard, e-learning (LMS)

Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Aqil, Muhammad; Bunyamin, Z. Water management of sorghum crops. Technology Innovation and Development, 2013, 188. Irawan, Bambang, and Nana Sutrisna. "Prospects for sorghum development in West Java to support food diversification." Agroeconomic Research Forum. Vol. 29. No. 2. 2011. Subagio, H., & Aqil, M. (2014). Assembly and development of superior sorghum varieties for food, feed, and bioenergy. Tarigan, Dewi Hiasinta, T. Irmansyah, and Edison Purba. "Effect of Weeding Time on Growth and Production of Several Sorghum Varieties (Sorghum Bicolor (L.) Moench)." Journal of Agroecotechnology, University of North Sumatra 2.1 (2013): 96594. Juarsah, I. (2015). Teknologi pengendalian gulma alang-alang dengan tanaman legum untuk pertanian tanaman pangan. Jurnal Agro, 2(1), 29-38. Pieter, Y., & Mejaya, M. J. (2018). Effect of biological fertilization on growth and yield of soybean in paddy field. Food Crop Agriculture Research, 2(1), Mulyani, A., Nursyamsi, D., & Harnowo, D. (2016). Potential and challenges of utilizing suboptimal land for various bean and tuber crops. In Proceedings of Research Seminar on Various Beans and Tuber Crops (Vol. 25, pp. 16-30). Malang: Food Crops Research and Development Center. Haliza, W., Purwani, E. Y., & Thahir, R. (2010). Pemanfaatan kacang-kacangan lokal mendukung diversifikasi pangan. Pengembangan Inovasi Pertanian, 3(3), 238-245. Sembiring, S. J. B., Saniman, S., & Azlan, A. (2020). Expert System for Diagnosing Pests and Diseases of Amorphophallus Muelleri Plants at the North Sumatra

	Food Crops and Horticulture Office Using the Dempster Shafer Method. Cyber Tech Journal, 3 (1). Wijayanto, N., & Pratiwi, E. (2011). Effect of shade from sengon (Paraserianthes falcataria (L.) Nielsen) stands on porang (Amorphophallus onchophyllus) plant growth. Journal of Tropical Silviculture, 2(1), 46-51. Supporter Latest journals.
Last date of update	July, 2025

8th Semester

AGT 4201 RESEARCH PROPOSAL SEMINAR

Course Name	Research Proposal Seminar
Code	AGT 4201
Semester (s) in which the module is taught	VIII
Lecturer (Person responsible)	Thesis supervisor
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Small Group Self-study, • Role Play and Simulation, • Discovery Learning, • Independent Learning, • Cooperative Learning, • Collaborative Learning, • Contextual Learning, • Project Based Learning, and other equivalent methods.
Workload (incl. Contact hours, self-study hours)	Workload for 14 weeks or within 1 semester
Credit	1 credits (equivalent with 1.6 ECTS)
Required and recommended s for joining the module	-
Course Description	This course discusses application of agrotechnology theory in the field of plantation, application of research methods in the field of agrotechnology, identifying problems in the field of agrotechnology, applying communication theory in Indonesian, applying communication theory in writing final assignments and scientific publications in the field of agrotechnology
Module objectives/intended learning outcomes	Students able to apply research methods to identify problems in the field of agrotechnology Students able to apply communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations.

Content	1. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 2. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 3. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 4. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 5. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 6. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 7. The research method chosen, and write it up in the proposal seminar 8. The research method chosen, and write it up in the proposal seminar 9. The research method chosen, and write it up in the proposal seminar 10. The research method chosen, and write it up in the proposal seminar 11. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 12. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 13. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references 14. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references
Examination forms	• PB = Learning Process (30%) • PT = Structured Assignment (40%) • KM = Independent Activity (30%)
Leraning media	Lecture, Reception, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field

	Practice, Research, Community Service and/or other equivalent forms of learning
Study and examination requirements	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Reading material is related to the research topic taken
Last date of update	July, 2025

AGT 4201 RESULT SEMINAR

Course Name	Result Seminar
Code	AGT 4201
Semester (s) in which the module is taught	VIII
Lecturer (Person responsible)	Thesis supervisor
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Small Group Self-study, • Role Play and Simulation, • Discovery Learning, • Independent Learning, • Cooperative Learning, • Collaborative Learning, • Contextual Learning, • Project Based Learning, and other equivalent methods.
Workload (incl. Contact hours, self-study hours)	Workload for 14 weeks or within 1 semester
Credit	1 credits (equivalent with 1.6 ECTS)
Required and recommended s for joining the module	-
Course Description	This course discusses application of agrotechnology theory in the field of plantation, application of research methods in the field of agrotechnology, identifying problems in the field of agrotechnology, applying communication theory in Indonesian, applying communication theory in writing final assignments and scientific publications in the field of agrotechnology
Module objectives/intended learning outcomes	Students able to apply research methods to identify problems in the field of agrotechnology Students able to apply communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations.

Content	1. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 2. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 3. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 4. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 5. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 6. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 7. The research method chosen, and write it up in the proposal seminar 8. The research method chosen, and write it up in the proposal seminar 9. The research method chosen, and write it up in the proposal seminar 10. The research method chosen, and write it up in the proposal seminar 11. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 12. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 13. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references 14. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references
Examination forms	• PB = Learning Process (30%) • PT = Structured Assignment, (40%) • KM = Independent Activity (30%)
Learning Media	• Lecture, Reception, • Tutorial,

	• Seminar or equivalent, • Practicum, Studio Practice, • Workshop Practice, • Field Practice, Research, Community Service and/or other equivalent forms of learning
Study and examination requirements	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Reading material is related to the research topic taken
Last date of update	July, 2025

AGT 4203 THESIS

Course Name	Thesis
Code	AGT 4203
Semester (s) in which the module is taught	VIII
Lecturer (Person responsible)	Thesis suvervisor
Language	Indonesian or English
Relation to curriculum	Compulsory course
Teaching methods	• Small Group Self-study, • Role Play and Simulation, • Discovery Learning, • Independent Learning, • Cooperative Learning, • Collaborative Learning, • Contextual Learning, • Project Based Learning, and other equivalent methods.
Workload (incl. Contact hours, self-study hours)	Workload for 14 weeks or within 1 semester
Credit	4 credits (equivalent with 6.4 ECTS)
Required and recommended s for joining the module	-
Course Description	This course discusses and applies research methods in the field of agrotechnology and identify problems in the field of agrotechnology and can also apply communication theory in Indonesian in writing final assignments and scientific publications in the field of agrotechnology are expected to be able to design innovations in the field of agrotechnology by utilizing science and technology..
Module objectives/intended learning outcomes	Able to apply research methods to identify problems in the field of agrotechnology. Able to apply communication theories in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations. Able to develop global insights for character and self-potential in accordance with scientific fields and across disciplines

Content	1. Identify problems in the field of agrotechnology that will be raised as a thesis title 2. Identify problems in the field of agrotechnology that will be raised as a thesis title 3. Find solutions to the problems that have been selected, and design solutions or innovations to solve these problems. 4. Find solutions to the problems that have been selected, and design solutions or innovations to solve these problems 5. Apply the chosen research method, and observe the results of the experiment. 6. Apply the chosen research method, and observe the results of the experiment. 7. Apply the chosen research method, and observe the results of the experiment. 8. Apply the chosen research method, and observe the results of the experiment. 9. Apply the chosen research method, and observe the results of the experiment. 10. Apply the chosen research method, and observe the results of the experiment. 11. Make a research report (thesis) in accordance with the writing guidelines and the direction of the supervisor. 12. Make a research report (thesis) in accordance with the writing guidelines and the direction of the supervisor. 13. Make a research report (thesis) that is in accordance with the writing guidelines and supported by appropriate references. 14. Make a research report (thesis) that is in accordance with the writing guidelines and supported by appropriate references.
Examination forms	• PB = Learning Process (40%) • PT = Structured Assignment (40%) • KM = Independent Activity (30%)
Learning media	• Lecture, • Reception, • Tutorial, • Seminar or equivalent, • Practicum, • Studio Practice, • Workshop Practice, • Field Practice, • Research, Community Service and/or other equivalent forms of learning

Reading list	Reading material is tailored to the research topic taken
Study and examination requirements	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Last date of update	July, 2025

Plant Pests And Diseases Interest

5^{th} Semester

HPT 2 301P ENTOMOLOGI

Course Name	Entomologi
Code	HPT 2 301P
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Ir. Suzanna Fitriany Sitepu MSi
Language	Indonesian or English
Relation to curriculum	Mata kuliah Compulsory dalam minat
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Course Description	This course discusses insects and their way of life, the morphology and anatomy of insects in depth, ecology, physiology, biochemical processes, and systems in insects through 14 face-to-face lectures, structured assignments, case method and project-based learning, practicals, mid-semester exams, and semester exams.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create sustainable agricultural systems.

Content	1. Describing the evolution of insects and their position 2. Describing and identifying the specific characteristics of insects from a morphological perspective and distinguishing insects from other arthropods. 3. Describing the recognition of the external structure of the head, various types of antennae, and mouthparts, their parts and functions. (lanjutan) 4. Analyzing 5. Describing the function and process of insect cuticle molting, as well as the endocrine system 6. Describing the position, shape, mechanism of action, parts, and function (tract) of the insect digestive system and excretory organs. (pembuangan) 7. Analyzing the muscular system and the hemolymph circulation system 8. Analyzing the insect nervous system, 9. Describing the respiratory system and the reproductive system of insects 10. describing the growth and development, metamorphosis of insects 11. Describing the sensory system (sense organs) and the perception of communication between insects and other organisms and their environment. 12. identifying insects and performing proper insect preservation techniques 13. Analyzing various important residential insects, the bioecology of the problems they cause, and their control. 14. Describing various important residential insects, their bioecology, the problems they cause, and their control.
Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) Case methods (15%)
Media employed	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric:

	A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Key Reading Lumowa, S. V. T., & Purwati, S. (2022). Entomology. Media Nusa Creative (MNC Publishing). Sudarsono, H. (2015). Introduction to plant pest control. Wati, C., Rahmawati, R., Hartono, R., Haryati, P. W., Riyanto, R., Anggraini, E.,... & Karenina, T. (2021). Agricultural Entomology. Foundation We Write. Irfan, M. Laboratory of Pathology, Entomology, and Microbiology, Faculty of Agriculture and Animal Husbandry, UIN Suska Riau. Kutubkhanah, 16(1), 1-6. Ma'arif, S., Suartini, N. M., & Ginantra, I. (2014). Diversity of surface soil insects in organic horticultural agriculture in Banjar Titigalar, Bangli Village, Baturiti District, Tabanan-Bali Regency. Journal of Biology, 18(1), 28-32. Albab, A. U. (2016). Study of soil insect diversity in the Gadungan Manggis nature reserve and agricultural land in Siman Village, Puncu District, Kediri Regency (Doctoral dissertation, Universitas Islam Negeri Maulana Malik Ibrahim). Tneup, Y. T., Bay, M. M., & Pakaenoni, G. (2022). Inventory of insects in horticultural agricultural land in Sasi Village, Kefamenanu City District. Jurnal Saintek Lahan Kering, 5(1), 1-4. Aveludoni, M. M. (2021). Diversity of Insect Species in Various Agricultural Lands of Maubeli Village, North Central Timor Regency. Wahana-Bio: Journal of Biology and Its Learning, 13(1), 11-18. Purwantiningsih, B. (2014). Pollinator insects. Universitas Brawijaya Press. Rizali, A., Buchori, D., & Triwidodo, H. (2002). Insect Diversity at the Forest Margin-Rice Field Interface: An Indicator for a Healthy Ecosystem. Journal of Biosciences, 9(2).
Last updated date	July, 2025

AGT 3120 NEMATOLOGY AND VIROLOGY

Course Name	Nematology and Virology
code	AGT 3120
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Dr. Lisnawita, S.P., M.Si Ir. Mukhtar Iskandar Pinem, M.Agr Irda Safni, S.P., M.CP, Ph.D
Language	Indonesian or English
Relation to curriculum	Compulsory course in interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Lectures (3 x 50 minutes) per week or 35.00 hours per semester • Self studi: 35 hours • Structured assignment (i.e.: article reading/review and case method): 15.00 hours per semester • Projec base learning : 30 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended for joining the module	-
Course Description	Nematology and virology courses learn about the importance of plant viruses, virus symptoms in plants by utilising science and technology in isolating, purifying, transmitting and controlling plant viruses
Module objectives/intended learning outcomes	Able to apply the theory of plant pest and disease science. able to design innovations in the field of agrotechnology by utilising science and technology.

Content	1. Describe the history of nematodes and the importance of plant parasitic nematodes. 2. Distinguish the characteristics of nematodes morphologically, and anatomically 3. Describe the biology and lifestyle of nematodes 4. Evaluate population dynamics, feeding strategies of nematodes 5. Evaluate above-ground symptoms of nematode infection 6. Evaluating below-ground symptoms of nematode infection 7. Analyse the interaction of nematodes with other organisms 8. Apply nematode control 9. Describe the significance and name of plant viruses 10. Distinguish plant viruses as genetic information packages 11. Analyse virus isolation and purification 12. Apply virus replication 13. Analyse virus identification, pcr, and electron microscopy 14. Analyse plant virus symptom recognition
Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Readings: Muhlizhin, R., Sudianto, U. K., Andryan, R., & Kilowasid, L. M. H. (2019). Patiwala Extract to Prevent Nematode Attack on the Roots of Muna Local Tomato Plants. Proceedings of Student Creativity Programme, 1-1.

	Blaxter, M., & Koutsovoulos, G. (2015). The evolution of parasitism in Nematoda. Parasitology, 142(S1), S26-S39. Sommer, R. J. (2015). Nematoda. In Evolutionary Developmental Biology of Invertebrates 3: Ecdysozoa I: Non-Tetraconata (pp. 15-33). Vienna: Springer Vienna. Poinar Jr, G. O. (2010). Nematodes and nematomorpha. In Ecology and classification of North American freshwater invertebrates (pp. 237-276). Academic Press. Justine, J. L., & Jamieson, B. G. (2000). Nematodes. Reproductive biology of invertebrates. Voume 9, Part B: progress in male gamete ultrastructure and phylogeny, 183-266. Blaxter, M. L. (2003). Nematodes: genes, genomes and the evolution of parasitism. Adv Parasitol, 54, 101-195. Blaxter, M. L., De Ley, P., Garey, J. R., Liu, L. X., Scheldeman, P., Vierstraete, A., ... & Thomas, W. K. (1998). A molecular evolutionary framework for the phylum Nematoda. Nature, 392(6671), 71-75. Nielsen, C. O. (1967). Nematodes. Soil biology, 197-211. Blaxter, M. (2009). Nematodes. The timetree of life, 247, 250. Decraemer, W., Coomans, A., & Baldwin, J. (2013). Morphology of nematodes. Nematoda, 2, 1-60.
Last date of update	July, 2025

AGT3119 MYCOLOGY AND BACTERIOLOGY

Course Name	Mycology and Bacteriology
Code	AGT3119
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Irda Safni, SP, MSc, PhD.
Languages	Indonesian or English
Relation to curriculum	Compulsory courses of the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended s for joining the module	-
Course Description	This course explains about the characteristics of fungi, classification of fungi, identification of fungi as saprophytes and pathogens, basic laboratory techniques and procedures for studying fungi, the role of bacteria that cause plant diseases, symptoms of plant diseases caused by pathogenic bacteria, the structure of plant bacteria, how diseases develop due to bacteria and how they spread, as well as extraction, isolation and biochemical identification of plant pathogenic bacteria in the laboratory. with experts in their fields in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	Students are able to apply the theory of plant pests and diseases. Students are able to solve problems in the field of agrotechnology by taking into account environmental factors. Students are able to identify problems in the field of agrotechnology

Content	1. Lecture contract and Role of bacteria as plant pathogens 2. Symptoms of pathogenic bacteria on plants 3. Diagnosis of diseases caused by plant pathogenic bacteria 4. Identification of bacteria by bacterial morphological structure and biochemical tests 5. Pathogenesis of pathogenic bacteria 6. Spread and survival of pathogenic bacteria 7. How to control diseases caused by plant pathogenic bacteria 8. Position of fungi in microorganisms, Differences between fungi and other organisms, Role and importance of fungi 9. Causes of disease in plants, animals and humans and Types of edible fungi 10. Body of lower fungi and higher fungi, Spores, conidia, hyphae, mycelium, and resting spore 11. Reproduction and life cycle of fungi 12. Identification of Myxomycota, zygomycota, and ascomycota phylum fungi, medium preparation techniques, preparation and observation. 13. Identification of fungi of the phylum Plasmodiophoromycota, phylum Basidiomycota and phylum Oomycota. 14. Application of mycology as edible fungi
Examination forms	• Case methods (25%) • Projec base learning (25%) • Midterm exam (15%) • Final exam (15%) • Task (10%) • Quiz (10%)
Learning media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Irianto, K. (2014). Bakteriologi medis, mikologi medis, dan virologi medis. Bandung: Alfabeta.

	Hardiyanti, S. (2017). Mikrob rizosfer dan endofit jaringan akar tanaman karet sebagai agens hayati penyakit akar putih (Rigidoporus lignosus (klotzsch) imazeki) (Doctoral dissertation, IPB (Bogor Agricultural University)). Irianto, K. (2014). Bakteriologi, Mikologi, dan Virologi. Bandung: Alfabeta. Bakteriologi, T. (2014). Panduan Praktikum Mikologi. Darkuni, M. Noviar 2001 Mikrobiologi (Bakteriologi, Virologi, dan Mikologi). Irianto, K. (2015). Bakteriologi Medis, Mikologi Medis, Virologi Medis. Bandung: Alfabeta, 2(54), 107. Sopialena, I., & Mp, P. D. Mikologi dan Bakteriologi Taksonomi Dan Klasifikasi Bakteri. Syahfari, H., & Ramayana, A. S. (2024). Buku Ajar Dasar-Dasar Perlindungan Tanaman. Penerbit NEM. Suharman, T. H. P. (2020). Bahan ajar mata kuliah mikrobiologi umum. Charisma, A. M. (2019). Buku ajar mikologi. Airlangga University Press.
Last date of update	July, 2025

HPT 409 BIOLOGICAL CONTROL

Course Name	Biological Control
Code	HPT 409
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Ir. Suzanna F. Sitepu, MP.
Language	Indonesian or English
Relation to curriculum	Elective Courses in Interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended s for joining the module	-
Course Description	The biological control course learns about parasitoids, predators, entomogens, and antagonistic pathogens, the role of natural enemies, and antigenic pathogens in agricultural ecosystems, propagation techniques and implementation in the field to control Plant Disturbing Organisms (PGR), weeds, and pathogenic microbes. The Biological Control course is organised in 14 face-to-face meetings, structured assignments, case method and project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	After completing the Biological Control course, students are able to explain the importance of natural enemies in agriculture, including parasitoids, predators, entomogens, and antagonistic pathogens, the role of natural enemies, and antogenic pathogens in agricultural ecosystems, propagation techniques and implementation in the field to control Plant Disturbing Organisms (PEST), weeds, and pathogenic microbes.
Content	1. The definition, benefits, and disadvantages of Biocontrol 2. The types of natural enemies, characteristics, classification, and propagation techniques of natural enemies and predatory insects.

	3. The types of natural enemies, characteristics, classification, and propagation techniques of natural enemies and predatory insects. 4. Biological control of weeds and implementation techniques 5. The history of biological control with entomopathogens and types of entomopathogens. 6. The history of biological control with entomopathogens and types of entomopathogens. 7. Entomopathogenic fungi, entomopathogenic bacteria 8. Entomopathogenic fungi, entomopathogenic bacteria 9. Entomopathogenic viruses, entomopathogenic nematodes 10. The introduction of several plant disease biological control agents and their mechanisms 11. The introduction of several plant disease biological control agents and their mechanisms 12. The work and application of plant disease biological control agents 13. The standardization of plant disease biological control agent applications 14. The regulation and business of plant disease biological control agents
Examination forms	• Case Methods (20%) • Project Base Learning (30%) • Task (5%) • Quiz (5%) • Midterm Exam (20%) • Final Exam (20%)
Learning Media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Van Driesche, R.G & T.S. Belloows, Jr. 1996. Biological Control. Chapman & Hall. Metcalf, R. & W.H. Luckmann. (eds). 194. Introduction to Insect Pest Pest Management. John Wiley & Sons, Inc. New York Waage, J. & D. Greathead. (eds). 1989. Insect Parasitoids. Acad. Press. London.

	Tanada, Y. & H.K. Kaya. 1993. Insect Pathology. Acad Press, Inc. Fujita, H et al. 2000. Insect Viruses and Pest Management. John Wiley & Sons, Inc. Gaugler, R. 2002. Entomophatogenic Nematodes. CABI Publ.
Last date of update	July, 2025

AGT3101 RESEARCH METHODS

Course Name	Research Methods
Code	AGT3101
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Dr.Ir.Hamidah Hanum, MP.
Language	Indonesian or English
Relation to curriculum	Compulsory courses of the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended s for joining the module	-
Course Description	The Research Methods course learns about the concepts, principles and stages in research methods, especially in agriculture, both experimental and descriptive research. The research methods course is held in 14 face-to-face meetings, structured assignments, Case Method, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	The ability to apply the theories of agronomy, soil science, plant protection science and plant breeding science for problem solving independently and in groups through active Self-studys in agriculture in an effort to increase productivity and quality of products and create a sustainable agricultural system. The ability to apply plantation and horticultural problem solving techniques both independently and in groups by taking into account economic, public health and safety, socio-cultural and environmental factors to increase productivity and quality of agricultural products. Ability to apply the theory of agronomy, soil science, plant protection science and breeding science and plantation management in oil palm, rubber and coffee commodities

	and horticulture to manage natural resources and human resources.
Content	1. Introduction: lecture contract; Science: thinking process and knowledge; theory and facts; values in science; Scientific Method: definition, criteria and steps in the scientific method; scientific and non-scientific approaches 2. Research: definition of research, research chain system, research characteristics, contribution and usefulness of research results; Types of research, 3. Literature Study: Definition, purpose and use, literature study criteria, types of literature studies, how to conduct literature studies 4. Determining the Research Object: Research topic: characteristics of good research topics, considerations for choosing research topics, where research topics are obtained; Problems and Hypotheses: Identifying and Formulating Problems, Formulating and Testing Hypotheses (CM) 5. Research Design: Research planning design, research implementation design 6. Experimental research design 7. Descriptive research implementation design 8. Selecting Variables and Measurement Techniques: Definition of variables, types of variables, methods and measuring instruments, validity of measuring instruments, examples of variables and measurement techniques in research in the field of agricultural science (PBL) 9. Sampling Methods: Purpose and usefulness of the sample. Types of sampling methods Criteria and methods of soil and plant sampling 10. Data analysis and data interpretation in experimental research, conclusions and research implications: Statistical techniques in data analysis: analysis of variance, independent sample t-test, contrast analysis regression and correlation analysis. 11. Data analysis and data interpretation in descriptive research, conclusions and research implications Statistical techniques in descriptive analysis, t test and multivariate analysis 12. Data presentation techniques, reference techniques and bibliography 13. Writing a research report: Systematics of research reports, grammar in scientific writing

	14. Slide making technique and research result presentation technique: Slide making techniques in power point, Presentation structure, and Presentation technique
Examination forms	• Quiz (5%) • Assignment (5%) • Study Case Method (30%) • Midterms exam (30%) • Final Exam (30%)
Leraning Media	Power point, screen, whiteboard, e-learning
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A $\geq$ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E $\leq$ 49
Reading list	Main Mohamad Nazir. 1988. Research Methods. Ghalia Indonesia.Jakarta Suharsimi Arikunto. 2013. Research Procedure: a practical approach. Publisher: Rineka Cipta Aji Sastrosupadi. 2000. Practical experimental design in agriculture. Kanisius Publisher, Yogyakarta Gomez, K.A and A.A Gomez. 1995. Statistical procedures for agricultural research. Second Edition. Translator E.Syamsudin and Justika Baharsyah. University of Indonesia Publisher Uyanto, S. 2009. Guidelines for Data Analysis with SPSS. Graha Ilmu USU Faculty of Agriculture. 2008. Thesis writing guidelines Supporter Up-to-date journals.
Last date of update	July, 2025

AGT3116 PLANT PESTS AND DISEASES

Course Name	Plant Pests and Diseases
Code	AGT3116
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Lisnawita, SP. M.Si
Languange	Indonesian or English
Relation to curriculum	Choice in interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended s for joining the module	-
Course Description	This course discusses the history of plant pests and diseases, the concept of the emergence of disturbances in plants, the biological characteristics of insect pests and microorganisms (bacteria, fungi, viruses, nematodes), the concept of pest blasting, the concept of disease occurrence, the development of insect pests and plant diseases, the influence of the environment on pests and diseases and ways of controlling plant pests and diseases. In addition, it discusses the basic principles of infectious diseases and the mechanism of pathogenicity of microorganisms 14 face-to-face meetings, structured assignments, Case Method and Project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create a sustainable agricultural system Able to apply agrotechnology theory in the management of plantation commodities, especially oil palm, rubber and coffee in the management of natural resources and human resources.

Content	1. Explain the meaning of ecosystem as a management unit for plant-building organisms 2. Explain the control of plant-disrupting organisms by Integrated Pest Management 3. Explaining insecticides in traditional pest management and integrated pest management 4. Explain monitoring, observation and sampling in the application of integrated pest management 5. Explain the scope of application of integrated pest management 6. Explain decision models for using pesticides 7. Explaining the new paradigm of integrated pest management in sustainable agriculture 8. Explain the development of integrated pest management of a pest in crops 9. Explain the application of integrated pest management in various rice crops 10. Explain the use of color and scent traps in the application of integrated pest management in citrus crops. 11. Explaining the application of integrated pest management of Oryctes rhinoceros pests in oil palm plants 12. Explaining entomopathogens in the application of integrated pest management 13. Explain the challenges and opportunities of integrated pest management in the future 14. Explain the challenges and opportunities of integrated pest management in the future
Examination forms	• Quiz (5%) • Assignment (10%) • Midterm exam(20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59

	E ≤ 49
Reading list	(Main) Binns MR, Nyrop JP, and Der Werf WV. 2000. Sampling and Monitoring in Crop Protection: The Theoretical Basis For Developing Practical Decision Guides. New York. CABI Publishing. Boivin G, dan Vincent C. 1987. Sequential Sampling For Pest Control Program. Toronto. Reseach Branch Agriculture Canada. Ciancio A, and Mukerjee KG. 2007. General Concepts in Integrated Pest and Disease Management. Springer Verlag. DeBach P, Schlinger EI (ed). 1973. Biological control of Insect & Weeds. London. Chapman & Hall. Dufour R. 2008. Biointrnsive Integrated Pest Management (IPM), Fundamentals of sustainable agriculture. NCAT Agriculture Specialist Published 2001 Flint ML, and van den Bosch R. 1981. Introduction to Integrated Pest Management. New York. Plenum Press. Norris RF, Caswell-Chen EP, and Kogan, M. 2003. Concepts in integrated Pest Management. New Jersey. Prentice Hall. Oka IN. 2005. Pengendalian Hama Terpadu dan Implementasinya di Indonesia. Gadjah Mada University Press. Yogyakarta
Last date of update	July, 2025

AGT 3116 PESTICIDES AND APPLICATION TECHNIQUES

Course Name	Pesticides and Application Techniques
Code	AGT 3116
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Lisnawita SP., M.Si.
Language	Indonesian or English
Relation to curriculum	Mandatory plant protection interest course Out-of-interest options in agronomy and soil science
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended s for joining the module	-
Course Description	This course discusses the proper and correct management of pesticides and is able to analyze real problems and recommend appropriate solutions, especially those related to pesticide management applications, has the ability to work in the field both in teams / alone, discuss with farmers, and have high activity and be able to develop pesticide use practices in the concept of sustainable agriculture in 14 face-to-face lectures, structured assignments, Case Method and Project based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Students are expected to be able to explain the definition, history, development, status and current market of chemical and biological pesticides, pesticide formulation codes, toxicology, and pesticide regulations. In addition, by utilizing science and technology, students are able to carry out mixing techniques, application techniques, and pesticide calibration, know pesticide safety equipment, understand the causes and symptoms of poisoning due to pesticides so that they are able to take first aid measures for poisoning in pesticide applications.

Content	1. Definition of pesticides, history, current status and market of pesticides 2. Pesticide use regulations and the meaning of labels on pesticide packages (PBL) 3. Definition of biological pesticides, development history of biological pesticides, and different types of biological pesticides 4. Biological pesticide infection mechanism and biological pesticide manufacturing techniques 5. Pesticide Formulation and Mixing Techniques (PBL) 6. Division, toxicology and mechanism of action or mode of action of fungicides 7. Definition, development and role of herbicides in agriculture 8. Herbicide classification 9. Mechanism of action (mode of action) of herbicides 10. Herbicide application (PBL) 11. Insecticides, classes of insecticides and how insecticides work to kill insect pests 12. Dosage, concentration, spray volume, and calibrate pesticides (CM) 13. Equipment such as tools, clothes used and know how to use them 14. Causes, symptoms and can perform first aid in case of poisoning due to pesticide use (CM)
Examination forms	• Quiz (5%) • Midterm exam (20%) • Final exam (20%) • Project based learning (35%) • 5. Case methods (20%)
Learning media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading: Nasution, L., & Si, S. M. (2022). Buku Ajar Pestisida dan Teknik Aplikasi. umsu press.

	Ardiansyah, R. (2022). Teknik Aplikasi Pestisida Nabati Micessla Pada Tanaman jagung (Zea mays L.) di Balai Besar Pelatihan Petanian Ketindan. Hidayat, F., Khamidi, T., & Wiyono, S. (2010). Pengetahuan, sikap dan tindakan petani di kabupaten tegal dalam penggunaan pestisida dan kaitannya dengan tingkat keracunan terhadap pestisida. Bumi Lestari Journal of Environment, 10(1). Safira, E. R. (2023). Teknik Aplikasi Pestisida Daun Mimba Untuk Pengendalian Hama Walang Sangit Di Gapoktan Al Barokah Bondowoso. Kurnia, H. H. A. P. (2018). Pengendalian Hama dan Penyakit Tanaman Selada (Lactuca sativa L.) yang diberi Pestisida Nabati dengan Teknik Ekstraksi dan Konsentrasi Berbeda (Doctoral dissertation, Universitas Islam Negeri Sultan Syarif Kasim Riau). Wibowo, P., & Kalatham, T. P. (2017). Panduan Praktis Penggunaan Pupuk dan Pestisida. Penebar Swadaya Grup. Dani, U., Sumekar, Y., Widayat, D., Yuwariah, Y., Kurniadie, D., & Umiyati, U. (2024). Pelatihan Teknik Kalibrasi, Penentuan Dosis dan Aplikasi Pestisida. BERNAS: Jurnal Pengabdian Kepada Masyarakat, 5(1), 934-942. Andini, P. R. (2023). Teknik Aplikasi Herbisida Berbahan Aktif Propyrisulfuron Pada Tanaman Padi (Oryza sativa L.) di PT. BASF Indonesia. Istianah, I., & Yuniastuti, A. (2017). Hubungan masa kerja, lama menyemprot, jenis pestisida, penggunaan APD dan pengelolaan pestisida dengan kejadian keracunan pada petani di Brebes. Public Health Perspective Journal, 2(2). Simarmata, M., & Suprijono, E. (2023). Teknik Aplikasi Herbisida dalam Pengendalian Gulma. Deepublish.
Last date of update	July, 2025

AGT 3105 SEED PRODUCTION AND TECHNOLOGY

Course Name	Seed Production and Technology
Code	AGT 3105
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Dr. Ir. Haryati MP
Language	Indonesian or English
Relation to curriculum	Compulsory courses within interests Elective courses outside of interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the understanding of seed technology, seed germination and influencing factors, physical and physiological quality testing of seeds, seed harvesting and processing, seed dormancy, seed storage, seed marketing, seed production and certification in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create a sustainable agricultural system. Able to create businesses in the fields of plantations, food and horticulture on a small and large scale independently.

Content	1. Definition and purpose of the role of seed production and technology 2. Definition of seed formation process and structure 3. Definition of germination 4. Harvesting and processing 5. Definition of orthodox, recalcitrant seeds and how to store orthodox and recalcitrant seeds 6. Seed health 7. Seed production and quality control 8. Seed circulation, marketing and distribution 9. Seed certification process 10. Seed institutionalization 11. Seed regulations in Indonesia 12. Genetic conservation and international seed organizations 13. Seed dormancy 14. Physical quality of seed
Examination forms	• Case methods (25%) • Projec base learning (25%) • Midterm exam (15%) • Final exam (15%) • Task (10%) • Quiz (10%)
Learning media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Yudono, P. (2023). Science and technology of recalcitrant seeds: fruit and plantation crops. UGM PRESS. Samah, E. (2024). Plant Seed Technology. Despita, R., & Nizar, A. (2019). Textbook of Plant Seed Production Technology. Tyasmoro, S. Y., Permanasari, P. N., & Saitama, A. (2021). Plantation Crop Production Technology. Brawijaya University Press.

	Prayoga, A., & Ruwaida, I. P. (2017). Textbook of Food Crop Production Technology. Revian, M. E., Kusuma, R. M., & Nursetyo, K. I. (2020). Development of a Guidebook for Large Production Practices in Video Media Development Courses in the Education Technology Study Program at State University of Jakarta. Journal of Innovative Learning, 3(1), 24-35. Farmia, A., & Wartapa, A. (2018). Hybrid Seed Production Practicum Manual. Wahyuni, A., Simarmata, M. M., Isrianto, P. L., Junairiah, J., Koryati, T., Zakia, A., ... & Herawati, J. (2021). Seed Technology and Production. Yayasan Kita Tulis. Husen, S., Sutardjo, H. T., & Aulia Zakia, A. (2021). Vegetable Crop Production Technology. UMM Press. Fawwas, M. (2023). Effect of Various Seed Priming Materials on Seed Quality and Vegetative Growth of Expired Maize (Zea mays L.) Seeds (Doctoral dissertation, Jember State Polytechnic).
Last date of update	July, 2025

AGT3102 PLANTATION CROPS II (COFFEE, SUGARCANE, COCONUT)

Course Name	Plantation Crops II (Coffee, Sugarcane, Coconut)
Code	AGT3102
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Ir. Jonis Ginting, MS
Language	Indonesian or English
Relation to curriculum	Compulsory interest courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the cultivation of plantation crops including coffee, sugar cane and coconut commodities starting from the preparation of planting materials, tillage, planting, plant maintenance and harvesting in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	Students are able to apply the theory of agronomy. Students are able to apply the theory of agrotechnology in the field of plantation. Students are able to apply management theory in plantations. Students are able to apply the science of entrepreneurship in the fields of food, plantations and horticulture

Content	1. Explain the history, role and prospects of coffee in Indonesia. 2. Explained the biology, taxonomy, morphology of coffee (root, stem, leaf, flower and fruit) and explained the names and types of coffee. 3. Explain the growing requirements, planting materials, seedlings, and maintenance of coffee 4. Explained about harvesting, processing, and analyzing coffee farming. (PBL) 5. Explained the history, morphology and growing requirements of sugarcane. 6. Explains seed preparation, land preparation, plant spacing, planting holes and sugarcane planting. 7. Explains crop maintenance, weeding, fertilization, bumbun, and klentek cane. 8. Explain the principles and concepts of pest, disease and weed management (CM) 9. Explain about harvesting, processing and analyzing sugarcane farming business. (CM) 10. Explain the history, morphology and growing requirements of coconut. 11. Explain about planting materials, seed quality requirements, nurseries and seedlings, land preparation, and coconut cultivation. 12. Explains about making planting holes, planting, maintenance, fertilization, pest, disease and weed control. 13. Explain the principles of fruit picking and coconut processing 14. Explain about coconut farming business analysis
Examination forms	• Essays questions (15%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • 3. Projec base learning (15%) • 4. Case methods (20%)
Learning media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64

	D = 50-59 E ≤ 49
Reading list	Main Palma Plant Research Center.2015. Technical Guidelines for the Cultivation of Inner Coconut Plants. Agricultural Research and Development Center. Plantation Research and Development Center. Regulation of the Minister of Agriculture. Number. 49/Permentan/OT.140/4/2014. Technical Guidelines for Good Agriculture Practices on coffee cultivation. Ministry of Agriculture Directorate General of Plantation RI. Najiati. S and Danarti. 1990. Coffee. Cultivation and After-Harvest Handling. Penebar Swadaya. Indrawanto, C; Purwono; Siswanto; Syakir. M and W. Rumini. 2010. Cultivation and Post-Harvest of Sugarcane. Publisher. ESKA Media. Jakarta. Regulation of the Minister of Agriculture of the Republic of Indonesia. Number. 130. MOA/OT.140/12/2013. Guidelines for Good Coconut Cultivation. Ministry of Agriculture. Directorate General of Plantation. Journals related to Coffee, sugarcane and coconut commodities. Supporter Related journals
Last date of update	July, 2025

AGT3101 FOOD CROPS II (SORGHUM, LEGUMES, AND TUBER)

Course Name	Food Crops II (Sorghum, Legumes, and Tuber)
Code	AGT3101
Semester (s) in which the module is taught	V
Lecturer (Person responsible)	Prof. Dr. Ir. Yaya Hasanah, M.Si
Language	Indonesian or English
Relation to curriculum	Mandatory agronomy interest course Elective course of soil science, plant protection and plant breeding
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course describes the history, uses and development of production, climate and soil growing conditions, classification, botany/morphology, growth phases, varieties, seed / planting material preparation and tillage, spacing and planting, fertilization, control of plant pests and weeds, harvest and post-harvest, farm business analysis for crop cultivation, sorghum, legumes and tuber crops. The language of instruction used is Indonesian. Assessment is done by quizzes, assignments, UTS and UAS, CM and PBL.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create a sustainable agricultural system. Able to create businesses in the fields of plantations, food and horticulture on a small and large scale independently.

Content	1. Definition and scope of food crops (sorghum, legumes and tubers) 2. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of mung bean (CM) 3. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of mung bean 4. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of groundnut 5. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of groundnut 6. Bogor bean cultivation (PBL) 7. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of sweet potato 8. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of sweet potato 9. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of taro (PBL) 10. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of porang 11. History, growing conditions, classification, botany, morphology, growth phases and high-yielding varieties and cultivation of ganyong 12. History, growing conditions, classification, botany, morphology, growth phases and high-yielding varieties and cultivation of arrowroot 13. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of sorghum 14. History, growing conditions, classification, botany, morphology, growth phases and high yielding varieties and cultivation of sorghum (CM)
Examination forms	• Quiz (10%) • Midterm exam (15%) • Final exam (15%) • Project based learning (30%) • Case methods (30%)
Learning media	Power point, screen, whiteboard, e-learning

Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main AQIL, Muhammad; BUNYAMIN, Z. Water management of sorghum crops. Technology Innovation and Development, 2013, 188. Irawan, Bambang, and Nana Sutrisna. "Prospects for sorghum development in West Java to support food diversification." Agroeconomic Research Forum. Vol. 29. No. 2. 2011. Subagio, H., & Aqil, M. (2014). Assembly and development of superior sorghum varieties for food, feed, and bioenergy. Tarigan, Dewi Hiasinta, T. Irmansyah, and Edison Purba. "Effect of Weeding Time on Growth and Production of Several Sorghum Varieties (Sorghum Bicolor (L.) Moench)." Journal of Agroecotechnology, University of North Sumatra 2.1 (2013): 96594.Juarsah, I. (2015). Teknologi pengendalian gulma alang-alang dengan tanaman legum untuk pertanian tanaman pangan. Jurnal Agro, 2(1), 29-38. Pieter, Y., & Mejaya, M. J. (2018). Effect of biological fertilization on growth and yield of soybean in paddy field. Food Crop Agriculture Research, 2(1), Mulyani, A., Nursyamsi, D., & Harnowo, D. (2016). Potential and challenges of utilizing suboptimal land for various bean and tuber crops. In Proceedings of Research Seminar on Various Beans and Tuber Crops (Vol. 25, pp. 16-30). Malang: Food Crops Research and Development Center.Haliza, W., Purwani, E. Y., & Thahir, R. (2010). Pemanfaatan kacang-kacangan lokal mendukung diversifikasi pangan. Pengembangan Inovasi Pertanian, 3(3), 238-245. Sembiring, S. J. B., Saniman, S., & Azlan, A. (2020). Expert System for Diagnosing Pests and Diseases of Amorphophallus Muelleri Plants at the North Sumatra Food Crops and Horticulture Office Using the Dempster Shafer Method. Cyber Tech Journal, 3 (1).

	Wijayanto, N., & Pratiwi, E. (2011). Effect of shade from sengon (Paraserianthes falcataria (L.) Nielsen) stands on porang (Amorphophallus onchophyllus) plant growth. Journal of Tropical Silviculture, 2(1), 46-51. Supporter Latest journals.
Last date of update	July, 2025

6th Semester

PNF306 AGROINDUSTRY

Course Name	Agroindustry
Code	PNF306
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Ir. Terip Karo-Karo, MS
Language	Indonesian or English
Relation to curriculum	Courses of interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The Agroindustry course provides an overview of the agroindustry concept, including the current challenges and opportunities in the agroindustry. Students are provided with an understanding of the potential and development of agroindustry. To this end, students will be given an understanding of the characteristics of agroindustry raw materials, agroindustry production technology, agroindustry processing transformation, and industrial machinery and technology. This course equips students with the ability to manage agroindustry, including raw material management, operational management, human resource management, technology management, marketing management, and agroindustry quality management.
Module objectives/intended learning outcomes	Able to develop a global perspective for character and self-potential in accordance with the field of science or across disciplines. Able to build a character with a global perspective in the field of science or across disciplines.

Content	1. Explaining the definition, general overview, and scope of the agroindustry course 2. Explaining the advantages and disadvantages of agroindustry 3. Explaining agro-industrial development strategies 4. Explaining the rubber agroindustry 5. Explaining agroindustrial regions 6. Explaining the cereal and tuber agroindustry 7. Explaining technological innovations / review 8. Explaining the palm oil agroindustry 9. Explaining the essential oil agroindustry 10. Explaining the sweetener agroindustry 11. Explaining the horticultural and fruit agroindustry 12. Explaining products from the horticultural agroindustry 13. Explaining agroindustry and the scale of agroindustry 14. Explaining agroindustry and the scale of agroindustry
Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • Projec base learning (30%) • Case methods (15%)
Learning Media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Handoko, H. T. 1996. Fundamentals of Production and Operations Management. BPFE. Yogyakarta Santoso, I. 2013. Introduction to Agroindustry. Universitas Brawijaya Press Soekartawi. 2000. Introduction to Agroindustry. Raja Grafindo Persada. Jakarta Mayers, R. 1982. Production and Operation Management. McGraw-Hill. New York

	Said, E.G and A.H. Intan. 2001. Agribusiness Management. Ghalia Indonesia. Jakarta
Last update of date	July, 2025

AGR 1206 AGRIBUSINESS SYSTEMS AND ENTERPRISES

Course Name	Agribusiness Systems and Enterprises
Code	AGR 1206
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Lindawati SP, M.Si
Language	Indonesian or English
Relation to curriculum	Courses of interest Elective course
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended s for Required and recommended prerequisites for joining the module	-
Course Description	This course studies the concepts, scope, and performance analysis of agribusiness systems; as well as the application of the agribusiness system framework to a wide range of agricultural commodities (agriculture, fisheries, livestock, plantations, and forestry) sustainably within the scope of companies, regions, and nationally.
Module objectives/intended learning outcomes	Able to apply the concepts, scope, and performance analysis of agribusiness systems and the implementation of agribusiness system frameworks across a wide range of agricultural commodities sustainably at the company, regional, and national levels.

Content	1. Understanding and able to explain about the definition and scope of agribusiness both as a business and as a system 2. Understanding and able to explain the role of the Agro-Input subsystem in the complex agribusiness system of agricultural commodities in general 3. Understanding and able to explain the role of the Agro-Production subsystem in the complex agribusiness system for agricultural commodities in general 4. Understanding and able to explain the role of the Agro-Industry subsystem in the complex agribusiness system for agricultural commodities in general 5. Understanding and able to explain the role of the Agro-Marketing subsystem in the complex agribusiness system for agricultural commodities in general 6. Understanding and able to explain the role of the Agro-Supporting subsystem in the complex agribusiness system for agricultural commodities in general 7. Understanding and able to explain and correlate the patterns and models of Cooperation in complex agribusiness systems from the perspectives of Vertical Backward, Vertical Forward, and Horizontal Linkage 8. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading horticultural, food, and secondary agricultural commodities 9. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading plantation agricultural commodities 10. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading plantation agricultural commodities 11. Understanding and able to explain and correlate the performance of all agribusiness subsystems in complex agribusiness ventures on various leading livestock and fishery commodities 12. Understanding and able to explain and correlate the performance of all agribusiness subsystems in

	complex agribusiness ventures on various leading livestock and fishery commodities 13. Understanding and able to explain and correlate business performance and agribusiness systems as drivers of development that support sustainable development 14. Understanding and able to explain and correlate business performance and agribusiness systems as drivers of development that support sustainable development

Examination forms	• Post Test (15 %) • Group Presentation and Student Participation in Q&A (15%) • Design assignment (15%) • Book Review/ Midterm Exam (Individual) (20%) • Final Exam (35%)
Learning media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Key Reading Barnard, F., Akridge, J., Dooley, F dan Foltz, J. 2012. Agribusiness Management. Fourth Edition. US:Routledge.Asie, E. R. (2023). Vegetable Crop Production Technology. Publisher P4I.
Last update of date	July, 2025

AGT 3208 SUSTAINABLE AGRICULTURE SYSTEM

Course Name	Sustainable Agriculture System
Code	AGT 3208
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Ir. Chairani Hanum, MS.
Language	Indonesian or English
Relation to curriculum	Elective courses in specialization
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the scope of sustainable agriculture; Integrated Crop Management includes integrated soil management, integrated pest and disease management, environmental management (ecosystems and agroecosystems); Principles of Sustainable agriculture; Bionergy development and its principles; Market development in sustainable agricultural systems. The sustainable agriculture system course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Students are able to apply agrotechnology theory to create sustainable agricultural systems. Students are able to solve problems in the field of agrotechnology by paying attention to economic, public health and safety, socio-cultural and environmental factors. Students are able to develop global insights for character and self-potential in accordance with scientific fields and across disciplines.

Content	1. Explanation and scope of sustainable integrated farming systems 2. The concept of sustainable agriculture 3. Organic Agriculture 4. Plant breeding and biodiversity 5. Agricultural production in Indonesia and food and energy needs 6. Natural resource management 7. Waste management/recycling 8. Agroecology Plant diseases 9. Concepts of controlling crop pests, diseases and weeds 10. Farming community development 11. Sustainable Agriculture Technology towards Precision agriculture 12. Economic indicators 13. Policies and economic aspects 14. Case studies and field projects
Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • 3. Projec base learning (30%) • 4. Case methods (15%)
Learning media	Power point, screen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Firnia, D., Lahati, B. K., Kusumawati, A., Darma, W. A., Umam, C., Jihad, M., ... & Dahliana, B. 2023. Sistem Pertanian Berkelanjutan. Penerbit Tahta Media. Agustina, L. 2011. Teknologi Hijau dalam Pertanian Organik Menuju Pertanian Berkelanjutan. Universitas Brawijaya Press. Miarso, M. 2023. Penerapan Sistem Pertanian Berkelanjutan Dalam Mendukung Produksi

	Pertanian. AGRONIMAL: Jurnal Ilmiah Pertanian dan Peternakan, 1(1), 23-26. Support: Efendi, E. 2016. Implementasi sistem pertanian berkelanjutan dalam mendukung produksi pertanian. Warta Dharmawangsa, (47). Ma'ruf, A. 2017. Agrosilvopastura sebagai sistem pertanian terencana menuju pertanian berkelanjutan. Bernas: Jurnal Penelitian Pertanian, 13(1), 81-90. Rachma, N., & Umam, A. S. 2021. Pertanian organik sebagai solusi pertanian berkelanjutan di Era New Normal. Jurnal Pembelajaran Pemberdayaan Masyarakat (JP2M), 1(4), 328-338. Puspitasari, R. D. 2020. Pertanian berkelanjutan berbasis revolusi industri 4.0. Jurnal Layanan Masyarakat (Journal of Public Services), 3(1), 26. Yulianto, K. 2016. Agroekologi: Model pertanian berkelanjutan masa depan. Jurnal Tambora, 1(3). Hidayati, F., Yonariza, Y., Nofialdi, N., & Yuzaria, D. 2019. Intensifikasi lahan melalui sistem pertanian terpadu: Sebuah tinjauan. In Unri Conference Series: Agriculture and Food Security (Vol. 1, pp. 113-119). Ningsih, F., & Syaf, S. 2015. Faktor-faktor yang menentukan keterlibatan pemuda pedesaan pada kegiatan pertanian berkelanjutan. Jurnal Penyuluhan, 11(1).
Last date of update	July, 2025

TEP 2216 MACHINERY AND EQUIPMENT

Course Name	Machinery and Equipment
Code	TEP 2216
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Taufik Rizaldi, S.TP, M.Si
Language	Indonesian or English
Relation to curriculum	Elective courses outside the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minit) per minggu atau 28 jam per semester • Self-study : (2 x 60 minit) per minggu atau 28 jam per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course explains the scope of machinery and equipment, the definition of agricultural mechanization; explains the sources of agricultural power, motor baker, power and efficiency of motor baker; tillage tools / machines; planting tools / machines; plant care tools / machines; harvesting tools / machines. The machinery and equipment course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams..
Module objectives/intended learning outcomes	Students are able to develop global insights for character and potential in accordance with scientific fields and across disciplines.

Content	1. Scope of the subject of machinery and equipment, Definition of mechanization as understood by mechanization experts in Indonesia 2. Types of labor available in agriculture 3. Difference between gasoline motor and diesel motor 4. Power and efficiency of combustion motors 5. Classification of tractors and auxiliary equipment on tractors 6. Types of tillage tools I and II 7. How to calculate work capacity in tillage, How to calculate labor requirements in tillage 8. How to calculate equipment unit requirements in tillage 9. Types of tools that can be used for plant cultivation 10. Types of tools that can be used for plant maintenance 11. Ways to calculate work capacity in seed planting and calculate the amount of equipment Compulsory 12. Types of tools that can be used for harvesting 13. How to calculate work capacity in crop harvesting with mechanized tools 14. Selection of agricultural machinery
Examination forms	• Quiz (10%) • Task (20%) • Midterm Exam (35%) • Final Exam (35%)
Learning media	Power point (LCD), whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Primary: Nainggolan, T. 2004. Mekanisasi Pertanian. Prabowo, A. (2013). Kebijakan antisipatif pengembangan mekanisasi pertanian. Analisis Kebijakan Pertanian, 11(1), 27-44.

	Santoso, D. 2023. Transformasi dan Pengembangan Mekanisasi Pertanian di Kawasan Perbatasan. Sekunder: Priyanto, A. 1997. Penerapan mekanisasi pertanian. Jurnal Keteknikan Pertanian, 11(1). Djamhari, S. 2009. Kajian Penerapan Mekanisasi Pertanian di Lahan Rawa Lebak Desa Putak-Muara Enim. Jurnal sains dan teknologi Indonesia, 11(3). Humam, A., Mutia Sani, A., Reziati, E., Hurul Islami, F., Laelastuti, F., & Heryani, I. 2018. Efek Ekonomis dari Mekanisasi Pertanian di Wilayah Gedebage aliran sungai Cinambo. Ratnawati, C. 2020. Mekanisasi Usahatani Padi Di Kecamatan Sananwetan Kota Blitar. Manajemen Agribisnis: Jurnal Agribisnis, 20(1), 1-13. Erniati, E., Solahudin, M., Lulung, P., & Wardani, I. K. 2020. Aplikasi Metode Analisis Swot untuk Merumuskan Strategi Pemanfaatan Mekanisasi Pertanian di Kabupaten Kapuas Hulu Provinsi Kalimantan Barat. Jurnal Ilmiah Rekayasa Pertanian dan Biosistem, 8(2), 219-229. Jiwantoro, A., Argo, B. D., & Nugroho, W. A. 2013. Analisis Efektivitas Mesin Penggiling Tebu dengan Penerapan Total Productive Maintenance (In Press, JKPTB Vol 1 No 2). Jurnal Keteknikan Pertanian Tropis dan Biosistem, 1(2). Sugandi, W. K., Yusuf, A., & Saukat, M. 2016. Rancang Bangun Dan Uji Kinerja Mesin Pencacah Rumput Gajah Untuk Pakan Ternak Dengan Menggunakan Pisau Tipe Reel (Construction Design and Test Performance of Elephant Grass for Cattle Feed using Reel Type Knife): Construction Design and Test Performance of Elephant Grass Cutting Machine for Cattle Feed using Reel Type Knife. Jurnal Ilmiah Rekayasa Pertanian dan Biosistem, 4(1), 200-206.
Last date of Update	July, 2025

AGT 3204 FIELD WORK PRACTICES

Course Name	Field Work Practices
Code	AGT 3204
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Nini Rahmawati, SP., M.Si
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Doing work practices in companies / agencies / business units engaged in agrotechnology. This course teaches about ageotechnology insights: work culture, discipline towards rules and time, work creativity, work motivation, accuracy and thoroughness of work, organizational observation and management observation, productive activities; introduction to production and production machines, production stages and production activities, communication; observation of the communication process, appreciation of the communication process. cooperation, observation of the process of cooperation in

	the industry, cooperation with workers, supervisors and superiors, planned meetings.
Module objectives/intended learning outcomes	Able to internalize the BINTANG values in developing their ability as a lifelong learner in the field of agrotechnology
Content	1. Research methods to identify problems in the field of agrotechnology 2. Research methods to identify problems in the field of agrotechnology 3. Communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations. Agrotechnology both orally and in writing, in academic and non-academic situations. 4. Global insights for character and self-potential in accordance with scientific and cross-disciplinary fields 5. Implementing learning in community groups 6. Solve problems in the field of agrotechnology by taking into account environmental factors 7. Solve problems in the field of agrotechnology by taking into account environmental factors 8. Managing natural resources, especially in the field of plantations 9. Managing human resources, especially in the field of plantation 10. Apply communication theory in indonesian 11. Apply global insights in various aspects of life within the scope of monodisciplines and interdisciplines scope of monodisciplines and interdisciplines 12. Apply global insights in various aspects of life within the scope of monodisciplines and interdisciplines scope of monodisciplines and interdisciplines 13. Building global-minded characters in scientific and cross-disciplinary fields 14. Building global-minded characters in scientific and cross-disciplinary fields
Examination forms	• Attitute (7%) • Dissiplinity (5%)

	• Practical works (28%) • Final report (25%) • Final examination (seminar) (10%) • Video project (25%)
Media employed	Power point, screen. whiteboard, e-learning (LMS)
Study and examination requirements	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Arifin, Muhammad. Analisa Dan Perancangan Sistem Informasi Praktek Kerja Lapangan Pada Instansi/Perusahaan. Simetris: Jurnal Teknik Mesin, Elektro Dan Ilmu Komputer, 2014, 5.1: 49-56. Novianti, Novianti; Qashlim, A. Akhmad; Kahpi, Ashabul. Sistem Informasi Pendataan Dan Penilaian Pkl (Praktek Kerja Lapangan) Mahasiswa Berbasis Web. Journal Peqguruang, 2021, 3.2: 579-583. Priyanto, Priyanto, Et Al. Pengaruh Persepsi Terhadap Kesiapan Kerja Melalui Kepuasan Praktek Kerja Lapangan Mahasiswa Perguruan Tinggi Vokasi Pariwisata. Jurnal Kepariwisataan, 2023, 22.1: 97-108.
Last date of update	Juli, 2025

AGT3219 ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR AGRICULTURE AND WASTE TREATMENT

Course Name	Environmental Impact Assessment (EIA) for Agriculture and Waste Treatment
Code	AGT3219
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Ir. Posma Mangasi Pintaria Marbun, M.P.
Language	Indonesian or English
Relation to curriculum	Choice in Interests
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The agricultural EIA and waste treatment course studies the definition of EIA, EIA study methodology and laws, government regulations and ministerial decrees relating to environmental management in general and specifically about EIA, in the field of agriculture / plantations, and quality standards for plantation waste, the environment (air, water and soil), understanding waste management techniques produced by the agriculture / plantation industry (oil palm, rubber and sugar cane), and alternative utilization of these wastes in an effort to achieve sustainable, environmentally friendly and zero waste agriculture by applying the concepts of RSPO and ISPO.

	This course is organized in 14 face-to-face meetings, structured assignments, case method, project-based learning, and practicum. Evaluation is carried out by conducting mid and final semester exams.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create sustainable agricultural systems Able to apply agrotechnology theories in plantation commodity management, especially oil palm, rubber and coffee in the management of natural resources and human resources. Able to develop global insights for character and self-potential in accordance with scientific fields and across disciplines.
Content	1. Students are able to explain the concepts of development and environment, environmentally sound development and human ecology as a special branch of development ecology. 2. The concept of environmental impact assessment (EIA), the meaning of impact, positive and negative impacts and the role of EIA in development planning. 3. Students are able to explain the important impact of an activity, types of businesses that are Compulsory to conduct EIA, institutions related to the implementation of EIA studies. 4. EIA study methodology. 5. laws, government regulations and ministerial decrees governing environmental management and AMDAL in agriculture/farming, types and contents of AMDAL and UKL/UPL documents. 6. regulations governing the quality standards of agricultural/plantation waste. 7. quality standards for air quality, surface water and groundwater and soil damage for biomass production 8. production process flow chart, material balance and development of processing technology in palm oil processing plants 9. waste treatment techniques and technological developments in palm oil processing plants.

	10. Application of PKS liquid waste to the plantation area; basic calculations to determine the area, capacity and design of trenches and calculation of waste flow rotation per year. 11. Flow chart of production process, material balance and development of processing technology in rubber and sugarcane processing plants 12. waste treatment techniques and technological developments in palm oil processing plants. 13. concept and assessment of RSPO and ISPO, soil pollution by agricultural waste (fertilizers, heavy metals and pesticides). 14. Pollution case paper and presentation
Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • Projec base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Fandeli, Chafid. 2004. Analisis Mengenai Dampak Lingkungan Prinsip Dasar Dalam Pembangunan. Liberty, Yogyakarta Otto Soemarwoto. 1991. Analisis Dampak Lingkungan. Gadjah Mada University Press. Yogjakarta. 378 h Ginting, P. 2007. Sistem Pengelolaan Lingkungan dan Limbah Industri. Yrama Widia, Bandung. 221 h

	Website Kementerian Lingkungan Hidup (www. Menlh.go.id) UU, PP, KepMen LH Teh. Balai Penelitian dan Perkembangan Pertanian: Bogor.
Last date of update	July, 2025

AGT 3224 ECOLOGY OF PLANT DISTURBING ORGANISMS

Course Name	Ecology of Plant Disturbing Organisms
Code	AGT 3224
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Dr. Ir. Marheni, MP.
Language	Indonesian or English
Relation to curriculum	Compulsory interest courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The Ecology of Pests and Plant Diseases course is a compulsory course for Agrotechnology study programs with an interest in Pests and Plant Diseases. This course discusses the concept of the plant destroying triangle, explains and describes the meaning and scope of biology, behavior and mechanisms as well as macro and micro environmental factors that affect the life and development of pests and plant pathogens that cause crop damage in agroecosystems, classifies insects based on status, dominance index and insect evenness in agroecosystems, and the interaction between the two. Learn about the population dynamics of pests and pathogens and their observations. To make it easier for students to understand, various cases of pests and diseases that develop during the lecture period are taken. The practicum of this course

	elaborates the theoretical lecture material into practical form, which includes the influence of the environment on the development of disease causes and the proliferation of plant pests in the field scope and followed by the influence of the biotic and abiotic environment on the development of diseases and the spread of plant pests. This course is held in 14 face-to-face meetings, structured assignments, case method and project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create sustainable agricultural systems.

Content	1. Students are able to explain the meaning of the levels of life in the biosphere and the population causing damage and attack of plants. 2. Students are able to explain environmental inhibiting factors and trophic system mechanisms in regulating insect pests 3. Students are able to interpret the status of insects and measure the environmental stability of an agroecosystem through the presence of insec 4. Students are able to explain the meaning of habitat and niche of insect pests, natural enemies, pollinating insects, and decomposer insects 5. Students are able to understand the population regulation of a pest species in rice, soybean, corn, and chili plantations. 6. Students are able to recognize, classify and classify insects from rice, beans, soybeans, corn, and chili. 7. Students are able to explain the stability of the environment in rice, soybean, corn, and chili plantations based on the presence of insects. 8. Students are able to explain the stability of the environment in rice, soybean, corn, and chili plantations based on the presence of insects. 9. Students are able to explain and understand the environmental factors that affect the growth of soil-borne pathogens. 10. Students are able to explain and understand the environmental factors that affect the growth of viruses. 11. Students are able to explain and understand the environmental factors that affect mold growth. 12. Students are able to understand and explain about environmental factors that affect the development of nematodes. 13. Students are able to understand, and explain the environmental factors that affect the development of soil-borne and air-borne pathogens such as Ganoderma, Fusarium. leaf rust or Cercospora. 14. Students are able to analyze and consider plant disease control tactics based on ecological principles.

Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading List	Main Readings Mambu, A. P., Salaki, C. I., & Wanta, N. (2016, October). Inventarisation Of Parasitoids In Corn (Zea Mays) Plant Pests In North Minahasa District. In Cocos (Vol. 7, No. 6). Indriyanti, D. R., Pribasari, A. D. H., Puspitarini, D., & Widiyaningrum, P. (2014). Abundance And Distribution Pattern Of Entomopathogenic Nematodes As Insect Pest Control Agents In Various Fields In Semarang. Journal Of Suboptimal Lands: Journal Of Suboptimal Lands, 3(1). Abywijaya, I. K., Hikmat, A., & Widyatmoko, D. (2014). Diversity And Distribution Patterns Of Invasive Alien Plant Species In Sempu Island Nature Reserve, East Java. Indonesian Journal Of Biology, 10(2). Ginting, C., & Prasetyo, J. (2016). Plant Pathogenic Fungi. Swibawa, I. G., Yulistiara, S. P., & Aeny, T. N. (2015). Application Of Tillage And Mulching Systems In Sugarcane For Dominant Plant Parasitic Nematode Control. Journal Of Applied Agricultural Research, 15(2). Sastrahidayat, I. R. (2016). Plant Diseases By Obligate Parasites. Brawijaya University Press. Sastrahidayat, I. R. (2016). Plant Diseases By Obligate Parasites. University Of Brawijaya Press. Hakim, L. (2022). Plant Pathogenic Bacteria. Syiah Kuala University Press.

	Khaeruni, A., Sutariati, G. A. K., & Wahyuni, S. (2010). Characterization And Activity Test Of Ultisol Land Rhizosphere Bacteria As Plant Growth Promoters And Biological Agents Of Soil-Borne Pathogenic Fungi In Vitro. Journal Of Pests And Diseases Khaeruni, A., Sutariati, G. A. K., & Wahyuni, S. (2010). Characterization And Activity Test Of Ultisol Land Rhizosphere Bacteria As Plant Growth Promoters And Biological Agents Of Soil-Borne Pathogenic Fungi In Vitro. Journal Of Tropical Plant Pests And Diseases, 10(2), 123-130.
Last Update Date	July, 2025

AGT 3227 PLANTATION PESTS AND DISEASES

Course Name	Plantation Pests and Diseases
Code	AGT 3227
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Ir. Suzanna Fitriany Sitepu M.Si
Language	Indonesian or English
Relation to curriculum	Choice in interests in plant protection
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses the introduction of important pests and diseases (which dominate) in plantation crops along with appropriate management in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	Students are expected to be able to identify important pests and diseases in superior commodities of plantation crops, their importance, and be able to determine appropriate management strategies with the application of science and technology based on bioecology, and pest behavior in accordance with the principles of Integrated Pest Management.

Content	1. Important pests in plantation crops 2. Pest bioecology 3. Important pests of the Cocoa crop, symptoms of attack behavioral bioecology, and control techniques 4. Important pests of Coffee plants, attack symptoms behavioral bioecology, and control techniques 5. Important pests of Tea plants, attack symptoms behavioral bioecology, and control techniques (CM) 6. Important pests of the Coconut crop, attack symptoms, behavioral bioecology, and control techniques 7. Important pests of sugarcane and tobacco crops, symptoms of attack, behavioral bioecology, and control techniques (CM) 8. Oil palm diseases, history of disease development, symptoms, causes and control techniques 9. Important pests of the Coconut crop, attack symptoms, behavioral bioecology, and control techniques 10. Rubber plant diseases, history of disease development, symptoms, causes of disease and control techniques (PBL) 11. Cocoa plant diseases, history of disease development, symptoms, causes and control techniques 12. Coffee, history of disease development, symptoms, causes of disease and control techniques 13. Tobacco plant diseases, history of disease development, symptoms, causes of disease and control techniques 14. Sugarcane diseases, history of disease development, symptoms, causes and control techniques
Examination forms	• Quiz (5%) • Midterm exam (20%) • Final exam (20%) • Project based learning (35%) • 5. Case methods (20%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79

	B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading: Binns MR, Nyrop JP, and Der Werf WV. 2000. Sampling and Monitoring in Crop Protection: The Theoretical Basis For Developing Practical Decision Guides. New York. CABI Publishing. Boivin G, dan Vincent C. 1987. Sequential Sampling For Pest Control Program. Toronto. Reseach Branch Agriculture Canada. Ciancio A, and Mukerjee KG. 2007. General Concepts in Integrated Pest and Disease Management. Springer Verlag. DeBach P, Schlinger EI (ed). 1973. Biological control of Insect & Weeds. London. Chapman & Hall. Dufour R. 2008. Biointrnsive Integrated Pest Management (IPM), Fundamentals of sustainable agriculture. NCAT Agriculture Specialist Published 2001 Flint ML, and van den Bosch R. 1981. Introduction to Integrated Pest Management. New York. Plenum Press. Norris RF, Caswell-Chen EP, and Kogan, M. 2003. Concepts in integrated Pest Management. New Jersey. Prentice Hall. Oka IN. 2005. Pengendalian Hama Terpadu dan Implementasinya di Indonesia. Gadjah Mada University Press. Yogyakarta. Effendi., dan S. Baehaki. 2009. Strategi Pengendalian Hama Terpadu Tanaman Padi Dalam Perspektif Praktek Pertanian yang baik (Good Agricultural Practices). Pengembangan Inovasi Pertanian. 2(1): 68-78. Agustian A dan Rachman B. 2009. Penerapan Teknologi Pengendalian Hama Terpadu pada Komoditas Perkebunan Rakyat. Perspektif. 8 (1) : 30-41.
Last date of update	July, 2025

AGT3225 PLANT CLINIC

Course Name	Plant Clinic
Code	AGT3225
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Dr. LIsnawita, SP., MSi.
Language	Indonesian or English
Relation to curriculum	Compulsory courses of the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course explains investigation and diagnosis in a plant health problem and also as a forum for distributing information about its control. The plant clinic also learns the role and function of connecting farmers with experts in their fields in 14 face-to-face lectures, structured assignments, case method and project-based learning, practicum, midterm exams, and final semester exams.
Module objectives/intended learning outcomes	Students are able to apply the theory of plant pests and diseases Students are able to solve problems in the field of agrotechnology by taking into account environmental factors

	Students are able to identify problems in the field of agrotechnology
Content	1. Meaning, purpose, and symptoms of damage due to 2. plant pests 3. Symptoms caused by plant pests 4. Symptoms caused by plant pests (continued) 5. Symptoms of damage caused by abiotic factors 6. Symptoms of damage due to soil nutrient deficiency and excess 7. Symptoms of damage due to soil nutrient deficiency and excess (continued) 8. How to make soil healthy (PBL) 9. Symptoms of plant damage caused by nematodes 10. Symptoms of plant damage caused by nematodes (continued) 11. Symptoms of plant damage caused by fungi (CM) 12. Symptoms of plant damage due to fungi (continued) 13. Symptoms of plant damage caused by viruses 14. Symptoms of plant damage due to bacteria
Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Habazar, T., Yanti, Y., dan Nasrun. 2015. Bakteriologi Tumbuhan. Bahan Ajar. Minangkabau Press.

	Hadiastono, T. Virologi Tumbuhan: Identifikasi dan Diagnosis Virus Tumbuhan. Universitas Brawijaya Press. Kelly, P. 2008. Global Plant Clinic: Getting better all the time, farmers and plant doctors talk about their work and plant health problems in Bangladesh Kumar, S., 2020. Abiotic stresses and their effects on plant growth, yield and nutritional quality of agricultural produce. Int. J. Food Sci. Agric, 4, pp.367-378. Rajkumar, R. and Anabel, N.J., 2018. Role of Plant Clinics in addressing pest and disease management. CSI Transactions on ICT, 6, pp.279-288. Raskin, I., Ribnicky, D.M., Komarnytsky, S., Ilic, N., Poulev, A., Borisjuk, N., Brinker, A., Moreno, D.A., Ripoll, C., Yakoby, N. and O'Neal, J.M., 2002. Plants and human health in the twenty-first century. TRENDS in Biotechnology, 20(12), pp.522-531. Srivastava, M.P., 2013. Plant clinic towards plant health and food security. International Journal of Phytopathology, 2(3), pp.193-203. Taylor, P. 2015 Plantwise Diagnostic Field Guide. CABI UK Yadav, S., Modi, P., Dave, A., Vijapura, A., Patel, D. and Patel, M., 2020. Effect of abiotic stress on crops. Sustainable crop production, 3
Last date of update	July, 2025

AGT3222 ORGANIC FARMING

Course Name	Organic Farming
Code	AGT3222
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Prof. Ir. T. Sabrina M.Agr.Sc., Ph.D
Language	Indonesian or English
Relation to curriculum	Elective of agronomy, plant breeding and plant protection
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course explains organic agriculture, ecological principles, roles and objectives of organic agriculture, organic fertilizers, soil biota and soil management for organic agriculture, the role of biofertilizers in supporting organic agriculture, organic pest and disease and weed control, the advantages of organic agricultural products, organic agricultural production and management aspects, the study of social, cultural and economic aspects of organic agriculture, the development of organic agriculture in Asia and Australia, standardization, quality assurance and certification of organic agricultural products, policies and regulations in marketing organic agricultural products and the development of organic agriculture in Africa.

Module objectives/intended learning outcomes	Students are able to apply the theory of the basic principles of sustainable agricultural systems Students are able to solve problems in the field of agrotechnology by taking into account environmental factors Students are able to identify problems in the field of agrotechnology Students are able to design innovations in the field of agrotechnology by utilizing science and technology

Content	1. Definitions of organic and natural farming, ecological principles of organic farming, roles and objectives of organic farming as well as concepts and strategies for achieving them in terms of management and practices 2. Potential and application of organic fertilizer in supporting agriculture 3. Function and role of soil biota and soil management for organic farming 4. Opportunities, utilization and barriers as well as the successful use of biofertilizers in supporting organic farming (CM) 5. Introduction of pesticide production systems and organic farming as well as the scope of biological control and its problems in organic farming (CM) 6. Development and progress of organic farming around the world (CM) 7. Advantages of organic agricultural products from all aspects (CM) 8. Organic agricultural production and management aspects 9. Social, cultural and economic aspects of organic farming 10. Development of organic farming in Asia 11. The development of organic farming in Australia 12. A study of the social, cultural and economic aspects of organic farming (PBL) 13. Standardization, quality assurance and certification/legislation organic agricultural products (PBL) 14. Policies and regulations in marketing organic agricultural products (PBL)
Examination forms	• Quiz (5%) • Mid Term Exam (15%) • Final Exam (20%)

	• Project based learning (30%) • Case methods (30%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Altieri, M. A. (2012). Agroecology: The Science of Sustainable Agriculture. CRC Press. Benbrook, C. M. (2012). Organic farming and the future of agriculture: A review. Agronomy for Sustainable Development, 32(1), 83-93. Food and Agriculture Organization (FAO). (2018). The State of Food and Agriculture 2018: Leveraging Food Systems for Inclusive Rural Transformation. FAO. Lampkin, N., & Padel, S. (1994). The Economics of Organic Farming: An International Perspective. CAB International. Reganold, J. P., & Wachter, J. M. (2016). Organic Farming in the Twenty-First Century. Nature Plants, 2(2), 15221. Hole, D. G., et al. (2005). Does organic farming benefit biodiversity?. Biological Conservation, 122(1), 113-130. Smith, L. (2020). The Role of Organic Farming in Sustainable Agriculture. Journal of Sustainable Agriculture, 42(3), 145-162.
Last date of update	July, 2025

AGT3226 BIOMETRICS IN PLANT PROTECTION

Course Name	Biometrics in Plant Protection
Code	AGT3226
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Dr. Lisnawita SP., M.Si.
Language	Indonesian or English
Relation to curriculum	Choice in interests of plant protection
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The biometrics in plant protection course studies statistical methods and data analysis applications that can be used to improve results and success in the management of plant pests and diseases. This course is organized in 14 face-to-face meetings, structured assignments, case method, project-based learning, and practicum. Evaluation is carried out by conducting mid and final semester exams.
Module objectives/intended learning outcomes	Students are able to apply the theory of plant pests and diseases

Content	1. Introduction of biometrics in crop protection 2. Experimental design in crop protection 3. Analysis of variance (ANOVA) to analyze treatment differences in plant protection research (CM) 4. Regression analysis in crop protection 5. Descriptive and inferential statistics 6. Hypothesis testing in plant protection research 7. Forecasting and prediction in crop protection 8. Pest and disease population modeling 9. Survival analysis in crop protection (CM) 10. Mapping and geostatistics for crop protection 11. Statistics in risk and decision management 12. Application of statistical technology and software (PBL) 13. Application of statistical technology and software (PBL) 14. Ethics and statistical validity in crop protection research
Examination forms	• Quiz (20%) • Midterm exam (20%) • Final exam (20%) • Project based learning (20%) • Case methods (20%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Malau, S. 2005. Biometrika Genetika dalam Pemuliaan Tanaman. Medan (ID): Universitas HKBP Nomensen. Nugroho, E. 2021. Biometrika Mengenal Sistem Identifikasi Masa Depan. Jakarta (ID): Andi Publisher.

	Sembel, D.T. 2024. Dasar-Dasar Perlindungan Tanaman. Jakarta (ID): Andi Publisher.
Last date of update	July, 2025

7th Semester

HPT 3210 BENEFICIAL INSECT

Course Name	Useful Entomology
Code	HPT 3210
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Ameilia Zulyanti Siregar, M.Sc, Ph.D
Language	Indonesian or English
Relation to curriculum	Mandatory courses in the interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course provides knowledge about the scope, benefits, characteristics of beneficial insects, classifying beneficial insects, and the ability to breed insects as livestock with the aim of producing commodities such as silk, honey, lac, and tea, which are used as food and feed, as well as detecting insects as indicators of pollution.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create sustainable agricultural systems. Able to implement research methods to identify problems in the field of agrotechnology.

Content	1. Explaining the scope of Useful Insect Science (UIS) and its benefits in life 2. Describing and explaining the utilization of insects in human life 3. Describing and explaining entomopathogens and their bioecology 4. Describing and explaining the biology of honey bees 5. Describing and explaining honey bee farming 6. Describing and explaining the biology of crickets 7. Describing and explaining cricket farming 8. Describe the dynamics of Describing and explaining the biology of silkworms 9. Describing and explaining silkworm cultivation 10. Describing and explaining the precise processing of insects 11. Describing and explaining the biology of dragonflies 12. Describing and explaining dragonfly rearing 13. Describing and explaining the processing of insects as a source of food 14. Describing and explaining the processing of insects as a source of medicine 15. Describing and explaining the processing of insects as cosmetic tools 16. Describing and explaining insects as indicators of pollution
Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59

	E ≤ 49
Reading list	Main: Adihendro. 1999. The Secret to Breeding Crickets. Ardy Agensy, Jakarta. pp. 1-69. Ameilia Z.S. 2009. Beneficial Agricultural Insects. USU Press, Medan. 183 pages. Arnett Russ, HJR., Richard L., & Jacques, JR. 1981. Guía de Insectos. Nueva York, Simon and Schuster Inc, 68p. Bambang, AM. 1991. Keeping Honey Bees. Kanisius. Jakarta. 63 pages. Christian, W y G. Gottsberger. 2000. La diversidad en la polinización de cultivos. Crop Science 40 (5): 1209-1222. Driesche, R.GV y Bellows, Jr TS. 1996. Control Biológico. Chapman and Hall, Boston-Amerika. Kalshoven, LGE. 1981. Hama Tanaman di Indonesia. Revisado y traducido por van Derlaan. Ikhnar Baru, Jakarta. 386-397p. Kusumah, E. 1994. Economic Impact of the Implementation of the PHT Concept on Highland Vegetable Farmers. Workshop on the Socio-Economic Impact of the PHT Program. Center for Agricultural Socio-Economic Research. Bogor, March 7-9, 1994. 10 pages. Paimin, F., B. Pudjiastuti, and Erniwati. 1999a. Success in Cricket Farming. Penebar Swadaya Jakarta. pp. 1-65 Nazaruddin. 1993. Silkworm Cultivation. pp. 30-40. Paimin, FB. 1999b. Successfully Overcoming Problems in Cricket Farming. Penebar Swadaya Jakarta. pp. 1-72. Rismunandar. 1981. Bees: Versatile Insects. CV Masa Baru. Jakarta. Pages 13-20. Siregar, AZ. 2001. Silkworm Farming. Iptek Waspada. Wednesday, December 5, 2001. Siregar, AZ. 2009. Dragonfly Predator in Agriculture. USU Press, Medan Siregar, A. Z., Che Salmah Md. Rawi, and Zulkifli Nasution. 2009. Un estudio de odonatos en un campo de arroz de montaña en Manik Rambung, Siantar, al norte de Sumatra. Kultivar Journal 1 (3): 21-30. Taufik, RMS. 1991. Raising Silk-producing Caterpillars. Suara Karya. February 19, 1991.
Last update of date	July, 2025

AGT4120 POST-HARVEST PESTS AND DISEASES

Course Name	Post-Harvest Pests And Diseases
Code	AGT4120
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Ir Suzanna Fitriany Sitepu M. Si
Language	Indonesian or English
Relation to curriculum	Elective courses outside the study program
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The post-harvest pests and diseases course discusses in depth the various pests and diseases that attack agricultural products after harvest. In this context, students will learn the characteristics, biology, and behavior of pests and pathogens that can affect the quality and durability of post-harvest products. held in 14 face-to-face meetings, structured assignments, Case Method and Project-based learning, midterm exams, and semester exams.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create a sustainable agricultural system

	Able to solve problems in the field of agrotechnology by taking into account economic, public health and safety, socio-cultural and environmental factors. Students are able to apply the theory of plant pests and diseases Students are able to solve problems in the field of agrotechnology by taking into account environmental factors
Content	1. Characteristics of post-harvest products and their problems 2. Ecological factors that affect the abundance of warehouse pest populations 3. Ecological factors that affect the abundance of warehouse pest populations 4. Microclimate dynamics that affect pest development 5. Post-harvest pests of the beetle type (coleoptera) 6. Post-harvest pests of the type of moth (lepidoptera), psocid, termites 7. Biology and behavior of rats as warehouse pests 8. Good warehouse management and pest management techniques 9. Causes of post-harvest diseases 10. Appropriate seed health test methods 11. The effect of pathogens (especially fungi) of the warehouse on animals and humans 12. Post-harvest diseases of fruits and vegetables 13. Factors that influence the outbreak of post-harvest diseases 14. Post-harvest disease control techniques
Examination forms	• Task (5%) • Quiz (5%) • Midterm exam (20%) • Final exam (20%) • Case methods (25%) • Project base learning (25%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80

	B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main Reading Dobie, P., Haines, C. P., Hodges, R. J., & Prevett, R. F. (1984). Insects and Arachnids of Tropical Stored Products, Their Biology and Identification. Storage Dept Development and Research Institute, Slough, England. Mardinus. (2003). Patologi Benih dan Jamur Gudang. Andalas University Press. Meaney, P. (1998). Insect Pest Food Premises. National Britannia Ltd. Martoredjo, T. (1986). Ilmu Penyakit Lepas Panen. Ghalia Indonesia, Yogyakarta. Neergard, P. (1997). Seed Pathology. The Maxmillan Press Ltd, London University Press. Semangun, H. (1996). Pengantar Ilmu Penyakit Tumbuhan. Gajah Mada University Press. Wagiman, F. X. (2014). Hama Pasca Panen dan Pengelolaannya. Gajah Mada University Press.
Last date of update	July, 2025

HPT 3 208 PESTS AND DISEASES OF FOOD AND HORTICULTURAL PLANTS

Course Name	Pests and Diseases of Food and Horticultural Plants
Code	HPT 3 208
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Prof. Dr. M.Cyccu Tobing
Language	Indonesian or English
Relation to curriculum	Elective in Plant Protection interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Deskripsi Mata Kuliah	After taking this course, students are able to explain and understand the scope, benefits, characteristics of pests and diseases in horticultural, food and tuber crops, such as vegetables, fruits, rice, corn, soybeans, wheat, sorghum, tubers by paying attention to the causes and symptoms of damage; integrated pest and disease control biologically and natural enemies; physical and chemical in agriculture
Module objectives/intended learning outcomes	Able to explain the scope, objectives, benefits and characteristics of pests and diseases in horticultural crops, food and tubers

Content	1. Scope, objectives, benefits and characteristics of pests and diseases in horticultural, food and root crops. Characteristics and bioecology of vegetable pests. How to detect pest infested chilli, tomato & shallot plants. 2. Integrated Pest Management of vegetables. Characteristics and bioecology of pests of cabbage, cabbage and mustard vegetable crops. How to detect cabbage, cabbage, mustard plants that are attacked by pests. 3. Integrated Pest Management of cabbage, cabbage, mustard. Characteristics and bioecology of potato and pekcoy pests. How to detect pest infested potato and pekcoy plants. 4. Integrated pest management of potato and pekcoy crops. Characteristics and bioecology of pajale crop pests. How to detect pest infested food crops (pajale). 5. Integrated Pest Management of pajale crops. Characteristics and bioecology of pests of sorghum and porang. How to detect pest infested food crops (sorghum and porang). Integrated pest management of sorghum and porang. 6. Characteristics and bioecology of tuber crop pests. How to detect pest infested food crops (tubers). Integrated pest management of tuber crops. 7. Characteristics and diseases of banana plants. How to detect nematode and fungus infested banana plants. Disease control in banana plants 8. Characteristics and diseases of rice plants. How to detect nematode and fungal infested adi plants.Disease control in rice plants 9. Characteristics and diseases of potato plants. How to detect potato plants infested with nematodes and fungi. Disease control in potato plants 10. Characteristics and diseases of banana plants. How to detect infected banana plants. Disease control in banana plants. Characteristics and diseases of rice and maize plants. How to detect infested rice and maize plants 11. Disease control in banana plants. Characteristics and diseases of rice and maize plants 12. How to detect infested rice and maize plants. Disease control in banana plants 13. Characteristics and diseases of potato plants. How to detect infested potato plants

	14. Disease control in potato plants

Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Ciancio A, and Mukerjee KG. 2007. General Concepts in Integrated Pest and Disease Management. DeBach P, Schlinger EI (ed). 1973. Biological Control of Insects & Weeds. London. Chapman & Hall. Dufour R. 2008. Biointrnsive Integrated Pest Management (IPM), Fundamentals of sustainable agriculture. NCAT Agriculture Specialist Published 2001 Semangun, H. 2000. Introduction to Plant Disease Science Publisher University of Indonesia, Jakarta Van der Plank. 1984. Epidemiology of Plant Diseases. New York: McGraw-Hill. Agrios GN. 2005. Plant Pathology, 5th edition. Elsevier Academic Press, California. 948 p Support: Related journals
Last date of update	July, 2025

AGT 3116 BIOLOGICAL CONTROL

Course Name	Biological Control
Code	AGT 3116
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Suzanna
lenguage	Indonesian or English
Relation to curriculum	Compulsory in Plant Protection interest courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Description	This course discusses the control of plant pest organisms (OPT) by natural enemies or biological control agents. However, it can also be called controlling plant diseases and pests biologically, namely by utilizing natural enemies. The biological control course is held in 14 face-to-face meetings, structured assignments, case method and/or project-based learning, practicum, midterm exams, and semester exams.
Module objectives/intended learning outcomes	students Able to apply agrotechnology theory to create sustainable agricultural systems. students are able to create innovations and contribute in the field of agrotechnology by utilizing science and technology.

Content	1. Definition, Benefits, And Drawbacks Of Biological Control 2. Application Of Natural Enemies In Biological Control 3. Analysis Of Characteristics, Groupings, And Propagation Techniques Of Natural Enemies 4. Application Of Predatory Insects In Biological Control 5. Weed Biological Control Design And Implementation Techniques 6. History Of Biological Control With Entomopathogens And Types Of Entomopathogens 7. Analysis Of Entomopathogenic Fungi 8. Analysis Of Entomopathogenic Bacteria 9. Analysis Of Entomopathogenic Viruses 10. Analysis Of Entomopathogenic Nematodes 11. Mechanism Design Of Plant Disease Biological Control Agents 12. Application Of Plant Disease Biological Control Agent Mechanism 13. Analyze How Plant Disease Biological Control Agents Work 14. Design Of Application Methodology For Plant Disease Biological Control Agents
Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Wagiman, F. X. 2019. Pengendalian hayati hama kutu perisai kelapa dengan predator Chilocorus politus. UGM PRESS.

	Sastrahidayat, I. R. 2012. Pengendalian Hayati dan Penyakit Tumbuhan Cara Uji Laboratorium. Universitas Brawijaya Press. Maisyaroh, W. 2014. Pemanfaatan tumbuhan liar dalam pengendalian hayati. Universitas Brawijaya Press. Support: Istiqomah, I., & Kusumawati, D. E. 2018. Pemanfaatan Bacillus subtilis dan Pseudomonas fluorescens dalam pengendalian hayati Ralstonia solanacearum penyebab penyakit layu bakteri pada tomat. Arwiyanto, T., & Hartana, I. 1997. Pengendalian hayati penyakit layu bakteri tembakau: 1. Isolasi bakteri antagonis. Jurnal Perlindungan Tanaman Indonesia, 3(1), 54-60. Mihardjo, P. A., & Majid, A. 2008. Pengendalian penyakit layu pada pisang dengan bakteri antagonis Pseudomonas fluorescens dan Bacillus Subtilis. Jurnal Pengendalian Hayati, 1(1), 26-31. Suswanto, I., Simamora, C. J. K., & Anggorowati, D. 2018. Penggunaan cendawan endofit sebagai agens pengendali hayati pada lada (Piper nigrum L.). Jurnal Agroqua, 16(2), 143-151. Sudirman, A., Sumardiyono, C., & Widyastuti, S. M. 2011. Pengendalian Hayati Penyakit Layu Fusarium Pisang (Fusarium oxysporum f. sp. cubense) dengan Trichoderma sp. Jurnal Perlindungan Tanaman Indonesia, 17(1), 31-35. Arwiyanto, T., & Hartana, I. 1999. Pengendalian hayati penyakit layu bakteri tembakau: 2. Percobaan di rumah kaca. Jurnal Perlindungan Tanaman Indonesia, 5(1), 50-59. Puspitasari, A. E., Abadi, A. L., & Sulistyowati, L. 2014. Potensi khamir sebagai agens pengendali hayati patogen Colletotrichum sp. pada buah cabai, buncis, dan stroberi. Jurnal HPT (Hama Penyakit Tumbuhan), 2(3), 92-101.
Last date of update	July, 2025

AGT4117 PRECISION AGRICULTURE

Course Name	Precision Agriculture
Code	AGT4117
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Prof. Ir. Zulkifli Nasution, M.Sc., Ph.D.
Language	Indonesian or English
Relation to curriculum	Elective course of agronomy
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study : (2 x 60 minutes) per week or 28 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course will discuss the development of agriculture including the concept of precision agriculture (definition, scope, interaction, process cycle, method, equipment), the benefits of precision agriculture, precision agriculture applications, the development of precision agriculture in the world and Indonesia, and the prospects for precision agriculture.
Module objectives/intended learning outcomes	Students are able to apply the theory of the basic principles of sustainable agricultural systems Students are able to design innovations in the field of agrotechnology by utilizing science and technology

Content	1. Background, development goals and scope of precision agriculture 2. Conceptual foundation of precision agriculture, empirical review, countries implementing precision agriculture, tangible evidence of precision agriculture development 3. Development Model, Precision Agriculture Model, Land Acquisition (site plan) (CM) 4. Land mapping precision, GIS utilization, map accuracy and detailed mapping (PBL) 5. Land mapping precision, GIS utilization, map accuracy and detailed mapping (continued) (PBL) 6. Evaluation of land suitability for food crops, plantations and horticulture 7. Pesticide fertilizer seed/seed production system (CM) 8. Agricultural irrigation, evaluation of irrigation techniques, irrigation structures, water use efficiency 9. Agricultural irrigation, evaluation of irrigation techniques, irrigation structures, water use efficiency (continued) 10. Agricultural tools and machinery, seed planting equipment, fertilization mechanization 11. Harvest mechanization, development of tools and mechanization according to location 12. Post-harvest and processing (PBL) 13. Finished goods-based production system (downstream agricultural products) 14. Distribution and marketing of green and blue carbon economy
Examination forms	• Mid term exam (5%) • Final exam (5%) • Project based learning (55%) • Case methods (35%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49

Reading list	Main: Sondakh, J., & Rembang, J. H. (2020). Karakteristik, potensi generasi milenial dan perspektif pengembangan pertanian presisi di Indonesia. In Forum Penelitian Agro Ekonomi (Vol. 38, No. 2, pp. 155-166). Saydi, R. (2021). Monitoring Curah Hujan dan Kelengasan Tanah Lahan Pertanian Menggunakan Sensor Berbasis Internet of Things (IoT) sebagai Dasar Pertanian Presisi. Jurnal Ilmiah Teknologi Pertanian Agrotechno, 6(1), 25. Data, M., Yahya, W., & Kurniawan, A. (2020). Implementasi Teknologi Virtualisasi Berbasis Kontainer untuk Perangkat Internet of Things pada Pertanian Presisi. CYBERNETICS, 3(01), 1-7. Manalu, L. P. Aplikasi Kontrol Digital Untuk Pemupukan Secara Variable Rate Pada Sistem Pertanian Presisi Digital Control Application For The Variable Rate Fertilization On Precision Farming System.
Last date of update	July, 2025

AGT4121 PLANT QUARANTINE

Course Name	Plant Quarantine
Code	AGT4121
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Prof. Dr. Lisnawita, SP., M.Si
Language	Indonesian or English
Relation to curriculum	Elective course in interests of plant protection
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, project based learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study : (2 x 60 minutes) per week or 28 hours per semester • Test: 60 minutes x 2 times = 120 minutes = 2 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	The plant quarantine course discusses the principles, theories, and practices related to the protection of plants from harmful organisms, including pests and diseases. The main focus of this course is on the policies, regulations, and procedures implemented to prevent the spread of harmful organisms through international and domestic trade. The Plant Quarantine course is organized into 14 face-to-face meetings, structured assignments, Case Method and or Project based learning, practicum, midterm exam, and final semester exam.
Module objectives/intended learning outcomes	Students are able to apply the theory of plant pests and diseases Students are able to identify problems in the field of agrotechnology

Content	1. Introduction to plant quarantine 2. General definition of plant quarantine 3. Types of quarantine pests that have and have not been reported (CM) 4. Pest Risk Analysis 5. Invasive Alien Species (IAS) 6. Export requirements for agricultural commodities 7. Area of Low Pest Prevalent (ALPP) 8. Pest Risk Management 9. OPTK (pathogen) and its handling 10. National Plant Protection Organization (NPPO) 11. Pest Risk Analysis (pathogen) 12. International cooperation (PBL) 13. Plant health and quarantine 14. Types of commodities and their problems
Examination forms	• Mid term exam (30%) • Final exam (30%) • Project based learning (15%) • Case methods (15%) • Quiz (10%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Aldrich, J. (2014). Plant Quarantine: A Global Perspective. Springer. IPPC (International Plant Protection Convention). (2020). International Standards for Phytosanitary Measures (ISPMs). Peters, D. (2016). Invasive Alien Species: A Global Perspective. Wiley. Sukartono, B. (2021). Dasar-Dasar Karantina Tumbuhan dan Keamanan Hayati. Jakarta: Penebar Swadaya. Wang, Y., & Chen, L. (2018). Pest Risk Analysis: A Comprehensive Guide. CRC Press. Zhao, J. (2015). Plant Health and Quarantine. Springer.
Last date of update	July, 2025

AGT4117 MASS PROPAGATION OF INSECT & ANTAGONISTIC AGENTS

Course Name	Mass Propagation of Insect & Antagonistic Agents
Code	AGT4117
Semester (s) in which the module is taught	VI
Lecturer (Person responsible)	Ameilia Zulyanti Siregar,M.Sc,Ph.D
Language	Indonesian or English
Relation to curriculum	Elective in Plant Protection interest courses
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class • .
Workload (incl. Contact hours, self-study hours)	• Learning process (3 x 50 minutes) per week or 35.00 hours per semester • Structured assignment (3 x 60 minutes) per week or 42 hours per semester • Self-study (3 x 60 minutes) per week or 42 hours per semester • Test: 120 minutes x 2 times = 240 minutes = 4 hours
Credit points	3 credits (equivalent with 4.8 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Insect & Antagonistic Agents Mass Propagation courses typically focus on techniques and methods for mass propagating insects and antagonistic organisms, which are often used in pest control and agricultural ecosystem improvement.
Module objectives/intended learning outcomes	Able to apply agrotechnology theory to create a sustainable agricultural system Students are able to apply the theory of plant pests and diseases

Content	1. Explain the scope, objectives, benefits and characteristics of mass propagation of insects and antagonistic agents 2. Explain the use and mass propagation of predators, parasitoids and beneficial insects of the order Coleoptera in agriculture. 3. Explain the use of predators, parasitoids and beneficial insects of the order Hymenoptera in agriculture. 4. Explain the use and mass propagation of predators, parasitoids and beneficial insects of the order Lepidotera in agriculture. 5. Explain the use and mass propagation of predators, parasitoids and beneficial insects of the Order Diptera in agriculture. 6. Explain the use and mass propagation of predators, parasitoids and beneficial insects of Neuroptera in agriculture. 7. Describe and explain the division, examples and rearing of endoparasitoids and ectoparasitoids. 8. Explain antagonistic agents from the bacterial class 9. Explain antagonistic agents from the bacterial class 10. Analyzing appropriate application methods for virus class antagonistic agents 11. Conducting mass multiplication of virus class antagonist agent applications 12. Analyze the appropriate application method for fungal antagonists and collaborate to conduct mass propagation of fungal antagonist agent applications 13. Describe antagonistic agents from the nematode group, 14. isolate antagonistic agents from nematode groups and performing mass propagation of antagonistic agents from nematode groups 15. Apply nematodes as antagonistic agents and collaborate to conduct mass propagation and application of nematode class antagonistic agents.
Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam(20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric:

	A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Muharam, A dan W. Setiawati. 2007. Teknik Perbanyakan Masal Predator Menochilus sexmaculatus Pengendali Serangga Bemisia tabaci Vektor Virus Kuning pada Tanaman CabaiJ. Hort. 17(4):365-373. Sorel,Benoît R.2017. Professional insect rearing: Strategical points and management method. New Jersey, USA. Araz Meilin1*, Y. Andi Trisyono2 , Edhi Martono2 , Damayanti Buchori3. 2012. Teknik perbanyakan massal parasitoid Anagrus nilaparvatae (Pang et Wang) (Hymenoptera: Mymaridae) dengan kotak plastik. Online version: http://jurnal.pei-pusat.org DOI: 10.5994/jei.9.1.7. Sri Lestari , Trisnowati Budi Ambarningrum , Hery Pratiknyo. 2013. Tabel Hidup Spodoptera litura Fabr. dengan Pemberian Pakan Buatan yang Berbeda. Jurnal Sain Veteriner ISSN : 0126 – 0421. Novri Nelly, Trimurti Habazar, Rahmat Syahni, Bandung Sahari, Damayanti Buchori. 2005. Tanggap Fungsional Parasitoid Eriborus argenteopilosus (Cameron) terhadap Crocidolomia pavonana (Fabricius) pada Suhu yang Berbeda. Hayati 12 (1): 17-22 Sri Ria Vidia Antika, Ludji Pantja Astuti, Rina Rachmawati. 2014. PERKEMBANGAN Sitophilus Oryzae (Coleoptera: Curculionidae) Pada Berbagai Jenis Pakan. Jurnal HPT 2 (4): 77-84.
Last date of update	July, 2025

AGT 4106 AGROTECHNOLOGY

Course Name	Agrotechnology
Code	AGT 4106
Semester (s) in which the module is taught	VII
Lecturer (Person responsible)	Prof. Ir. Edison Purba, Ph.D
Languange	Indonesian or English
Relation to curriculum	Choice in interest
Teaching methods	• Lectures (explanation, Self-study) • Structured assignment (i.e.: article reading and review, case method, projec base learning) • The class size 30-50 students per class
Workload (incl. Contact hours, self-study hours)	• Learning proses (2x 50 minutes) per week or 23.30 hours per semester • Structured assignment (2 x 60 minutes) per week or 28 hours per semester • Self-study: (2 x 60 minutes) per week or 28 hours per semester • Test: 60 minutes x 2 times = 120 minutes = 2 hours
Credit points	2 credits (equivalent with 3.2 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	Agrotechnology courses learn about modern agricultural technology, focusing on innovations to improve productivity, sustainable farming systems and efficiency in agriculture. Topics include precision agriculture, smart farming, advances in biotechnology and sustainable farming systems.
Module objectives/intended learning outcomes	Students are able to explain the scope of agrotechnology and the differences between conventional and modern agricultural systems.

Content	1. Explain the scope scope agrotechnology and the difference between agricultural systems conventional and modern farming systems. 2. Explained modern agriculture smart agriculture efforts to anticipate climate change 3. Explain efficient agribusiness supply chain management 4. Explain the technology-based precision agriculture approach 5. Definition of smart farming, use of IoT and remote sensing principles 6. Definition and challenges of sustainable agriculture and agroforestry systems 7. Utilization of renewable technology using autonomous tractors and agricultural robots. 8. The role of Biotechnology in sustainable agriculture systems, GMOs technology, genetic engineering and CRISPR 9. Apply the concept of challenges and opportunities of the agricultural sector in the future 10. Explain the utilization of Big Data and agricultural software in supporting sustainable agricultural systems 11. Utilization of remote sensing for plant pest and disease detection 12. Utilization of remote sensing for plant pest and disease detection (continue) 13. Students are able to apply technology utilization through innovation and collaboration for sustainable agricultural systems 14. Students are able to apply technology utilization through innovation and collaboration for sustainable agricultural systems (continue)
Examination forms	• Essays questions (5%) • Practical works (10%) • Midterm exam (20%) • Final exam (20%) • Project base learning (30%) • Case methods (15%)
Learning media	Power point, Srcreen, whiteboard, e-learning (LMS)
Study and examination requirements	Students can take the exam if they attend at least 80% of the 14 course sessions. Grading rubric: A ≥ 80 B+ = 75-79

	B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Main: Precision Agriculture Technology for Crop Farming by Qin Zhang Smart Agriculture: The Future of Food Production by A. Yousef Biotechnology in Agriculture and Food Processing by Keith W. Waldron
Last date of update	July, 2025

8th Semester

AGT 4201 RESEARCH PROPOSAL SEMINAR

Course Name	Research Proposal Seminar
Code	AGT 4201
Semester (s) in which the module is taught	VIII
Lecturer (Person responsible)	Thesis supervisor
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Small Group Self-study, • Role Play and Simulation, • Discovery Learning, • Independent Learning, • Cooperative Learning, • Collaborative Learning, • Contextual Learning, • Project Based Learning, and other equivalent methods.
Workload (incl. Contact hours, self-study hours)	Workload for 14 weeks or within 1 semester
Credit points	1 credits (equivalent with 1.6 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses application of agrotechnology theory in the field of plantation, application of research methods in the field of agrotechnology, identifying problems in the field of agrotechnology, applying communication theory in Indonesian, applying communication theory in writing final assignments and scientific publications in the field of agrotechnology
Module objectives/intended learning outcomes	Students able to apply research methods to identify problems in the field of agrotechnology Students able to apply communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations.

Content	1. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 2. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 3. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 4. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 5. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 6. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 7. The research method chosen, and write it up in the proposal seminar 8. The research method chosen, and write it up in the proposal seminar 9. The research method chosen, and write it up in the proposal seminar 10. The research method chosen, and write it up in the proposal seminar 11. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 12. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 13. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references 14. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references
Examination forms	• PB = Learning Process, (30%) • PT = Structured Assignment (40%) • KM = Independent Activity (30%)

Learning media	Lecture, Reception, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning
Study and examination requirements	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Reading material is related to the research topic taken
Last date of update	July, 2025

AGT 4201 RESULT SEMINAR

Course Name	Result Seminar
Code	AGT 4201
Semester (s) in which the module is taught	VIII
Lecturer (Person responsible)	Thesis supervisor
Language	Indonesian or English
Relation to curriculum	Compulsory courses
Teaching methods	• Small Group Self-study, • Role Play and Simulation, • Discovery Learning, • Independent Learning, • Cooperative Learning, • Collaborative Learning, • Contextual Learning, • Project Based Learning, and other equivalent methods.
Workload (incl. Contact hours, self-study hours)	Workload for 14 weeks or within 1 semester
Credit points	1 credits (equivalent with 1.6 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses application of agrotechnology theory in the field of plantation, application of research methods in the field of agrotechnology, identifying problems in the field of agrotechnology, applying communication theory in Indonesian, applying communication theory in writing final assignments and scientific publications in the field of agrotechnology
Module objectives/intended learning outcomes	Students able to apply research methods to identify problems in the field of agrotechnology Students able to apply communication theory in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations.

Content	1. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 2. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 3. Identify problems in the field of agrotechnology that will be discussed at the proposal seminar 4. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 5. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 6. Agrotechnology theory with the problems that have been determined. Agrotechnology theory became the basis for selecting the research theme 7. The research method chosen, and write it up in the proposal seminar 8. The research method chosen, and write it up in the proposal seminar 9. The research method chosen, and write it up in the proposal seminar 10. The research method chosen, and write it up in the proposal seminar 11. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 12. The research proposal seminar paper is in accordance with the writing guidelines and the direction of the supervisor. The proposal seminar paper also uses good and correct Indonesian language. 13. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references 14. Research proposal seminar papers that are in accordance with writing guidelines and supported by appropriate references
Examination forms	• PB = Learning Process, (30%) • PT = Structured Assignment (40%) • KM = Independent Activity (30%)

Learning media	Lecture, Reception, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning
Study and examination requirements	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Reading material is tailored to the research topic taken
Last date of update	July, 2025

AGT 4203 THESIS

Course Name	Thesis
Code	AGT 4203
Semester (s) in which the module is taught	VIII
Lecturer (Person responsible)	Thesis supervisor
Language	Indonesian or English
Relation to curriculum	Compulsory course
Teaching methods	• Small Group Self-study, • Role Play and Simulation, • Discovery Learning, • Independent Learning, • Cooperative Learning, • Collaborative Learning, • Contextual Learning, • Project Based Learning, and other equivalent methods.
Workload (incl. Contact hours, self-study hours)	Workload for 14 weeks or within 1 semester
Credit points	4 credits (equivalent with 6.4 ECTS)
Required and recommended prerequisites for joining the module	-
Course Description	This course discusses and applies research methods in the field of agrotechnology and identify problems in the field of agrotechnology and can also apply communication theory in Indonesian in writing final assignments and scientific publications in the field of agrotechnology are expected to be able to design innovations in the field of agrotechnology by utilizing science and technology.
Module objectives/intended learning outcomes	Able to apply research methods to identify problems in the field of agrotechnology Able to apply communication theories in the application of information technology and publications in the field of agrotechnology both orally and in writing, in academic and non-academic situations.

	Able to develop global insights for character and self-potential in accordance with scientific fields and across disciplines
Content	1. Identify problems in the field of agrotechnology that will be raised as a thesis title 2. Identify problems in the field of agrotechnology that will be raised as a thesis title 3. Find solutions to the problems that have been selected, and design solutions or innovations to solve these problems. 4. Find solutions to the problems that have been selected, and design solutions or innovations to solve these problems 5. Apply the chosen research method, and observe the results of the experiment. 6. Apply the chosen research method, and observe the results of the experiment. 7. Apply the chosen research method, and observe the results of the experiment. 8. Apply the chosen research method, and observe the results of the experiment. 9. Apply the chosen research method, and observe the results of the experiment. 10. Apply the chosen research method, and observe the results of the experiment. 11. Make a research report (thesis) in accordance with the writing guidelines and the direction of the supervisor. 12. Make a research report (thesis) in accordance with the writing guidelines and the direction of the supervisor. 13. Make a research report (thesis) that is in accordance with the writing guidelines and supported by appropriate references. 14. Make a research report (thesis) that is in accordance with the writing guidelines and supported by appropriate references.
Examination forms	• PB = Learning Process, (30%) • PT = Structured Assignment (40%) • KM = Independent Activity (30%)

Learning media	Lecture, Reception, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning
Study and examination requirements	Grading rubric: A ≥ 80 B+ = 75-79 B = 70-74 C+ = 65-69 C = 60-64 D = 50-59 E ≤ 49
Reading list	Reading material is tailored to the research topic taken
Last date of update	July, 2025