IPB University
Bogor Indonesia

Faculty of Forestry and Environment

Department of
Forest Resources Conservation
and Ecotourism

MODULE HANDBOOK

Table of Contents

LEARNING OUTCOMES

The Forest Resources Conservation and Ecotourism K2020 Learning Outcomes (Los) for bachelor Study Programme are as follow:

1. Able to comprehend the theoretical concepts of forest conservation, biodiversity, ecotourism and environmental services.
2. Able to educate the general public about the importance of forest conservation, biodiversity, ecotourism and environmental services.
3. Able to describe and implement policies, legislation and regulations related to ecosystem management, wildlife management, management of bioprospection and plant conservation, environmental and geospatial analysis, and management of ecosystem-environmental services, outdoor recreation and ecotourism.
4. Able to adopt the traditional wisdom of the community and to develop this traditional wisdom in the fields of ecosystem management, wildlife management, management of bioprospection and plant conservation, environmental and geospatial analysis, and management of ecosystem-environmental services, outdoor recreation and ecotourism.
5. Able to plan area management, which includes the areas of: ecosystem management, wildlife management, management of bioprospection and plant conservation, environmental and geospatial analysis, and management of ecosystem-environmental services, outdoor recreation and ecotourism.
6. Able to manage sustainable use in the areas of ecosystem management, wildlife management, management of bioprospection and plant conservation, environmental and geospatial analysis, and management of ecosystem-environmental services, nature recreation and ecotourism.
7. Able to preserve genetic resources and germplasm on site.
8. Able to develop genetic resources and germplasm in the field of wildlife management and management of plant bioprospection and conservation.
9. Able to mobilize resources in the management of protected areas, wildlife, bioprospection and conservation of plant biodiversity, ecosystem-environmental services; outdoor recreation & ecotourism.
10. Able to apply an interdisciplinary approach in the field of ecosystem management, wildlife management, management of bioprospection and plant conservation, environmental and geospatial analysis, and management of ecosystem-environmental services, outdoor recreation and ecotourism.
11. Able to convey thoughts in the form of scientific writing and oral communication well.

Curriculum Mapping
Forest Resources Conservation and Ecotourism Study Programme

Semester	COURSES									Total ECTS
8	KSH1408 1.44 ECTS Seminar	KSH1409 8.64 ECTS Final Project/Undergraduate Thesis								10.08
7	KSH1404 4.32 ECTS Wildlife Management Field Practice/Internship	KSH1405 4.32 ECTS Protected Area Management, Ecotourism and Environmental Services Practice/Internship	KSH1406 1.44 ECTS Colloquium	IPB303 4.32 ECTS *Life Skill* (Internship)						14.40
6	KSH1315 4.32 ECTS Ex-situ Conservation and Wildlife Captivity	KSH1333 4.32 ECTS Forest Medicinal Plants and Food3	KSH1303 2.88 ECTS Environmental management Instrument	KSH1324 4.32 ECTS Protected Area Planning	KSH1316 2.88 ECTS Wildlife Management	KSH1345 2.88 ECTS Urban Forest Conservation	KSH1325 2.88 ECTS Conservation Business	IPB400 5.76 ECTS Thematic Services Learning Program/Community Outreach		30.24
5	KSH1342 4.32 ECTS Environmental Spatial Analysis	KSH 1332 2.88 ECTS Ethnobiology and Forest Bioprospecting	KSH1302 2.88 ECTS Research Methods and Scientific Writing	KSH1343 4.32 ECTS Pollution and Environmental Impact Assessment	KSH1314 2.88 ECTS Wildlife Behaviour	KSH1353 2.88 ECTS Nature and Environment Interpretation	KSH1344 2.88 ECTS Environmental Services	KSH1323 2.88 ECTS Protected Area and Essential Ecosystem		25.92
4	SVK212 4.32 ECTS Forest Ecology	SVK225 4.32 ECTS Silviculture	KSH1222 2.88 ECTS Communication and Social Science Conservation	KSH1252 4.32 ECTS Conservation Education	KSH1213 4.32 ECTS Wildlife Inventory and Monitoring	FHT1200 4.32 ECTS Forestry Field Practice				24.48
3	SVK211 4.32 ECTS Dendrology	KSH1211 4.32 ECTS Wildlife Ecology	KSH1212 4.32 ECTS Biodiversity Conservation Data Analysis	KSH1251 2.88 ECTS Outdoor Recreation and Ecotourism	KSH1231 2.88 ECTS Tropical Plant Conservation	KSH1221 2.88 ECTS Conservation and Environmental Policy	KSH1241 4.32 ECTS Mapping, GIS, and Unmanned Aerial Vehicle (UAV) of Environment	MNH1101 2.88 ECTS Forestry Science and Environmental Ethics		28.80
2	IPB10F 2.88 ECTS English	FIS104 4.32 ECTS Physical Science and Technology	KIM104 4.32 ECTS Chemistry Science and Technology	KPM131 2.88 ECTS Sociology	KOM102 2.88 ECTS Computational Thinking	STA111 4.32 ECTS Statistics and Data Analysis	KSH1101 2.88 ECTS Conservation of Natural Resources and Environment			24.48
1	IPB100 4.32 ECTS Religion	IPB10D 1.44 ECTS Pancasila*	IPB10E 1.44 ECTS Civic Education*	IPB106 2.88 ECTS Indonesian Language	BIO102 4.32 ECTS Fundamentals of Biology	EKO101 2.88 ECTS Economics	IPB10C 2.88 ECTS Innovative Agriculture	MAT102 4.32 ECTS Mathematics and Logical Thinking	IPB10G 1.44 ECTS Sports and Arts	25.92

Note: *= can be taken either in semester 1 or 2

Common Core Course	IPB General competencies courses	Academic Core	Core courses for study program	Compulsory Enrichment Course	Credit earning outside study program
Study Program Fundamentals	Basic courses for study program	SP In-depth Core	In-depth courses within study program		
Foundational Literacy	Skills to apply core skills	Final Year Project	Capstones		

Islamic Education (IPB100)

Module designation	*Islamic Education IPB100)*
Semester(s) in which the module is taught	*1*
Person responsible for the module	*Dr. Hamzah, M.Si.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory courses for Muslims undergraduate students*
Teaching methods	*Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23.3 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Practical class : 1 × 170 min × 14 meetings = 2380 min (39.7 hours)* *Total = 7140 min (119 hours)*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Able to explain the urgency of science in the view of Islam and the urge to seek and apply it to life* 2. *Able to explain the concept of science in Islam and eliminate the dichotomous attitude that contradicts science and Islam* 3. *Able to explain the concept of Islam as rahmatan lil'alamiin with a strong belief in the truth of Islam and being tolerant of other religions* 4. *Able to explain the main teachings of Islam relatedto Akidah, Sharia, Morals and Da'wah* 5. *Have the right attitude in understanding the teachings of Islam, and have the awareness to become a better Muslim* 6. *Have an honest, disciplined and enthusiastic attitude in developing knowledge based on the Quran* 7. *Able to read the Quran well and diligently worship and perform various activities according to Islamic teachings*
Course description	*This course discusses the basics of Islamic religious teachings comprehensively (kaaffah) as a basis for thinking and acting in the development of scientific and professional disciplines, as well as being a reference in daily behavior so that Muslim intellectuals who are faithful, pious and have noble character can be realized.* *This course covers the following materials: Science in an Islamic perspective, Islam as rahmatan lil'alamiin, basic principles and implementation of Islamic aqidah, basic principles and implementation of Islamic sharia, building Islamic morals and Islamic da'wah.* *This course is also equipped with a practicum that discusses the practical values and teachings of Islam in everyday life.*

Module designation	*Islamic Education IPB100)*
Content	1. *Introduction Islamic Religious Education* *Principles of Islamic religious teachings comprehensively (kaffah) As a foundation in thinking, behaving and behavior So that graduates become human beings who believe and fear Allah, as mandated by the National Education System Law as mandated by the National Education System Law. This course is also equipped with practicum to apply the application of Islamic values and teachings in daily life. Islamic values and teachings in everyday life* 2. *Allah The Creator of the Universe* 3. *Signs in the Quran related to Humans* 4. *Scientist Muslim, Scientists Who Love Allah And His Creation* 5. *Knowing Man through Quran* 6. *The Urgency of Religion for Life* 7. *Tolerance in religion* 8. *Application of Tawhid Value in Life* *A correct understanding of the meaning of glorifying Allah. Acceptance of his position before Allah Swt as a servant. Submission to all of Allah's commands and prohibitions. Sincerity in carrying out these commands only for the sake of to achieve the pleasure of Allah Swt.* 9. *The Pillars of Faith and Implementation* *Verbal utterance, Justification of the heart, and Evidence of Deeds. Not faith, which is only with ideals and wishful thinking, but faith is that which is crystallized in the heart and justified by the crystallized in the heart and justified by his his deeds. The Qur'an commands believers to sincere in practicing their faith.* 10. *Understanding Islamic Law correctly* *Umderstanding the urgencies of Syariah and identity of islami. Building the blessings of the Ummah and the Nation. Bringing goodness to mankind and all creatures.* 11. *Worship Throughout Life* *Mahdoh Worship and the Wisdom behind it, The purpose of Mahdhoh worship is to show evidence of our submission to Allah in Mahdoh Worship we do whatever Allah tells us to do. Every act of worship teaches positive values that shape the character of a Muslim. It is a wisdom for those who perform the act of worship.* 12. *Entrepreneurship in Islam* *Muamalah is the relationship of interaction between humans and fellow human beings and their environment and What is Haram in Muamalah* 13. *Leadership in Islam* *Understanding leadership such as Leadership is a responsibility, Leader Obligations, Fulfilling the Mandate, Being Fair, Forbidden to Deceive the People, and Leader's Rights.* 14. *Becoming an Agent of Change with Morals and Da'wah* *Understanding being an agent of morals morals and da'wah such as Shalih; A Person of Character Noble, Noble Character; Fruit of the application of Faith & Islam, amd Some Key Morals.*
Examination forms	*Written examination*

Module designation	*Islamic Education IPB100)*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes,* *assignments Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*
Reading list	*Mandatory Reading:* *1. Al-Qur'an and Translations, Islamic Religious Education* *2. Guidebook compiled by TIM PAI-IPB* *Additional Reading:* *1. Faridz M. 1999. Pokok-pokok Ajaran Islam. Jakarta(ID): Penerbit Pustaka.* *2. Ilyas Y. 1999. Kuliah Akhlak. Jakarta(ID): LIPPI.* *3. Ilyas Y. 2002. Kuliah Aqidah Islam. Yogyakarta(ID): LPDI UMY.* *4. Qardhawy Y. 1996. Tahuhid dan Fenomena Kemusyrikan. Surabaya(ID): Pustaka Progresif.* *5. Qardhawy Y. 1997. Pengantar Kajian Islam. Jakarta(ID): Pustaka Kautsar.* *6. Shalih bin Fauzan. 1999. Kitab Tauhid I. Jakarta(ID): Darul Haq.* *7. Yaqub H. 1996. Etika Islam. Bandung(ID): CV. Diponegoro.*

Christian Education (IPB101)

Module designation	*Christian Education (IPB101)*
Semester(s) in which the module is taught	*1*
Person responsible for the module	*Dr. Ir. Elisa Ganda Togu Manurung, M.S*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory courses for Christians undergraduate students*
Teaching methods	*Lecturer presentation, discussion.*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23.3 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Practical class : 1 × 170 min × 14 meetings = 2380 min (39.7 hours)* *Total = 7140 min (119 hours)*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students master the content of Christian faith education by using their faith and reason in a balanced manner;* 2. *Students have devotion to God Almighty and are able to demonstrate a religious attitude;* 3. *Students uphold human values in carrying out duties based on religion, morals and ethics;* 4. *Students contribute to improving the quality of life in society, nation, and state based on Pancasila;* 5. *Students act as citizens who love the country, have nationalism, responsibility to the state and nation;* 6. *Students respect the diversity of cultures, views, religions, and beliefs, as well as the opinions of others;* 7. *Students work together and have social sensitivity and concern for society and the environment;* 8. *Students obey the law and are disciplined in social and state life.* 9. *Internalizing academic values, norms, and ethics;* 10. *Students internalize the spirit of independence, struggle, and entrepreneurship.*
Course description	*This course discusses the science of Christianity for life as a believer and its application, ranging from specific to general matters. Starting from the topics of the core doctrines of Christian faith, church and parachurch, apologetics, responsibility for the environment, youth social ethics, responsibility as a citizen, responsibility in a plural society, responsibility as an intellectual, and work ethics and Christian integrity. This course equips students to understand and realize the importance of Christian faith in life and self-cultivation in general. Understand and be able to explain the purpose of Christian Religious Education in Higher Education. Produce the benefits of the growth of Christian faith in studying science and for living daily life in terms of society, nation and state.*

Module designation	*Christian Education (IPB101)*
Content	1. *Knowing God* *How to know God, the attributes of God, God's nature toward man, the living God* 2. *Man and the Wholeness of Creation* *Man's original position, The fall of man, Consequences of sin, Man's state of sin* 3. *Salvation in Jesus Christ* *The necessity of salvation, Descriptions of the promise of salvation, Pattern of salvation, The fulfillment of salvation, The beauty of salvation, Fruit of salvation, New life in Jesus Christ* 4. *Prayer* *What is prayer, Why pray, Attitude in prayer, Obstacles in prayer, The results of prayer and the role of the Holy Spirit* 5. *The Bible* *What is the Bible, Canonization of the Bible, The authority of the Bible, How does the Bible speak* 6. *Church* *The meaning and nature of the church, The call of the church, Choices of the church, The head of the church, Fellowship of churches in Indonesia* 7. *Baptism and Holy Communion* *Holy Communion as a command of God, The meaning of Holy Baptism as a Sacrament, Meaning of the Lord's Supper* 8. *Apologetics* *Some important Christian teachings in the context of apologetics: creation, Jesus is God, the Trinity.* 9. *Responsibility to the Environment* 10. *Young people's social etiquette* 11. *Responsibility as a Citizen* 12. *Responsibility in a Plural Society* 13. *Responsibility as an Intellectual* 14. *Work Ethic and Christian Integrity.*
Examination forms	*Written examination, discussion asessment*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination: 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%; Mid-semester Examination : 30%, Final-semester Examination : 30%, Discussion Assessment : 40%.*
Reading list	1. *Alkitab (terjemahan baru). Lembaga Alkitab Indonesia.* 2. *Pendidikan Agama Kristen Untuk Perguruan Tinggi. 2016. Kementerian Riset, Teknologi dan Pendidikan Tinggi Republik Indonesia, Direktorat Pembelajaran dan Kemahasiswaan. Jakarta.* 3. *Diktat Bahan Presentasi Mata Kuliah Agama Kristen.* 4. *Buku Responsi Kelompok Diskusi Mata Kuliah Agama Kristen*

Catholic Education (IPB102)

Module designation	*Catholic Education (IPB102)*
Semester(s) in which the module is taught	*1*
Person responsible for the module	*RD. Paulus Piter, M. Hum, RD. Yohanes Dryanto, Lic,*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory courses for Catholics undergraduate students*
Teaching methods	*Lecturer presentation, discussion.*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23.3 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Practical class : 1 × 170 min × 14 meetings = 2380 min (39.7 hours)* *Total = 7140 min (119 hours)*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students master the content of Catholic faith education by using their faith and reason in a balanced manner.* 2. *Motivate students to be ready to face the challenges of the times.* 3. *Students are able to understand their duties and roles as citizens of the State and the Church: 100% Catholic, 100% Indonesian.*
Course description	*This course discusses the science of Catholicism in life as a believer and its applications ranging from general to specific matters. Starting from the subject matter of the person, becoming a Catholic, the Church, the Hierarchy, forms of life, Scripture, Sacraments.* *This course equips students to understand and realize the importance of faith in life and self-cultivation in general. Understand and be able to explain the purpose of Religious Education in Higher Education and explain the benefits of developing faith in learning science in everyday life (society).*
Content	1. *Position, Content, Methods, Objectives of Catholic Religious Education* 2. *Personal-Male and female* 3. *Becoming Catholic* 4. *Church and Hierarchy* 5. *Form of Life* 6. *Scripture and the Problem* 7. *Sacraments in the Church* 8. *Building Community* 9. *Church and Society Ministry*
Examination forms	*Written examination, discussion assessment, seminar*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*

Module designation	*Catholic Education (IPB102)*
Reading list	1. *St. Darmawijaya, Pr.2009. Seluk Beluk Kitab Suci. Kanisius* 2. *Dokumentasi dan Penerangan KWI. 2013. Dokumen Konsili Vatikan II. OBOR* 3. *Konfrensi Waligereja Indonesia. 2018. Kitab Hukum Kanonik. Grafika Mardi Yuana Bogor* 4. *Konfrensi Waligereja Indonesia.2013. Kompendium Katekismus Gereja Katolik.Kanisius* 5. *Diktat Kuliah-Satuan Mata Pelajaran Agama Katolik.*

Hindu Education (IPB103)

Module designation	*Hindu Education (IPB103)*
Semester(s) in which the module is taught	*1*
Person responsible for the module	*Prof. Dr. Ir. I Wayan Mangku, M.Sc.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory courses for Hindus undergraduate students*
Teaching methods	*Lecturer presentation, discussion, watching videos*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23.3 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Practical class : 1 × 170 min × 14 meetings = 2380 min (39.7 hours)* *Total = 7140 min (119 hours)*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	*After taking this course students will be able to: extract the role of Hindu history in providing positive learning, extract the role of Vedic studies and Brahma Widya in building sradha and bhakti, extract the role of art in shaping aesthetic personalities, extract the role of philosophy, ethics, ceremonies and building awareness as social beings, and identify the concept of being a leader.*
Course description	*This course discusses the history of the spread of Hinduism, the Sruti Vedas and Smrti Vedas, the basics of Hindu beliefs, techniques for achieving religious goals, Hindu Philosophy, Hindu Ethics, Hindu Ceremonies, society and the basics of Hindu leadership and state administration.*
Content	1. *Hindu Religious Education in Higher Education* 2. *History of Hindu development in India, the world, and Indonesia* 3. *Weda Sruti and Weda Smrti* 4. *Basics of Hindu beliefs (Satya, Rta, Diksa, Tapa, Brahma, Yadnya) and Panca Sraddha* 5. *Catur Purusartha, Catur Marga (Yoga) and Dharma Siddhiyartha* 6. *Nyaya, Vaisesika, Samkhya, Yoga, Mimamsa and Wedanta Philosophy* 7. *Hindu ethics* 8. *Definition of Yadnya, Types of Yadnya, Samskara* 9. *Catur Asrama, Hindu Family, Catur Warna and Parisada Institution* 10. *Asta Brata, Sapta Angga, Raja Dharma, and Danda Niti*
Examination forms	*Written examination, presetation.*

Module designation	*Hindu Education (IPB103)*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%; Mid-semester Examination : 40%, Final-semester Examination : 40%, Presentation : 20%*
Reading list	1. *Direktorat Jenderal Pembelajaran dan Kemahasiswaan DIKTI. 2016. Pendidikan Agama Hindu untuk Perguruan Tinggi.* 2. *Mangku, I W. 2021. Materi Kuliah IPB103 Agama Hindu. Program Pendidikan Kompetensi Umum, Institut Pertanian Bogor.* 3. *Sivananda, S. S. 1993. Intisari Ajaran Hindu. (Terjemahan dari: All About Hinduism.). Paramita. Surabaya.* 4. *Wiana, K. 1992. Sembahyang Menurut Hindu. Yayasan Dharma Narada Jakarta.* 5. *Bhagawadgita. Teks asli dalam bahasa Sanskerta. Terjemahan dalam Bahasa Indonesia dan keterangan oleh N.S. Pendit. 1986. B.P. Dharma Nusantara. Jakarta.*

Buddhist Education (IPB104)

Module designation	*Buddhist Education (IPB104)*
Semester(s) in which the module is taught	*1*
Person responsible for the module	*Ir Hermawan Wana, MSi.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory courses for Buddhists undergraduate students*
Teaching methods	*Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23.3 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Practical class : 1 × 170 min × 14 meetings = 2380 min (39.7 hours)* *Total = 7140 min (119 hours)*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Course description	*In this course, students learn the concept of Supreme Divinity, human nature and inner qualities concerning their roles and responsibilities in life, themselves as part of society and can play an active role in advancing their society. Students learn morality to achieve ultimate happiness, in addition to samādhi and paññā, learn man-made laws with universal laws and integrate the role of science and Buddhism in daily life. Students learn culture, politics, and interfaith harmony in Buddhist studies.*
Module objectives/intended learning outcomes	1. *Students are able to rearrange the concept of God Almighty* 2. *Students are able to describe human nature and inner qualities regarding their roles and responsibilities in life* 3. *Students are able to provide arguments that they are part of the community and can play an active role in advancing their community* 4. *Students are able to compare the enactment of laws made by humans with universal laws* 5. *Students are able to examine the morality for attaining the highest happiness, in addition to samādhi and paññā* 6. *Students are able to integrate the role of science and Buddhism in everyday life* 7. *Students are able to abstract culture in Buddhism* 8. *Students are able to describe politics in the study of Buddhism* 9. *Students are able to create inter-religious harmony in the study of Buddhism*

Module designation	*Buddhist Education (IPB104)*
Content	*In this course, students learn the concept of God Almighty, human nature and inner qualities regarding their roles and responsibilities in life, they are part of society and can play an active role in advancing their society. Students study morality to achieve the highest happiness, in addition to samādhi and paññā, study man-made laws with universal laws and integrate the role of science and Buddhism in daily life. Students learn culture, politics, and inter-religious harmony in Buddhist studies*
Examination forms	*Written examination and oral test*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element / variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*
Reading list	1. *Bodhi. 2015. Anguttara Nikaya (Khotbah-Khotbah Numerikal Sang Buddha). Jakarta(ID): DhammaCitta Press.* 2. *Buddhagosa, Bhadantacariya. 1975. The Path of Purification (Visudhi magga). Kandy Srilanka: Buddhist Publication Society.* 3. *David, Rhys. 1977. Dialgues of The Buddha Vol. I, II, III (Digha Nikaya I, II, III). London(GB): Pali Text Society.* 4. *David, Rhys. 1989. Kindred Sayings Vol. I, II, III, IV, V (Samyutta Nikaya). Oxford(GB): Pali Text Society.* 5. *Dhammika. 2006. Maklumat Raja Asoka Insight. Yogyakarta(ID): Vidyasena Production.* 6. *Dharmmananda, Sri. 2002. Keyakinan Umat Buddha. (Terjemahan Ida Kumiati). Jakarta(ID): Karaniya & Ehipassiko.* 7. *Direktorat Jenderal Pembelajaran dan Kemahasiswaan Kementrian Riset Teknologi dan Pendidikan Tinggi. 2016. Materi Terbuka Kesadaran Pajak untuk Perguruan Tinggi. Jakarta(ID): DIKTI Materi Terbuka Kesadaran Pajak Dalam Pendidikan Tinggi.* 8. *Direktorat Jenderal Pembelajaran dan Kemahasiswaan Kementrian Riset Teknologi dan Pendidikan Tinggi. 2016. Pendidikan Agama Buddha untuk Perguruan Tinggi. Jakarta(ID): DIKTI.* 9. *Hare. 1989. Gradual Sayings Vol. I, II, III, IV, V (Anguttara Nikaya). Oxford(GB): Pali Text Society.* 10. *Maurice Walshe. 2009. Khotbah-khotbah Panjang Sang Buddha (Digha Nikaya). Jakarta(ID): DhammaCitta Press.* 11. *Mehm Tin Mon. 2013. Karma Pencipta Sesungguhnya. Jakarta(ID): Yayasan Hadaya Vatthu.* 12. *Nandasena Ratnapala. 1997. Buddhist Democratic Political Theory and Practice (An Alternative Democracy for the 21st Century ?). Colombo(LK): Sarvodaya Vishva Lekha Publication.* 13. *Narada. 1998. Sang Buddha dan Ajaran-Ajarannya Jilid I & II. Jakarta(ID): Yayasan Dhammadipa Arama.*

Module designation	*Buddhist Education (IPB104)*
Reading list	14. *Nyanatiloka, Mahathera. 1970. Hidup Bebas Bahagia. Surabaya(ID): The Light of the Borobudur.* 15. *Siddhi Butr-Indr. 1979. The Social Philosophy of Buddhism. Bangkok(TH): Mahamangutarajaviyalaya Press.* 16. *Taniputera, Ivan. 2003. Sains Modern dan Buddhisme. Jakarta(ID): Yayasan Penerbit Karaniya.* 17. *Wahyono Mulyadi. 1995. Sejarah Perkembangan Agama Buddha I. Jakarta(ID): Direktorat Jenderal Bimbingan Masyarakat Hindu Buddha, Departemen Agama Buddha dan Universitas Terbuka.* 18. *Wijaya-Mukti, Krisnanda. 2003. Wacana Buddha-Dharma. Jakarta(ID): Yayasan Dharma Pembangunan bekerjasama dengan Ekayana Buddhist Centre.* 19. *Wowor, Corneles. 1991. Pandangan Sosial Agama Buddha. Jakarta(ID): Aryasuryacandra.*

Pancasila Education (IPB10D)

Module designation	*Pancasila Education (IPB10D)*
Semester(s) in which the module is taught	*1*
Person responsible for the module	*Prof. Dr Ir Sedarnawati M.Agr*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory courses for undergraduate program*
Teaching methods	*Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning*
Workload	*Lecture : 1 × 50 min × 14 meetings = 700 min (11,6 hours)* *Assignment : 1 × 60 min × 14 meetings = 840 min (14 hours)* *Self-activity : 1 × 60 min × 14 meetings = 840 min (14 hours)* *Total = 2380 min (39,6 hours)*
Credit points	*1 SCH x 1.44 = 1.44 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	*Students understand and can describe the concept of citizenship as a whole in an effort to strengthen awareness of defending the country, strengthening citizen behavior, mastering the basic problems of national and state life, and being pro-active towards changes that occur so that they become professional scientists who have a sense of nationality and love for the homeland, democratic, civilized, become citizens who are competitive, disciplined and actively participate in building a peaceful life based on the Pancasila value.*
Course description	*This course is about Pancasila and its implementation, national identity, constitution, democracy, citizens, human rights, geopolitics, geostrategy, National Police, good governance, regional autonomy, and anti- corruption education.*
Content	*The Pancasila Education course as a compulsory course aims to build and foster students' attitudes, behaviors, mindsets, insights, knowledge, and skills in accordance with the values of Pancasila (religious, humanist, nationalist, cooperative, and fair) through understanding Pancasila (1) historically, namely the history of the development of Pancasila thought; (2) philosophically, including Pancasila as a system of philosophy, ethical system, national outlook on life, national ideology, state foundation; (3) juridically, related to the position of Pancasila in the legislation system, (4) Pancasila as a National Development Paradigm in the fields of Politics, Economy, Socio-Culture, Defense and Security, and (5) Millennial generation action program in advancing the Indonesian nation state (Actualization of the character of Pancasila values) in the form of an assignment to make an individual paper with the theme Implementation and Development of Pancasila Values that can Improve the Quality of Life in Society, Nation and State, including religious values (religiosity), family values (humanists), harmony values (nationalists), populist values (cooperation), and justice values.*
Examination forms	*Written examination*

Module designation	*Pancasila Education (IPB10D)*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*
Reading list	1. *Herdiawanto H, Jumanta H, Hayati YS. 2010. Cerdas Kritis dan Aktif Berwarganegara : Pendidikan Kewarganegaraan Untuk Perguruan Tinggi. Jakarta(ID): Erlangga.* 2. *Pendidikan Kewarganegaraan: Demokrasi, Hak Asasi Manusia, Masyarakat Madani. 2003. ICCE UIN dan Prenada Media.* 3. *Rangkuti PA. 2007. Membangun Kesadaran Bela Negara. Bogor(ID): IPB Press.* 4. *Setiadi EM. 2007. Panduan Kuliah Pendidikan Pancasila untuk Perguruan Tinggi. Jakarta(ID): Gramedia.* 5. *Winarno. 2008. Paradigma Baru Pendidikan Kewarganegaraan : Panduan Kuliah di Perguruan Tinggi. Jakarta(ID): Sinar Grafika*

Civic Education *(IPB10E)*

Module designation	*Civic Education (IPB10E)*
Semester(s) in which the module is taught	*1*
Person responsible for the module	*Dr. Ir. Didid Diapari, M.S*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory Course*
Teaching methods	*Lecturer and discussion session*
Workload	*Lecture : 1 × 50 min × 14 meetings = 700 min (11,6 hours)* *Assignment : 1 × 60 min × 14 meetings = 840 min (14 hours)* *Self-activity : 1 × 60 min × 14 meetings = 840 min (14 hours)* *Total = 2380 min (39,6 hours)*
Credit points	*1 SCH x 1.44 = 1.44 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Understand the four basic consensus and the importance of the character of state defense awareness.* 2. *Understand the dynamics of the implementation of the 1945 Constitution and changes in the constitutional system.* 3. *Apply the principles of democratization, regional autonomy, good governance, and anti-corruption character as an effort to improve the self-image of the Indonesian nation in facing changes in the world order, and the management of national resources for the prosperity of the Indonesian nation state.* 4. *Implementing the identification of problems with the approach of the conception of National Resilience and the constitution to increase national vigilance in solving various threat problems in order to uphold the existence of the Republic of Indonesia of the people, nation and state of Indonesia.*
Course description	*This course Pancasila Citizenship Education provides an understanding of the importance of awareness of the state defense of the next generation of the Indonesian nation in fighting for and maintaining efforts to uphold the integrity of the Unitary Republic of Indonesia that MERAH PUTIH FLY FOREVER through must be fought by strengthening the character of state defense of the next generation of the Indonesian nation in the mastery and application of science and technology based on 4 basic consensus, namely the values of Pancasila, the 1945 Constitution of the Republic of Indonesia, Unity in Diversity, and the establishment of the Republic of Indonesia in order to realize sustainable national development based on the insight of the archipelago, and national resilience and national vigilance and in line with the principles of democratization, regional autonomy, good governance, and anti-corruption character.*

Module designation	*Civic Education (IPB10E)*
Content	1. *THE RED AND WHITE FLIES FOREVER* *Shows the strong bond between the state and its citizens, Explanation of the purpose of Civic Education, as well as efforts to build awareness of the central role of the next generation of Indonesians in realizing an advanced Indonesian State.* 2. *Water Flows In to the Whirl of Mother Earth* *Shows the 4 basic foundations that form the basis of strong bonds between citizens in order to realize a developed Indonesian State.* 3. *Advancing Red and White Science and Technology Towards a Golden Indonesia* *Shows the importance of mastery and application of science and technology that is red needed in development and whiten useful in the management of national resources for the prosperity of the nation.* 4. *The Order and Role of a Democratic Government Organization System* *Shows the relationship between the organizational structure, the process of running the wheels of government, and the impact of government performance results in accordance with the aspirations of the people for mutual happiness.* 5. *Managing Challenges to Achieve Victory* *Shows the management of the governance system against the threats of globalization and the demands of democracy.* 6. *Helping each other and collaboration in Unifying Steps* *Shows the common perspective of all components of the nation towards the management of the region and its contents by prioritizing common interests. Equal understanding of the functions and principles of archipelago insight and efforts to improve pentahelix cooperation (Government, Academics, Private, Community, and Media).* 7. *Realizing the Aspiration of Happiness of the People and the Nation* *Shows efforts to achieve happiness in the common life of the Indonesian nation* 8. *Development in the Era of the New Normal* *Shows the importance of adjusting to new demands through community empowerment.* 9. *The Young Generation in the Perspective of National Development* *Shows the important role of the younger generation in the success of national development.* 10. *Next Generation Leadership with Integrity* *Demonstrate the leadership of the next generation who are honest, trustworthy, and responsible.* 11. *Smart Work to Achieve Progress Together* *Shows the role of the electoral system as a form of democratic process that successfully selects intelligent and aspirational leaders.* 12. *Young Generation's Resilience to Threats* *Shows the important role of resilient character in the young generation in facing threats.* 13. *Corruption is Our Enemy* *Demonstrate a shared attitude towards corruption prevention*
Examination forms	*Written examination*

Module designation	*Civic Education (IPB10E)*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%; Mid-semester Examination : 40%, Final-semester Examination : 40%, Assignment : 20%*
Reading list	1. *Rangkuti, P.A.,20165, Membangun Kesadaran Bela Negara, Bogor : (edisi ke2) IPB Press.* 2. *Mahmuzar, 2010, Sistem Pemerintahan Indonesia : Sebelum dan Sesudah Amandemen UUD 1945, Jakarta : Nusa Media.* 3. *Syakrani,2009, Implementasi Otonomi Daerah dalam Perspektif Good Governance, Jakarta : Pustaka Pelajar.* 4. *Pendidikan Kewarganegaraan untuk Perguruan Tinggi, Cet.1, Kemristek Dikti* 5. *Pendidikan Anti Korupsi Untuk Perguruan Tinggi, Nanang T.Puspito, Marcella Elwina (edit) Kemendikbud: 2011* 6. *Constitution of the Republic of Indonesia 1945 (as amended)* 7. *Law No. 12 of 2006 on Citizenship of the Republic of Indonesia* 8. *Law No. 32 of 2004 on Regional Government* 9. *Law No. 33 of 2004 on Fiscal Balance* 10. *Law No. 39 of 1999 on Human Rights* 11. *Law No. 23 of 2019 on the Management of National Resources for National Defense*

Indonesian Language (IPB106)

Module designation	*Indonesian Language (IPB106)*
Semester(s) in which the module is taught	*1*
Person responsible for the module	*Dr. Endang Sri Wahyuni, SS, M.Si*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory courses for undergraduate program*
Teaching methods	*Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning*
Workload	*Lecture : 1 × 50 min × 14 meetings = 700 min (11.6 hours)* *Assignment : 1 × 60 min × 14 meetings = 840 min (14 hours)* *Self-activity : 1 × 60 min × 14 meetings = 840 min (14 hours)* *Practical class : 1 × 170 min × 14 meetings = 2380 min (39.7 hours)* *Total = 4760 min (79.3 hours)*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Able to explain the concept of language, the history of the Indonesian language, the position of the Indonesian language, the functions of the Indonesian language* 2. *Able to explain and identify linguistic aspects, ranging from simple levels of spelling, vocabulary, sentences, paragraphs, to types of text* 3. *Able to correct language errors* 4. *Able to use the written and spoken variety of Indonesian in accordance with the rules* 5. *Mastering the skills and application of steps for writing scientific papers which include the pre-writing stage, writing stage, and editing stage* 6. *Able to do simple research and then compile it into a paper according to the field of science* 7. *Able to communicate verbally properly and correctly and able to present research results*
Course description	*This course contains material that increases the sense of national love in the form of the history of the Indonesian language. Materials related to improving language skills in the form of writing effective sentences include spelling, word selection, and structure. Materials for reading and writing skills are in the form of paragraph preparation techniques, text preparation, reading selection, critical thinking, and preparation of scientific papers. The material for oral language skills is in the form of oral presentation.*
Examination forms	*Written examination, Presentation, Project-based learning assessment*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*

Module designation	*Indonesian Language (IPB106)*
Reading list	*1. Kamus Besar Bahasa Indonesia (KBBI)* *2. Pedoman Ejaan Bahasa Indonesia yang Disempurnakan*

Biology (BIO102)

Module designation	*Biology (BIO102)*
Semester(s) in which the module is taught	*1*
Person responsible for the module	*Biology Department Team Teaching*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory courses for undergraduate program*
Teaching methods	*Lecturer presentation, discussion*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23.3 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Practical class : 1 × 170 min × 14 meetings = 2380 min (39.7 hours)* *Total = 7140 min (119 hours)*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Explaining the scope of biology, observe and explain the structure and metabolism of cells.* 2. *Observing and explaining the basic cellular reproduction and patterns of inheritance.* 3. *Observing and explaining the structure and expression of genes, and biotechnology.* 4. *Observing and explaining the diversity, structure and biological functions of organisms: monera, protists, fungi, plantae, animalia.* 5. *Observing and explaining the ecology: population, community, ecosystem and bioconservation.*
Course description	*This course explains the theories and basic principles of biology that form the basis for further courses in the major / department. The lecture begins by explaining the scope of biology and the origins of life, then proceeding to the Midterm Examination, lectures explaining the structure and function of biology at the cellular level, genetics and its application in biotechnology. In the next section until the Final Examination, the lecture explains about biodiversity and biological functions at the level of organisms (monera, protists, fungi, plantae, and animalia), population, community, ecosystem, and conservation biology. Examples and the application of each topic are given to help students understand basic principles and theories. This course is equipped with practicum as a support of theoretical knowledge provided in lectures.*
Examination forms	*Written examination*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*

Module designation	*Biology (BIO102)*
Reading list	1. *Jane B. Reece, Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Robert B. Jackson. 2014. Campbell Biology.10th. Pearson Education, Inc* 2. *Neil A. Campbell, Jane B. Reece. 2008. Biology 8th. Pearson Benjamin Cummings: San Francisco.*

General Economics (EKO101)

Module designation	*General Economics (EKO101)*
Semester(s) in which the module is taught	*1*
Person responsible for the module	*Faculty of Economy and Management Team Teaching*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory courses for undergraduate program*
Teaching methods	*Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23,2 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Total = 47600 min (79,2 hours)*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	*After attending this course, student is able to understand of economics as a branch of science, understand the behavior of households, companies and markets in economic decision making, understand macroeconomics, problems and the actual conditions of Indonesian macroeconomics*
Content	*The Economics course provides students with the ability to analyze the role of decision makers, namely consumers (households), producers, and the government as well as how the interactions between these decision makers in government and how the interaction between these decision makers in the market. The Economics course is also designed to provide students with ability to analyze the role of innovation and technology from an economic point of view, including the concepts of digital economic perspective including the concept of digital economy and inclusive inclusive development to be used by students in the decision-making process in various applied fields. decision-making process in various applied fields.*
Content	1. *Economic issues* 2. *Supply and Demand* 3. *Economic elasticity and its applications* 4. *Production and cost* 5. *Perfectly competitive market* 6. *Monopoly, Imperfect competitive market* 7. *Digital Economy* 8. *Economic growth* 9. *Inflation* 10. *Unemployment* 11. *Supply and Demand Agregat* 12. *Price stabilization policies* 13. *Fiscal policy* 14. *Monetary policy*
Examination forms	*Written examination*

Module designation	*General Economics (EKO101)*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*
Reading list	1. *Lipsey. R. G., P. O Steiner, and D. D. Purpis. 1987. Economics. Harper International Edition.* 2. *Books for practical class: Penuntun Responsi Ekonomi Umum. 2013. Departemen Ilmu Ekonomi (IE), Fakultas Ekonomi dan Manajemen (FEM). IPB* 3. *Lipsey. R. G., P. O Steiner, and D. D. Purpis. 1987. Economics. Harper International Edition. 3* 4. *Gregory, M. 2006. Principles of Economics (Pengantar Ekonomi Mikro) Edisi 3. Salemba Empat.*

Innovative Agriculture (IPB10C)

Module designation	*Innovative Agriculture (IPB10C)*
Semester(s) in which the module is taught	*1*
Person responsible for the module	*Prof. Dr. Ir. Hadi Susilo Arifin, M.S.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory Course*
Teaching methods	*Lecturer presentation, discussion*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23,2 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Total = 47600 min (79,2 hours)*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students explain the importance of agriculture in life and students are proud to be Agriculture Students. Students can explain the history of agriculture.* 2. *Students explain the importance of biological resources and the environment as capital for Indonesia's sustainable development.* 3. *Students are able to explain the meaning of national agrarian resources, patterns of regulating agrarian resources and applicable policies.* 4. *Students are able to explain the types and utilization of environmental services.* 5. *Students are able to explain the concept of Climate Smart Agriculture* 6. *Students are able to explain agro-ecosystem and integrated agriculture.* 7. *Students are able to explain food needs, energy for health and the concept of food sovereignty/defense/security.* 8. *Students can explain the role of biotechnology for agriculture, food, energy and health.* 9. *Students are able to explain the concept of ICT-based agricultural management and its examples.* 10. *Students are able to explain the role of agricultural extension. Students are able to explain the breakthrough strategy of ICT-based extension programs.* 11. *Students are able to explain the role of agricultural business actors and the challenges in establishing agricultural businesses.* 12. *Students are able to explain the concept of green & blue economy as a current development option. Explain examples of green & blue economy implementation.* 13. *Students are able to explain the facts of hot issues and challenges in agriculture. Students can formulate solutions to agricultural problems.*

Module designation	*Innovative Agriculture (IPB10C)*
Course description	*This course is designed and organized to deliver IPB students to the world of agriculture in a broad sense by discussing various topics related to agricultural sciences starting with the definition of Scientists and Knowledge.Science-Agriculture and Environment. History of Agriculture and Farming Business. Weather and Climate and Elements. Climate of Indonesia. Energy and Photosynthesis. Food and Nutrition. Nutrient Cycle of Life. Post-harvest Technology. Harvest Technology. Non-Food Agriculture. Agribusiness and Agro-industry, Biotechnology and Hydroponics. Vision of 21st Century Agriculture. To instill an attitude of pride in agriculture, an active learning approach is taken through supportive assignments.*

Module designation	*Innovative Agriculture (IPB10C)*
Content	1. *Agriculture, Life & Civilization* *Definition of Agriculture in the broadest sense, The Role of Agriculture in Life, Agriculture: Past, Present and Future.* 2. *Bioresources and Environment* *Potential and status of biological resources, Biodiversity groups, Ecosystem Diversity: Terrestrial, Aquatic, Atmosphere* 3. *Agro-maritime, Agrarian & Policy* *National agrarian resources and agrarian law, Patterns of regulation of agrarian resources on land and in sea waters, Relationship between management, problems and potential of agrarian resources.* 4. *Agro-Ecosystem Services* *Types of environmental services: productive land, carbon sequestration, biodiversity conservation, water management, preservation of landscape beauty, Utilization of environmental services, Willingness to pay* 5. *Climate-Smart Agriculture* *Climate change challenges to agricultural productivity, Agricultural development strategies to deal with climate change impacts, Examples of ICT application in CSA.* 6. *Sustainable & Integrated Agriculture* *The challenges of future agriculture, The three pillars of agricultural sustainability, Examples of integrated agriculture: AF-ASF-ASP, Local wisdom and local knowledge.* 7. *Food, Energy and Health* *Food needs, Food sovereignty/defense, food safety, Public health* 8. *Biotechnology* *Development of biotechnology, Techniques in biotechnology, Current and future benefits of biotechnology.* 9. *Smart Agriculture* *ICT-based agricultural management concept, Examples of smart agriculture: Precision Farming, Hydroponic, aeroponic, Robotic Farming, Big Data, Drone, Satellite.* 10. *Smart Agriculture Extension* *Challenges for agricultural extension workers in Indonesia, Breakthrough strategies for implementing extension services, Examples of ICT-based extension* 11. *Agriculture Start-up* *The role of entrepreneurs in agricultural development, The character of agricultural entrepreneurs, The challenges of the millennial generation in building and developing agricultural businesses, Examples of Startups in agriculture* 12. *Green and Blue Economy* *Green Economy, Objective of Green Economy, Blue Economy, Implementation concept of blue Economy* 13. *Hot Issue (Future Agriculture 2045)* *Hot issues in agriculture and related matters, Interpretation of problems and potential in the field, Agricultural development solutions in a broad sense.*
Examination forms	*Written examination*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*

Module designation	*Innovative Agriculture (IPB10C)*
Reading list	1. *Pengantar Ilmu Pertanian, Andi Hakim Nasution* 2. *Kumpulan Makalah Pengantar Ilmu-ilmu Pertanian* 3. *Tantangan Generasi Muda dalam Pertanian, Pangan, dan Energi*

Mathematics and Logical Thinking *(MAT102)*

Module designation	*Mathematics and Logical Thinking (MAT102)*
Semester(s) in which the module is taught	*2*
Person responsible for the module	*Drs.Siswandi, M.Si.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course*
Teaching methods	*Lecture session, discussion, practices*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23.3 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Practical class : 1 × 170 min × 14 meetings = 2380 min (39.7 hours)* *Total = 7140 min (119 hours)*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Able to explain whether there is an error/error in a statement and recognize the type of error/error, and recognize the concept of induction deduction thinking.* 2. *Able to explain the difference between propositions and non-propositions, Coupling and its types, and proposition truth value* 3. *Able to explain Classification of propositions: Tautology, contradiction, contingency, Two equivalent propositions (with table and postulate), Definition of predicates, Universe of predicates, predicate symbol, Quantifying terms, The symbol of a quantified proposition, Negation of quantified proposition* 4. *Students can Explain the meaning of argument Symbolize arguments and determine the validity of an argument* 5. *Students can Explain the Principle of Mathematical Induction using the principle of mathematical induction to prove mathematical formulas* 6. *Students are able to Counts the number of times an event is likely to occur Use the laws of addition, multiplication, permutation, combination, distribution appropriately* 7. *Students are able to Explain the meaning of Linear Equation System (SPL), SPL solution and how to find SPL solution, Apply SPL and find its solution.* 8. *Students are able to Explain linear, quadratic, instantaneous, exponential, logarithmic functions, The origin/result area of the function, Formulate/demonstrate the function according to the real data obtained* 9. *Students are able to explain the meaning of Linear Programming (PL), Determine the solution of PL, and Apply PL to real problems.*

Module designation	*Mathematics and Logical Thinking (MAT102)*
Course description	*This course discusses the basic concepts of mathematics which include the concepts of mathematical logic, combinatorics, linear models (matrices and systems of linear equations), function models (linear and nonlinear functions), and linear programming), function models (linear and nonlinear functions), and linear programming. Students are expected to be able to analyze and make judgments, draw appropriate conclusions, communicate, express quantitative evidence, strengthen arguments or goals, build and practice logical thinking*
Content	1. *Introduction to Logic, Types of errors/informal fallacies, Concept of Thinking Deduction & Induction* 2. *Propositional Logic, Proposition Definition, Stackers & Truth Tables, Compound, Complex Propositions, Classification of Propositions: tautology, contradiction, contingency, Equality of two propositions, Proof of equality* 3. *Arguments, Assessing arguments (valid or invalid) and their methods, Proof of equivalence, Inference rules, Short truth table method, Quantified arguments* 4. *Concept of Mathematical Induction Principle, Steps of Mathematical Induction Principle* 5. *Combinatorics: Law of Addition, Law of Multiplication, Permutations, Circular permutations, Combination Distribution* 6. *Mathematical Modeling with Linear Equation Systems* 7. *Function as a model, Linear Functions, Quadratic and Quadratic Functions, Exponential and Logarithmic Functions* 8. *Linear Programming, Definition, Facile region, OT Solution, Linear Programming Applications*
Examination forms	*Written examination*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*
Reading list	1. *Diktat Pengantar Matematika. 2019. Departemen Matematika IPB.* 2. *G.C. Berresford, A.M. Rockett. 2013. Brief Applied Calculus, 6th Ed, Cencage Learning.* 3. *Rosen, KH. 2019. Discrete Mathematics and Its Applications. 8th Edition. Mc GrawHill, New York.* 4. *Copi IM, Cohen C, McMahon, K. 2011. Introduction to Logic, 14th Edition. Pearson Prentice Hall.* 5. *M.L. Lial, R.N. Greenwell, N.P. Ritchie.2017. Calculus with Applications, 11th Ed. Global Edition, Pearson.* 6. *M.S. Engel, Bedford. 2014. With Good Reason: An Introduction to Informal Fallacies.* 7. *P.D. Magnus. 2014. Forall-An Introduction to Formal Logic.* 8. *Http://www.fecundity.com/logic.* 9. *PR P. Morash. 1987. Bridge to Abstract Mathematics. Random House Inc. New York.* 10. *R.P. Grimaldi. 2003. Discrete and Combinatorial Mathematics. 5th Edition. Pearson Addison Wesley, Boston.* 11. *R.N. Aufman, J.S. Lockwood, R.D. Nation, D.K. Clegg. 2008. Mathematical Thinking and Quantitative Reasoning. Houghton Mifflin Co. Boston.* 12. *Tan ST. 2008. College Mathematics for the Managerial, Life, and Social Sciences, 7th Ed, Thomson, Belmont.* 13. *Taha HA. 2017. Operations Researh: An Introduction. 10th Ed. Pearson, Edinburg.*

Sports and Arts (IPB10G)

Module designation	*Sports and Arts (IPB10G)*
Semester(s) in which the module is taught	*1*
Person responsible for the module	*Sitti Sugiah*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory courses for undergraduate program*
Teaching methods	*Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning*
Workload	*Practical : 1 × 170 min × 14 meetings = 2380 min* *Total = 2380 min* *(39.7 hours)*
Credit points	*1 SCH x 1.44 = 1.44 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Through sports activities, it is hoped that students will grow and develop in a healthy and fresh body, and can develop their personality to be more harmonious* 2. *As well as being able to contribute, especially through motion experiences so that as a whole they can grow and develop physical, spiritual, social, emotional, intellectual, moral, and spiritual elements*
Content	*Sports and art learning is an effort for lecturers and students to actualize all the potential of their activities as humans in the form of attitudes, actions and works that are given form, content and direction towards personal unity according to human ideals.*
Examination forms	*Written examination, art and sport performance*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*
Reading list	1. *Diktat Kuliah Olagraga dan Seni* 2. *Pendidikan Jasmani dan Kesehatan* 3. *Pedoman tentang Senam Aerobik* 4. *Pedoman Mengajar Atletik*

English (IPB10F)

Module designation	*English (IPB10F)*
Semester(s) in which the module is taught	*2*
Person responsible for the module	*Dra. Tatie Soedewo M.A*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory courses for undergraduate program*
Teaching methods	*Lecturer presentation, group discussion*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23,2 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Total = 47600 min (79,2 hours)*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Able to applying "reading skills" in understanding texts in English* 2. *Knowing the structure of language to support understanding of texts in English*
Course description	*This course is designed and structured to guide IPB University students so they can face the era of globalization with sufficient English language. The topics discussed are knowledge of grammar and reading techniques that are very useful such as: skimming, scanning, guessing meanings from context, text organization and transferring information.*
Content	1. *Regulations and course outline* 2. *Talking about activities based on particular time* 3. *Main ideas in text* 4. *Discussing scanning strategies* 5. *Understanding relations of ideas in text by observing pronoun references* 6. *Dealing with unfamiliar words and enriching vocabulary* 7. *Text organization: process and list of ideas* 8. *Text organization: comparison and contrast* 9. *Text organization: cause and effect* 10. *Expression of opinion, agreement-disagreement, and suggestion* 11. *Understanding graphs, charts, and tables*
Examination forms	*Written examination*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*

Module designation	*English (IPB10F)*
Reading list	1. *Abdulaziz, Helen Taylor, & Alfred D. Stover. 1980. Academic Challenges in Reading. Prentice-Hall, Inc.Englewood Cliffs, N.J.* 2. *Anson M. Chris, Schwegler A. Robert. 2001. The Longman Handbook for Writers and Readers, An Imprint of Addision Wesley Longman, Inc* 3. *Dobbs, Carrie. 1989. Reading for a Reason. Prentice Hall Regents Englewood Cliffs, N.J.* 4. *Feverstein, Tamar and Miriam S. 1995. Enhancing Reading Comprehension in the Language Learning Clasroom. Alta Book Center Pub. San Fransisco, California.* 5. *Grellet, Francois. 1981. A Practical Guide to Reading Comprehension Exercises. Cambridge University Press.* 6. *Hornby, A.S. 1991. Oxford Advanced Learner's Dictionary. Oxford UP.* 7. *Karen Blanchard et.al. 1997. For Your Information 3. Longman.* 8. *Kranhlee, Karl. 1976. Reading Together: A Reading Activities Text. St. Martin Press.* 9. *Labarca. Angela and James M. Hendrickson. 1984. Our Global Village. Harcourt Brace Jovanovichy, Inc.* 10. *Latulippe, L.D. 1987. Developing Academic Reading Skills. Prentice Hall Regents, Englewood Cliffs, N.J.* 11. *Maingay, S. 1983. Making Sense of Reading: an Introduction to Reading Skills in English. Australia Nelson.* 12. *Marcelino, M. 1999. Materials for Foundations of Academic Writing Course. AMINEF, Jakarta.* 13. *Mickulecky, Beatrice S. 2004. More Reading Power, Reading for Pleasure, Comprehension Skills, Thinking Skills, Reading Faster. Pearson Education, Inc.* 14. *Oshima, Alice, and Ann Hogue. 1999. Writing Academic English. Longman.* 15. *Praninkas, Jean. 1975. Rapid Review of English Grammar. Prentice Hall.* 16. *Rowland, Black S. and Lisa Rosenthal. 1986. Academic English and Study Skills for International Students. Prentice Hall. N.J.* 17. *Skykes, J.B. 1989. The Concise Oxford Dictionary. Oxford UP.* 18. *The British Council. 1979. Reading and Thinking: Exploring Functions. Oxford UP.* 19. *Torres G, Eunice. Smith L. Michael. English for Fisheries Technology. National Bookstore, Inc.* 20. *Valerie Kay. 1985. Biological Sciences "Developing Reading Skill in English". Pergamon Press.* 21. *Woods, Enid Nolan and David Foll. 1986. Penguin Advanced Reading Skills. Penguin Book Ltd. England.*

Physics Science and Technology (FIS104)

Module designation	*Physics Science and Technology (FIS104)*
Semester(s) in which the module is taught	*2*
Person responsible for the module	*Dr.Setyanto Tri Wahyudi, S.Si., M.Si.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course*
Teaching methods	*Lecturer session, discussion, practicum*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23.3 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Practical class : 1 × 170 min × 14 meetings = 2380 min (39.7 hours)* *Total = 7140 min (119 hours)*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	*Able to use various physics formulations in scope to solve simple physics problems and apply them to various other fields.*
Course description	*This course is given to equip students with insights into the scope of mechanics, vibrations and waves thermodynamics, electricity, electromagnetics and modern physics as well as provide an adequate foundation for students who need a considerable physics foundation with the necessary background such as high school mathematics which includes algebra, vectors, trigonometry, and a little differential and integral calculus.*

Module designation	*Physics Science and Technology (FIS104)*
Content	1. *Getting to know Physics, Scientific Method, Measurement and Units* 2. *Speed, Frame of reference, Displacement and Velocity in Regular Straight Motion, Regularly Changing Straight Motion, Instantaneous Velocity and Displacement, Acceleration and Velocity* 3. *Newton's First Law, Mass, Force, Newton's Second Law, Newton's Third Law, Weight (Gravitational Force), Normal Force, Friction Force, Forces in Nature* 4. *Work, Energy, Kinetic Energy, Gravitational Potential Energy, Conservation of Mechanical Energy, Conservative and Non-conservative Forces, Power, Use of Newton's Laws, Concept of Impulse and Momentum, Concept of Center of Mass, Force, Impulse and Linear Momentum, Law of Conservation of Momentum* 5. *Kinematics of Rigid Bodies, Static Equilibrium of a Rigid Body, Center of Gravity, Translational and rotational equilibrium of a rigid body, Torque, Moment of Inertia, Mechanical Engine* 6. *Concept of Density, Pressure in fuids, Pascal's Principle, Archimedes Principle, Flow Characteristics, Continuity Equation, Bernouilli Equation* 7. *Definition of Vibration* 8. *Simple Harmonic Motion (SHM), Quantity in SHM, SHM Energy, SHM Equation, Types of Waves and Their Properties, Definition of Wavefront, Sound Waves, Intensity and Level f Intensity of Sound, Doppler Effect* 9. *Definition of temperature, Temperature scale and thermometer, Expansion, Water anomalies, Heat and phase change, Black's principle, Conduction, convection and radiation* 10. *Ideal Gas Equation, Kinetic Energy and Energy in an Ideal Gas, First Law of Thermodynamics, Thermodynamic processes, Second Law of Thermodynamics, Heat Engine, Carnot Engine, Cooling Engine* 11. *Electric Charge, Coulomb's Law, Electric Field, Electric Potential Energy, Electric Potential, Capacitors* 12. *Electric Current, Electrical Resistance and Ohm's Law, Electric Power, Electrical Energy, Electrical resistance circuit, Kirchoff's laws* 13. *Symptoms of Magnetism, Magnetic Forces, Magnetic field produced by electric current, Magnetic force between two wires, Magnetic flux, Magnetic induction* 14. *Definition of Light, Reflection of light, Flat Mirror, Spherical Mirror, Refraction, Thin Lens, Eyes, Single slit diffraction*
Examination forms	*Written examination*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*

Chemistry Science and Technology (KIM104)

Module designation	*Chemistry Science and Technology (KIM104)*
Semester(s) in which the module is taught	*2*
Person responsible for the module	*Dr.Trivadila, S.Si., M.Si.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course*
Teaching methods	*Lecturer session, discussion, practicum*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23.3 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Practical class : 1 × 170 min × 14 meetings = 2380 min (39.7 hours)* *Total = 7140 min (119 hours)*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Able to understand Chemistry as the Central of Science for science and technology in agriculture, marine, and tropical biosciences.* 2. *Able to apply Chemistry concepts to design structures, dynamics and rates of change in living systems related to energy exploration for the future.* 3. *Able to communicate and convey opinions and ideas logically to solve a problem and respect the opinions of others.* 4. *Able to collaborate and cooperate through group work by paying attention to safety, occupational health, and environmental aspects.*
Course description	*This course encourages students to actualize Chemistry as the Central of Science for the foundation of science and technology in agriculture, marine, and tropical biosciences. The theoretical foundation will begin by providing insight into the contribution of Chemistry in the field of world technology, its relationship with other sciences, efficient atoms for product synthesis, dynamics and rates of product change and product utilization for technological development for the welfare of living things.*

Module designation	*Chemistry Science and Technology (KIM104)*
Content	1. *Video of Chemical Invention Changing the Face of the World, Face-Changing Chemical Invention, Scientific Method, Classification of Matter* 2. *Development of Atomic Theory, Periodic Table and Principal Properties of Elements, Intramolecular Bonding, Electronegativity, Molecular Polarity and simple molecular symmetry* 3. *Material Forms: Gases (Ideal & Real), Liquids, Solids, Plasmas, Intermolecular Interactions, Phase Diagram of 1 (one) Component* 4. *Reaction Equation, Quantity of Substance (moles), Empirical Formula and Molecular Formula, Limiting Reagent, Percent Yield* 5. *Solution, Concentration Colligative Properties* 6. *Law of Thermodynamics I (Thermochemistry), Law of Thermodynamics II* 7. *Chemical Equilibrium and Factors Affecting Equilibrium* 8. *Acid-base theory and acid-base classification, Degree of acidity (pH), Weak acid-base and salt equilibrium, Buffer solution* 9. *Law of Reaction Rate, Concentration and Time Relationship, Determinants of reaction rate, Catalyst* 10. *Redox, Voltaic cell and Cell diagram, Potential Cell, Electrolysis* 11. *Alkanes, Alkenes, Alkynes, Organohalogens, Alcohols, Amines, Carbonyl functional group, Ether, Sulfur* 12. *Carbohydrates, Proteins, Nucleic Acids, Lipids, Natural Polymers, Synthetic Polymers*
Examination forms	*Written examination and video assignment*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*

General Sociology (KPM131)

Module designation	*General Sociology (KPM131)*
Semester(s) in which the module is taught	*2*
Person responsible for the module	*Ir.Murdianto, M.Si.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory courses for undergraduate program*
Teaching methods	*Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23,2 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Total = 47600 min (79,2 hours)* *Lecture : 2 × 50 min × 14 meetings = 1400 min (23,2 hours)*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students are able to explain sociological concepts and theories regarding interaction, social structure, social stratification, culture and social change* 2. *Students are able to identify social realities and social problems at the group, organizational, institutional, community, community, and global levels* 3. *Students are able to analyze social change based on the dimensions of power and authority, communication patterns, gender and development with qualitative and quantitative approaches*
Content	*This course explains the history and development of Sociology; Sociology as a Perspective; Social Interaction and Structure; Society and Culture; Social Institutions; Group; Organization and Bureaucracy; Social Stratification; Power and Authority; Communication Patterns, Community Forms and Ecological Adaptation Patterns; Gender and Development; and Social Change and Development*
Examination forms	*Written examination*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*

Module designation	*General Sociology (KPM131)*
Reading list	1. *Charon, J.M. 1980. The Meaning of Sociology. Alfred Publishing Co. Inc. America.* 2. *Calhoun, C., et.al. 1994. Sociology (6th edition). McGraw-Hill, Inc. USA.* 3. *Wibisono, Koento. 1982. Arti Perkembangan Menurut Filsafat Positivisme Auguste Comte. Yogyakarta: Gadjah Mada University* 4. *Press.* 5. *Gillin, J.L. & J.P. Gillin, 1954. Cultural Sociology (3rd printing). New York: The Macmillan Co.* 6. *Maiolo, J., et.al., 1991. Study Guide to Accompany Bassis, Gelles and Levine: Sociology An Introduction. McGraw-Hill, Inc. USA.* 7. *Soekanto, S., 1990. Sosiologi Suatu Pengantar. Jakarta: Rajawali Press.* 8. *Geertz, C. 1976. Agricultural Involution: process of ecological change in Indonesia. Berkeley: University of California Press.* 9. *Herskovits, M.J. 1955. Cultural Anthropology. New York: Alfred A. Knopf.* 10. *Koentjaraningrat (Ed.). 1979. Manusia dan Kebudayaan di Indonesia. Jakarta: Penerbit Djambatan.* 11. *Kluckhohn, F.R. 1961. "Dominant and variant value-orientation" in: FR Cluchohn & HA Murray (Eds.), Personality in Nature, Society and Culture. New York: Alfred A Knoff.* 12. *Redfield, R. 1956. Peasant society and culture. Chicago: University of Chicago Press.* 13. *Tan, M.G. 1973. "Masalah perencanaan penelitian" dalam Koentjaraningrat (Ed.), Metode-metode Penelitian Masyarakat. Jakarta: LIPI.* 14. *Dorn, J.A.A. van & C.J. Lammers. 1959. Modern Sosiologie een sijstematische inleiding. Utreacht Antwerpen: Het Spectrum.* 15. *Koentjaraningrat. 1964. Pengatar Antropologi, Jakarta: Penerbit Universitas.* 16. *Koentjaraningrat . 1979. Kebudayaan, Mentalitas dan Pembangunan. Jakarta: Gramedia.* 17. *MacIver, R.M. & C.H. Page. 1957. Society and Introductory Analysis. New York: Rinehart and Company, Inc.* 18. *Merton, R.K. 1967. Social Theory and Social Structure. New York: The Free Press. Polak.* 19. *J.B.A.F.M. 1966. Sosiologi: Suatu Buku Pengantar Ringkas. Jakarta: Penerbit dan Balai Buku "Ichtiar".* 20. *Soemardjan, S. & S. Soemardi (Eds.). 1974. Setangkai Bunga Sosiologi. Jakarta: Yayasan Badan Penerbit Fakultas Ekonomi Universitas Indonesia.* 21. *Uphoff, N. 1993. "Grassroots Organizations and NGOs in Rural Development: Opportunities with Diminishing States and Expanding Markets." World Development, Vol 21(4): pp607-622.* 22. *Uphoff, N. 1986. Local Institutional Development: An Analytical Sourcebook with Cases. New York: Kumarian Press.* 23. *Bierstedt, R. 1982. The Social Order. Bombay: Tata McGraw Hill Publishing.*

Computational Thinking *(KOM102)*

Module designation	*Computational Thinking (KOM102)*
Semester(s) in which the module is taught	*2*
Person responsible for the module	*Dean Apriana Ramadhan, S.Kom., M.Kom.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course*
Teaching methods	*Lecturer session, discussion, assignment, quizes*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23,2 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Total = 47600 min (79,2 hours)* *Lecture : 2 × 50 min × 14 meetings = 1400 min (23,2 hours)*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students have the ability to analyze problems and find solutions to these problems with a computational thinking approach computational thinking approach* 2. *Students have knowledge of computational tools that can be used to solve problems.* 3. *Students understand the ethics of using various computational tools in problem solving.*
Course description	*This course provides students with an overview of the VUCA world that will be faced by students in the future era and provides a basis for computational literacy and ethics in using information technology. More specifically, this course explains about the process of recognizing problem and solution formulation by focusing on important information into a generic solution (abstraction), problem solving includes the process of breaking down a problem into smaller sub-problems (decomposition), looking for similarities in the pattern of a problem (pattern matching), and building structured solution steps (algorithms). This course shapes students' thinking patterns in expressing solutions in a structured a series of structured steps that can be carried out by the help of computing technology. After taking this course, students are expected to be able to apply problem solving through computational thinking methods*
Content	1. *Computational thinking VUCA world* 2. *ICT literacy* 3. *Ethics* 4. *Problem formulation* 5. *Decomposition* 6. *Abstraction* 7. *Problem solving* 8. *Algorithmic thinking* 9. *Hour of code* 10. *Pseudocode*
Examination forms	*Written examination*

Module designation	*Computational Thinking (KOM102)*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*
Reading list	1. *David Riley, Kenny A. Hun. 2014. Computational Thinking for the Modern Problem Solver. Chapman & Hall.* 2. *Paul Curzon, Peter W McOwan. 2017. The Power of Computational Thinking. Games, Magic and Puzzles to Help You Become a Computational Thinker. World Scientific.* 3. *Karl Beeche. 2017. Computational Thinking: A beginner's guide to problem-solving and programming. BCS, The Chartered Institute for IT.* 4. *George Beekman, Ben Beekman. 2012. Digital Planet: Tomorrow's Technology and You 10e. Pearson.* 5. *V. Anton Spraul. 2012. Think Like a Programmer: An Introduction to Creative Problem Solving. No Starch Press.* 6. *Eric Freemen. 2018. Head First Learn to Code: A Learner's Guide to Coding and Computational Thinking. O'Reilly Media*

Statistic and Data Analysist *(STA111)*

Module designation	*Statistic and Data Analysist (STA111)*
Semester(s) in which the module is taught	*2*
Person responsible for the module	*Dr. Ir.I Made Sumertajaya, M.Si.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course*
Teaching methods	*Lecturer session, discussion, assignment, quizzes*
Workload	*Lecture : 2 × 50 min × 14 meetings = 1400 min (23.3 hours)* *Assignment : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Self-activity : 2 × 60 min × 14 meetings = 1680 min (28 hours)* *Practical class : 1 × 170 min × 14 meetings = 2380 min (39.7 hours)* *Total = 7140 min (119 hours)*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Have an open attitude and desire to continue to develop themselves, both for personal and environmental progress* 2. *Have a strong foundation in the basic concepts of data analysis and statistical inference.* 3. *Have a broad knowledge of the application of statistical techniques and machine learning to other fields.* 4. *Have managerial, leadership, and teamwork skills, as well as being able to maintain good relationships with supervisors and fellow colleagues both in the field of statistics and machine learning and Maintain good relationships with supervisors and colleagues both inside and outside the institution.* 5. *Able to implement an adaptive data analysis process using statistical or machine learning techniques with the help of techniques or machine learning with the help of software, supported by adequate programming skills.* 6. *Students have the ability to generate, present and interpret general information from data.* 7. *Students have the ability to process simple data collection and management to produce valid information.*

Module designation	*Statistic and Data Analysist (STA111)*
Course description	*This course explains the basic concepts of statistics, understanding of some terms in statistics (sample, population, data, etc.); various techniques for understanding data (data understanding), which include statistics (sample, population, data, etc.); various techniques of understanding data, which include presentation and summarization of data, exploration of the existence of extreme values, exploration of distribution patterns, exploration of comparisons between groups, and exploration of relationships between variables; modeling, including association, correlation and the introduction of regression models. including association, correlation and the introduction of linear regression models; understanding some methods of data collection, data management and some techniques of data management. data collection methods, data management and some techniques of presenting information in the presentation of analysis results, which can be applied to various applied fields, such as Agriculture, Biology, Social, Business, and so on. This course is also the basis for further statistics courses such as Categorical Data Analysis, Regression Analysis, Design of Experiments, Quality Control Statistics, and Time Series Analysis.*
Content	1. *Introduction to statistics (1 meeting)* 2. *Data Understanding: Description and Exploration (4 meetings)* 3. *Modeling: Correlation and Regression (3 meetings)* 4. *Data collection Methods (2 meetings)* 5. *Introduction to Data Management (2 meetings)* 6. *Visualization and Presentation (2 meetings)*
Examination forms	*Written examination*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*
Reading list	1. *Agresti A, Franklin C, Kingenberg B. 2018. Statistics: the art and science of learning from data. Pearson –* 2. *Harlow, England.* 3. *Anderson DR, Sweeney DJ, Williams TA, Camm JD, Cochran JJ. 2018. Statistics for Bussiness and Economics,* 4. *13th ed. Cengage Learning. Boston.* 5. *Moore DS, McCabe GP, Craig BA. 2014. Introduction to the Practice of Statistics. WH Freeman and Company –* 6. *New York, USA.*

Conservation of Natural Resources and Environment (KSH1101)

Module designation	*Conservation of Natural Resources and Environment (KSH1101)*
Semester(s) in which the module is taught	*2*
Person responsible for the module	*Prof. Dr. Ir. Sambas Basuni, M.S.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Faculty Forestry and Environment IPB University (Department of Forest Management, Department of Forest Products, Department of Forest Resources Conservation and Ecotourism, Department of Silviculture)*
Teaching methods	*Lecture session and discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to understand the theoretical concept of living resources conservation.* 2. *Students acquire ability to identify traditional and indigenous knowledge in the utilization of protected area, wild animal, plant diversity, ecosystem services, nature recreation, and ecotourism*
Content	*This course is consisted of 8 topics, namely:* **1. *Introduction*** *Students are expected to be able to explain conservation problems related to human behavior and threats to biodiversity through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* **2. *Definition and objectives of living resources conservation*** *Students are expected to be able to explain the general definition, operational definition, and objectives of the conservation of living resources and its ecosystem through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.*

Module designation	*Conservation of Natural Resources and Environment (KSH1101)*
Content	***3. Conservation movement*** *Students are expected to be able to explain motifs, economic and socio-philosophical foundation on the importance of conservation as well as historical background of conservation movement (in Indonesia and the world). Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* ***4. Living resources concept*** *Students are expected to be able to explain the categories of living resources and clearly distinguish the definition of living resources and biodiversity through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* ***5. Ecology conservation principles*** *Students are expected to be able to explain the principles of biodiversity and fluctuations as the foundation of its management through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.* ***6. Conceptual foundation of living resources conservation*** *Students are expected to be able to explain the conceptual foundation of conservation in various levels; population and species level, community level, and landscape level through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* ***7. Rarity and extinction*** *Students are expected to be able to explain the foundational theory concerning rarity and extinction, the causative factors and the characteristics of species prone to extinction, and species conservation status. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.* ***8. Living resources conservation strategy*** *Students are expected to be able to explain the living resources conservation strategy in either principle or operational level in relation with the management of living resources and their ecosystem, including ecoturism as a strategy for living resources conservation. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 20% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	*1. Borrini-Feyerabend, G. 1999. Collaborative Management of Protected Areas (in Partnerships for Protection: New Strategies for Planning and Management for Protected Areas edited by Stolton, Sue and Nigel Dudley). IUCN-The World Conservation Union, Earthscan Publications Ltd, London. Pp. 224-234.* *2. Brandon, K. E and M. Wells. 1992. Planning for People and Parks: Design Dilemmas. Journal World Development Vol. 20 No. 4. Pergamon Press Ltd., Great Britain. Pp:557-570.*

Module designation	*Conservation of Natural Resources and Environment (KSH1101)*
	3. *Conservation. IUCN-The World Conservation Union, Gland-Switzerland. Pp. 215-222* 4. *Hess Jr., K. 2001. Parks Are for People – But Which People? in The Politics and Economics of Park Management, Edited by Terry L. Anderson and Alexander James. Rowman and Littlefield Publisher, Oxford. Pp. 159-181* 5. *UCN. 1992. Protected Areas and Demographic Change: Planning for the Future (A Working Report of Workshop 1.6). IVth World Congress on National Parksand Protected Areas held in Caracas, Venezuela 10-21 February 1992, IUCN The World Conservation Union, Gland, Switzerland.* 6. *Lewis, C. (Ed.). 1996. Managing Conflicts in Protected Areas. IUCN The World Conservation Union, Gland-Switzerland.* 7. *MacKinnon, J., MacKinnon, K., Child, G. and J. Thorsell. 1986. Managing Protected Areas in the Tropics, International Union for Conservation of Nature and Natural Resources (IUCN). Gland-Switzerland.* 8. *McNeely, J. A. 1999a. Mobilizing Broader Support for Asia's Biodiversity: How Civil Society Can Contribute to Protected Area Management. Asian Development Bank – The World Conservation Union, Manila, the Philippines.* 9. *Meganck, R. A. and R. E. and Saunier (Eds.). 1995. Conservation of Biodiversity and the New Regional planning. Department of regional Development and Environment, Executive Secretariat for Economic and Social Affairs, General Secretariat of Organization of American States – IUCN The World Conservation Union.* 10. *Sayer, J. 1991. Buffer Zones in Rainforest: Fact or Fantasy?. PARKS the international magazine dedicated to the protected areas of the world. Vol. 2 No. 2, July 1991 (System Planning): 20-24.* 11. *UNDP/FAO National Park Development Project. 1982. Rencana Konservasi Nasional Jilid I: Pendahuluan, Metoda Evaluasi dan Tinjauan Kekayaan Alam (basedon the works by John MacKinnon-FAO).* 12. *Wells, M. and K. E. Brandon (with Lee Hannah). 1995. People and Parks: Linking Protected Area Management with Local Communities (3rd Ed.). The World Bank, WWF, and USAID. Washington, D.C.* 13. *Westley, F., Seal, U., Byers, O and G. D. Ness. 1998. People and Habitat Protection. PARKSProtected Areas Programme (the International Journal for Protected Area Managers Vol. 8 No. 1. February 1998). IUCN – The Conservation Union, Cambridge – UK Pp. 15-26* 14. *Adrian C. Newton, 2007. Forest Ecology and Conservation. Oxford University Press.* 15. *Joe Landsberg and Richard Waring, 2014. Foests in our changing world - new principles for conservation and management. Island Press, 2000 M Street NW, Suite 650, Washington, DC 20036.* 16. *Chao Li, Raffaele Lafortezza, Jiquan Chen. 2011. Landscape Ecology in Forest Management and Conservation. Springer Heidelberg Dordrecht London New York* 17. *Ministry of Natural resources Ontario .2010. Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales. Ontario, Canada* 18. *Indrawan M, Primack RB, Supriatna J. 2007. Biologi Konservasi. Jakarta: Yayasan Obor Indonesia (hal 87-184).* 19. *Buechly E, Sekercioglu C. 2013. Endangered Species. dalam Grzimek's Animal Life Encyclopedia: Extinction, 1st ed. Gale (hal*

Module designation	*Conservation of Natural Resources and Environment (KSH1101)*
	159-175) 20. *Center for Biological Diversity. 2020. Saving Life On Earth a Plan to Halt the Global Extinction Crisis. Center for Biological Diversity* 21. *Darwin C. 2003. The Origin of Species – Asal Usul Spesies. Terjemahan Tim UNAS. Edisi 1. Yayasan Obor Indonesia* 22. *Gibb C, Pratt N, Sessa R. ed. 2013. The Youth Guide to Biodiversity. 1st edition. FAO.*

Dendrology *(SVK211)*

Module designation	*Dendrology (SVK211)*
Semester(s) in which the module is taught	*3*
Person responsible for the module	*Iwan Hilwan*
Language	*Bahasa Indonesia*
Relation to curriculum	*Cumpolsory Course*
Teaching methods	Small group discussion, Collaborative learning, cooperative learning
Teaching media and tools	*Powerpoint, textbooks, laboratory equipments (PPE (Protective Personal Equipment)), herbarium*
Workload	*Lecture class: 50 minutes x 2 sch x 14 weeks = 1400 minutes = 23 hours* *Practice class: 60 minutes x 3 sch x 14 weeks = 2520 minutes = 42 hours* *Exam: 120 minutes x 2 times = 240 minutes = 4 hours* *Self-study: 60 minutes x 5 times x 14 weeks = 3940 minutes = 66 hours* *Total: 8100 minutes = 135 hours*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	*Biology*
Module objectives/intended learning outcomes	*Able to explain definitions, understand deeply about tree morphology, and describe important botanical characteristics of several tribes, genera, and tree species. In addition, students are expected to have skills in the introduction of important tree species in the forestry sector, at least 60 species.*
Course description	*Dendrology is one of the basic science courses in the field of forestry which describes the definition of "trees", tree morphology (botanical properties), principles of plant taxonomy, forest botanical exploration activities, as well as discussion of several tribes, genera, and species-species of trees that are important in forestry and forest ecosystems.*
Content	1. *Definition of "tree",* 2. *Morphology (botanical characteristics) of trees,* 3. *Principles of plant taxonomy,* 4. *Forest botanical exploration activities, and* 5. *Discussion of several tribes, genera, and tree species that are important in the field of forestry and forest ecosystems*
Examination forms	*Lecture examination (writing test in the midterm and final semester), practicum examination (writing test in the final semester and quiz)*
Study and examination requirements	*Assessment of students's achievement using proportion as follow: midterm exam (35%), final exam (35%), practicum (30%). The proportion of practicum score consists of report (40%), quiz (10%), herbarium making (25%), and practicum examination (25%).*

Module designation	*Dendrology (SVK211)*
Reading list	1. *Harlow, W.M. and E.S. Harrar. 1985. Textbook of Dendrology. Mc Graw Hill Book Co., Inc. New York.* 2. *Keng, H. 1978. Orders and Families of Malayan Seed Plant. Singapore University Press. Singapore.* 3. *Lawrence, G.H.M. 1951. Taxonomy of Vscular Plants. MacMillan Publishing Co.,Inc. New York.* 4. *Samingan, T. 1985. Dendrologi. Gramedia. Jakarta.* 5. *Tjirosoepomo, G. 1985. Morfologi Tumbuhan. Gajah Mada University Press. Yogyakarta* 6. *Heyne K. 1987. Tumbuhan Berguna Indonesia. Jilid II. Jakarta (ID): Badan Litbang Kehutanan.* 7. *Prawira, S.A dan IGM Tantra. 1973. Pengenalan Jenis-jenis Pohon Penting (89 jenis). Lembaga Penelitian Hutan.Bogor.* 8. *PROSEA. 1995. Plant Resource of South-East Asia 5 : (1) Timber Trees : Major Commercial Timbers. Bogor.* 9. *PROSEA. 1995. Plant Resource of South-East Asia 5 : (2) Timber Trees : Minor Commercial Timbers. Bogor.* 10. *Steenis CGGJ van. 1972. Flora Pegunungan Jawa. Kartawinata JA, penerjemah. Bogor (ID): Pusat Penelitian Bogor LIPI. Terjemahan dari: The Mountain Flora of Java.* 11. *Wirjodarmodjo. 1959. Pohon-pohon Terpenting di Indonesia Seri I. Pengumuman No. 71. Lembaga Penelitian Hutan.Bogor.*

Wildlife Ecology (KSH1211)

Module designation	*Wildlife Ecology (KSH1211)*
Semester(s) in which the module is taught	*3*
Person responsible for the module	*Dr. Ir. Abdul Haris Mustari, M.Sc.F.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecture session, discussion and practicum session*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 2 hours per week* *Contact hour(s) (practicum session): 3 hours per week* *Structured academic activities (doing in-class/take home assignment or homework): 2 hours per week* *Private in-depth study (literature reading): 2 hours per week*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to implement the principles and policies of the discipline of forest resources conservation and ecotourism through the use of science, technology, and arts in problem solving and adaptation to real life situations.* 2. *Students acquire ability to master the theoretical concepts of forest resources conservation in general; acquire deep comprehension on the theoretical concepts of protected area management, wildlife management, conservation of plant diversity, ecosystem services utilization, ecotourism management; and solve procedural issues.* 3. *Students acquire ability to make decisions properly and accurately based on analysis of information and data and to provide guidance in selecting alternative solutions in individual or group settings.* 4. *Students acquire ability to be responsible of one's work to achieve the goals of one's organization or institution.*
Course description	*This course offers understanding and knowledge of various matters related to modern concepts of wildlife management such as background, objectives, principles, management processes, management of wildlife populations (density, sex ratio, age structure, birth, death, growth, survival), management wildlife habitat (cover, shelter, food & water, breeding grounds), forms of wildlife management model (carrying capacity approach, density level, recovery of small populations, and release), management and control of disturbance by wildlife, wildlife management law and administration at the national and global level, and wildlife management case study research project within the development*

Module designation	*Wildlife Ecology (KSH1211)*
	framework for ecotourism programs and entrepreneurship capacity building.
Content	*This course is consisted of 10 topics, namely:* ***1. Introduction*** *Students are expected to be able to understand and explain the scope, objectives, and interrelatedness of wildlife ecology with other field as well as the potency and value of wildlife through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 8% of the final score of this course.* ***2. Components of wildlife habitat*** *Students are expected to be able to understand and explain the functions and components of wildlife habitat through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 8% of the final score of this course.* ***3. Types of wildlife habitat*** *Students are expected to be able to understand and explain habitat types and habitat preferences of wildlife through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 8% of the final score of this course.* ***4. Wildlife as individual*** *Students are expected to be able to understand and explain physiological adaptation of wildlife towards environmental changes through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 8% of the final score of this course.* ***5. Wildlife as population*** *Students are expected to be able to understand and explain the definition of population and limiting factors for wildlife population growth through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 12% of the final score of this course.* ***6. Wildlife population growth*** *Students are expected to be able to understand and explain wildlife population growth models through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 8% of the final score of this course.* ***7. Wildlife movement*** *Students are expected to be able to understand and explain variety of wildlife movement, home range, core area, and territory through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 12% of the final score of this course.* ***8. Wildlife distribution*** *Students are expected to be able to understand and explain wildlife distribution pattern through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 8% of the final score of this course.*

Module designation	*Wildlife Ecology (KSH1211)*
	9. Species interaction *Students are expected to be able to understand and explain forms of species interaction in wildlife through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 12% of the final score of this course.* ***10. The effect of climate change towards wildlife, wildlife extinction, and the implementation of wildlife ecology in the sustainable management of wildlife population and habitat*** *Students are expected to be able to understand, explain, and implement wildlife ecology in the sustainable management of wildlife population through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 8% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	*1. Alikodra, H. S. 2002. Pengelolaan Satwaliar, Jilid I. Yayasan Penerbit Fakultas Kehutanan IPB. Bogor.* *2. Krebs, C. J. 1978. Ecology: Experimental Analysis of Distribution and Abundance. Second Edition. Harper &Row Publishers. New York.* *3. Bailey, J. A. 1984. Principles of Wildlife Management. John Wiley & Sons. New York.* *4. Begon, M., Harper, J. L. and C. R. Townsend. 1990. Ecology: Individuals, Populations and Communities (Second Edition). Blackwell Scientific Publications. Boston.* *5. Delany, M. J. 1982. Mammal Ecology. Blackie & Sons Ltd. Glasgow.* *6. Hildebrand, M. 1988. Analysis of Vertebrate Structure (Third Ed.). John Wiley & Sons, Inc. New York.* *7. Vaughan, T. A. 1978. Mammalogy. Sec Ed. W.B. Saunders Company. Philadelphia.*

Biodiversity Conservation Data Analysis *(KSH1212)*

Module designation	*Biodiversity Conservation Data Analysis (KSH1212)*
Semester(s) in which the module is taught	*3*
Person responsible for the module	*Prof. Dr. Ir. Yanto Santosa, DEA*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecturer session, discussion, assignment, quizzes*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 2 hours per week* *Contact hour(s) (practicum session): 3 hours per week* *Structured academic activities (doing in-class/take home assignment or homework): 2 hours per week* *Private in-depth study (literature reading): 2 hours per week*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Have a strong foundation in the basic concepts of data analysis and statistical inference.* 2. *Have a broad knowledge of applying statistical techniques in the fields of biodiversity conservation, social community, and ecotourism.* 3. *Have managerial, leadership, and teamwork skills, as well as maintain good relationships with supervisors and colleagues in applied statistics in the fields of biodiversity conservation, social community, and ecotourism.* 4. *Able to implement an adaptive data analysis process using statistical techniques with the help of software, supported by adequate programming skills.* 5. *Students have the ability to generate, present and interpret general information from data.* 6. *Students have the ability to process simple data collection and management to produce valid information.*
Course description	*This course explains the basic principles of data analysis in the field of biodiversity conservation and some simple statistical analysis methods commonly used in biodiversity conservation, social community, and ecotourism. This course also forms the basis for further data analysis courses such as Inventory and Monitoring of Wildlife, Communication and Social Science Conservation, Research Methods and Scientific Writing, Outdoor Recreation and Ecotourism, and etc. The topics covered in this course are statistical descriptions, probability, principles of estimating and testing hypotheses, estimating and testing hypotheses regarding proportions, estimating and testing hypotheses regarding mean values, correlations, simple linear regression, experimental designs, contingency tables, and non-parametric statistical analysis.*

Module designation	*Biodiversity Conservation Data Analysis (KSH1212)*
Content	*7. Introduction to statistics (1 meeting)* *8. Descriptive and Inferential Statistics (2 meetings)* *9. Sampling Techniques (2 meetings)* *10. Parameter Estimation (2 meetings)* *11. Hypothesis Testing and Non-Parametric Difference Testing (2 meetings)* *12. Regression and Correlation (2 meetings)* *13. Non-Parametric Statistics (1 meeting)* *14. Experimental design (2 meeting)*
Examination forms	*Written examination*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments* *Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active, role, initiative, language), (b) Being on time, (c) Effort*
Reading list	*7. Agresti A, Franklin C, Kingenberg B. 2018. Statistics: the art and science of learning from data. Pearson – Harlow, England.* *8. Anderson DR, Sweeney DJ, Williams TA, Camm JD, Cochran JJ. 2018. Statistics for Bussiness and Economics, 13th ed. Cengage Learning. Boston.* *9. Moore DS, McCabe GP, Craig BA. 2014. Introduction to the Practice of Statistics. WH Freeman and Company – New York, USA.* *10. Verma JP. 2012. Data Analysis in Management with SPSS Software. New Delhi, Springer Science & Business Media.* *11. MacFarland TW. 2013. Introduction to Data Analysis and Graphical Presentation in Biostatistics with R: Statistics in the Large. Fort Lauderdale, Springer Science & Business Media.* *12. Currell G. 2015. Scientific Data Analysis. Bristol, Oxford University Press.* *13. McGarigal K, Cushman SA, Stafford S. 2013. Multivariate Statistics for Wildlife and Ecology Research. New York, Springer Science & Business Media.*

Outdoor Recreation and Ecotourism (KSH1251)

Module designation	*Outdoor Recreation and Ecotourism (KSH251)*
Semester(s) in which the module is taught	*3*
Person responsible for the module	*Prof. Dr. E. K. S. Harini Muntasib, M.S.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students*
Teaching methods	*Lecture session and discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to understand the theoretical concept of living natural resources conservation and outdoor recreation.* 2. *Students acquire ability to plan the management of outdoor recreation and ecotourism.*
Content	*This course is consisted of 14 topics, namely:* 1. ***Outdoor recreation, tourism, and ecotourism*** *Students are expected to be able to explain the definition of outdoor recreation, tourism, and ecotourism through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 2. ***Policy and legislations on tourism*** *Students are expected to be able to explain the policy and legislations on tourism in Indonesia through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 3. ***The basic principles of outdoor recreation, tourism, and ecotourism*** *Students are expected to be able to explain the basic principles of outdoor recreation, tourism, and ecotourism through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.*

Module designation	*Outdoor Recreation and Ecotourism (KSH251)*
	4. ***Leisure time*** *Students are expected to be able to explain and measure leisure time owned by particular communities and its relation to tourism development through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 20%of the final score of this course.* 5. ***Resources inventory of outdoor recreation and ecotourism*** *Students are expected to be able to explain the resources that can be utilized as tourist object and attraction as well as steps to utilize them through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 6. ***Introduction to the variety of outdoor recreation and ecotourism*** *Students are expected to be able to explain the variety of activities in outdoor recreation and ecotourism and their definition through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 7. ***Example of activities in outdoor recreation and ecotourism*** *Students are expected to be able to explain the activities in outdoor recreation and ecotourism with animals as the main tourist object through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 8. ***Services to the visitors of natural tourism area*** *Students are expected to be able to explain the aspects of services to the visitors of natural tourism area through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 9. ***Management of the variety of outdoor recreation and ecotourism*** *Students are expected to be able to explain the management of the variety of outdoor recreation and ecotourism through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 10. ***Protected Area as location of outdoor recreation and ecotourism*** *Students are expected to be able to explain how Protected Areas can be managed as location of outdoor recreation and ecotourism through this topic. Assessment indicator for this topic isthe completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 11. ***Example of outdoor recreation and ecotourism management*** *Students are expected to be able to explain the example **of** outdoor recreation and ecotourism management through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 20% of the final score of this course.* 12. ***Market demand toward outdoor recreation and ecotourism***

Module designation	*Outdoor Recreation and Ecotourism (KSH251)*
	Students are expected to be able to explain the market demand toward outdoor recreation and ecotourism through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course. ***13. Introduction to tourism and ecotourism economics*** *Students are expected to be able to explain the tourism and ecotourism economics through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***14. Introduction to hazard and impacts from outdoor recreation and ecotourism*** *Students are expected to be able to explain the hazard and impacts from outdoor recreation and ecotourism through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading List	1. *Jubenville, A. 1976. Outdoor Recreation Planning. W.B. Saunders Company. Toronto.* 2. *[WTO] World Tourism Organization. 1995. National and Regional Tourism Planning. Routledge. New York.* 3. *Douglas, R. W. 1982. Forest Recreation. Pergamon Press. Frankfurt.* 4. *Laws, E. 1995. Tourist Destination Management. Routledge. New York* 5. *Direktorat Wisata Alam dan Pemanfaatan Jasa Lingkungan. 2002. Kriteria-Standar Penilaian Obyek dan Daya Tarik Wisata Alam (Analisis Daerah Operasi). Direktorat Wisata Alam dan Pemanfaatan Jasa Lingkungan, Direktorat Jenderal Perlindungan Hutan dan Konservasi Alam, Departemen Kehutanan. Bogor.* 6. *Wearing, S. and J. Neil. 2009. Ecotourism: Impacts, Potentialsand Possibilities. 2nd Ed. Butterworth-Heinemann, Elsevier. Oxford.* 7. *Edington J. M. and M. A. Edington. 1985. Ecology, Recreation and Tourism. Cambridge University Press. Cambridge.* 8. *Hammit, W. E and D. N. Cole. Wildland Recreation. John Wiley and Sons. Singapore.* 9. *Ceballos-Lascurain, H. 1996. Tourism, Ecotourism and Protected Areas. IUCN. Gland, Switzerland.* 10. *Clawson, M. and J. L. Knetsch, 1966. Economics of Outdoor Recreation. The Johns Hopkins Press. Baltimore.* 11. *Jubenville, A., Twight, B. W and R. H. Becker. 1987. Outdoor Recreation Management: Theory and Application Revised and Enlarged. Venture Publishing, Inc. State College. Philadelphia.* 12. *Godfrey, K. and J. Clarke. 2000. The Tourism Development Handbook: A Practical Approach to Planning and Marketing.*

Module designation	*Outdoor Recreation and Ecotourism (KSH251)*
	Cassell. London and New York. 13. *U.S. Department of the Interior, National Park Service, and Denver Service Center. 1997. VERP The Visitor Experience and Resource Protection (VERP) Framework A Handbook for Planners and Managers. U.S. Department of the Interior, National Park Service, and Denver Service Center.* 14. *Young, H. 2004. Service Quality in Tourism. HK Tourism Symposium 2004: Quality and Diversity.*

Tropical Plant Conservation *(KSH1231)*

Module designation	*Tropical Plant Conservation (KSH1231)*
Semester(s) in which the module is taught	*3*
Person responsible for the module	*Ir Siswoyo, MS*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students*
Teaching methods	*Lecture session and discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*2 SCH x 1.44 = 2.88 ECTS*
Credit points	-
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to understand the theoretical concepts of biodiversity conservation, ecotourism, and forest environmental services, as well as socio-economic-cultural communities.* 2. *Students acquire ability to understand the politics and policies of national and international laws and regulations related to biodiversity conservation.* 3. *Students acquire ability to manage sustainable use in the field of forest conservation, biodiversity, ecosystem-environmental services and ecotourism*
Course description	*Definition, scope and objectives, supporting scientific disciplines towrd plant diversity conservation; Legal basis and plant conservation policy; Build willingness for conservation action with the Tri Stimulus AMAR Pro-conservation approach; An overview of the diversity of taxa in the plant world; Scarcity and extinction of plant species; Important environmental factors in plant conservation; In-situ plant conservation in Indonesia; In-situ plant conservation practices; Techniques for harvesting plant products from nature in a sustainable manner; Plant management and monitoring; Forms, problems and solutions for ex-situ plant conservation; Community role in ex-situ plant conservation; In-vitro plant conservation and cryopreservation; Domestication and development of new tropical plant commodities.*

Content	*This course is consisted of 12 topics, namely:* 1. ***Introduction, definition, history, and prospects of ethnobiology*** *Students are expected to be able to explain the definition of ethnobiology and the objectives, scope, and interrelatedness between the discipline, history, and prospects of ethnobiology within forest conservation activities through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 2. ***Ethnobiology is a tangible manifestation of the principles of the uniqueness of the self-system in supporting food, medicine, and energy sovereignty*** *Students are expected to be able to explain how ethnobiology is a tangible manifestation of the principles of the uniqueness of the self-system for the independence or sovereignty of the nation's people and at the same time a form of biodiversity conservation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 3. ***Methods of ethnobiological study*** *Students are expected to be able to explain and implement various methods of ethnobiological study through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 4. ***Ethnobotany of comestibles, plant products for energy, dyes, aromatics, poisons, decorations, and traditional or spiritual ceremonies*** *Students are expected to be able to explain the traditional processing of plant species for various kinds of dyes, decorations, aromatics, poisons, traditional comestibles, and spices by giving examples of their usage in ethnic communities through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* 5. ***Building community plantation forest based on traditional silviculture system and indigenous knowledge*** *Students are expected to be able to understand and explain the concept of building community plantation forest based on traditional silviculture system and indigenous knowledge through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* 6. ***Ethnobiology of medicinal plants (Ethnophytomedics)*** *Students are expected to be able to explain the use of plants for treating various disease based on knowledge of particular ethnic communities through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 7. ***Ethnobiology of the traditional people of Baduy and Sunda Kasepuhan*** *Students are expected to be able to explain the case of ethnobiology in traditional communities in Java through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* 8. ***Indigenous knowledge in Indonesia's agroforestry system: Case study in Kalimantan and Sumatra***

Module designation	*Tropical Plant Conservation (KSH1231)*
	Students are expected to be able to explain the examples of traditional agroforestry system in Indonesia through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course. ***9. Types and functions of ethnic-based traditional home yard in Indonesia*** *Students are expected to be able to explain the types and functions of the ethnic-based traditional home yard landscape in Indonesia through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* ***10. Ethnozoology in Indonesia*** *Students are expected to be able to explain the examples of traditional knowledge of various ethnic communities in Indonesia in utilizing animal diversity through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* ***11. Ethnobiology of traditional communities in Sumatra, Kalimantan, and Papua (case study)*** *Students are expected to be able to explain the case study of Ethnobiology in the traditional people Sakai (Sumatra), Dayak Punan (Kalimantan), and Papua through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* ***12. Application of ethnobiological data and information for bio-cultural-diversity conservation to manifest nation's sovereignty with "Bhinneka Tunggal Ika"*** *Students are expected to be able to explain the application of the concept of ethnobiology in bio-cultural-diversity conservation program to support the sustainable development with "Bhinneka Tunggal Ika" in Indonesia through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum*

Module designation	*Tropical Plant Conservation (KSH1231)*
Reading list	1. *F. Merlin Franco, Magne Knudsen & Noor Hasharina Hassan ((ed). 2022. Case Studies in Biocultural Diversity from Southeast Asia—Traditional Ecological Calendars, Folk Medicine, and Folk Names. Springer Nature.* 2. *Ulysses Paulino Albuquerque, Reinaldo Farias Paiva de Lucena, Luiz Vital Fernandes Cruz da Cunha, Rômulo Romeu Nóbrega Alves. 2019. Methods and Techniques in Ethnobiology and Ethnoecology [2nd ed.]. Springer New York,Humana Press* 3. *Albuquerque, U. P., Romeu, R. and N. Alves (Eds). 2016. Introduction to Ethnobiology. Springer.* 4. *Aminah, Zuhud, E. A. M. and I. Z. Siregar. 2016. Utilization of Jelutung (Dyera spp.) among Anak Dalam Tribe in Bukit Duabelas National Park. Media Konservasi: Jurnal Ilmiah Bidang Konservasi Sumberdaya Alam Hayati dan Lingkungan. Vol 21, No. 2, August 2016: 168-173.* 5. *Anderson, E. N., Pearsall, D. M., Huwas, E. S. and N. J. Turner, 2011. Ethnobiology. Wiley-Black Well. London. Ready for phase 5 - current status of ethnobiology in Southeast Asia. Journal of Ethnobiology and Ethnomedicine volume 11 (17).* 6. *Hall, J. B., Tomlison, H.F., Oni, P. I., Buchy, M. and D. P. Aebischer. 1997. Parkiabiglobosa. A Monograph. School of Agricultural and Forest Science, University of Wales. Bangor, U.K.* 7. *Harefa, A. 2000. Menjadi Manusia Pembelajar. Penerbit Harian Kompas. Jakarta.*

Conservation and Environmental Policy (KSH1221)

Module designation	*Conservation Policy and Institutions(KSH221)*
Semester(s) in which the module is taught	*3*
Person responsible for the module	*Dr. Ir. Rinekso Soekmadi, M.Sc.F.Trop.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecture session and discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to elaborate and implement policies and regulations regarding protected area management, wild animal management, plant diversity conservation, ecosystem services utilization management, nature recreation, and ecotourism management.* 2. *Students acquire ability to manage conflicts.*
Content	*This course is consisted of 9 topics, namely:* **1. *Introduction*** *Students are expected to be able to correctly explain the definition of ethics and living resources conservation policy and its scope through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 2. ***Sovereignty principles in the management of natural resources*** *Students are expected to be able to correctly explain the nature of sovereignty in the management of living natural resources and the environment as the basis of national strength and integrity as well as international support through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* **3. *Values and ethics in living resources conservation*** *Students are expected to be able to explain and implement correctly environmental values and conservation ethics so that in the long term will own it as inherent personal characteristic through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts forfor*

Module designation	*Conservation Policy and Institutions(KSH221)*
	15% of the final score of this course. **4. *International convention and ethics on the conservation of living resources and environment*** *Students are expected to be able to distinguish understanding, agreement, convention, treaty, policy, and regulation in the context of conservation of living resources and the environment through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **5. *National policy on the conservation of living resources and the environment*** *Students are expected to be able to explain the national policy and strategy in the efforts to conserve living resources and the environment through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* **6. *Legislation on the conservation of living resources and the environment*** *Students are expected to be able to explain the important points regulated in several important laws and regulations in the effort to conserve living natural resources and the environment through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* **7. *Convention on International Trade of Endangered Species Flora and Fauna (CITES)*** *Students are expected to be able to explain the basic work principles of CITES and its implication for the member countries through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts forfor 5% of the final score of this course.* **8. *Convention on Biological Diversity (CBD) and The United Nations Framework Convention on Climate Change (UNFCCC)*** *Students are expected to be able to explain the points of agreement in the CBD and UNFCCC, the implementation strategy, and its implication for violation of agreements through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **9. *Capita selecta*** *Students are expected to be able to explain the government regulation on the conservation of living resources and environment and its implementation in the field through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.*

Module designation	*Conservation Policy and Institutions(KSH221)*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	1. *de Klemm, C. 1993. Biological Diversity Conservation and the Law: Legal Mechanism for Conserving Species and Ecosistem. Environmental Policy and Law Paper No. 29. IUCN-The World Conservation Union. Gland-Switzerland.* 2. *Soehartono, T. and A. Mardiastuti. 2003. Pelaksanaan Konvensi CITES di Indonesia. JICA.* 3. *Aliadi, A., Kismadi, B. C. and D. W. Munggoro(Eds). 2000. Berbagi Pengalaman: Pengelolaan Sumberdaya Alam Berbasis Masyarakat. Pustaka Latin.* 4. *Ascher, W. 1999. Why Governments Waste Natural Resources: Policy Failures in Developing Countries. The Johns Hopkins University Press. Baltimore.* 5. *Brandon, K., Redford, K. H. and S. E. Sanderson (Eds). 1998. Parks in Peril: People, Politics, and Protected Areas. The Nature Conservancy. Island Press. Washington DC.* 6. *Hardjosumantri, K. 1991. Hukum Perlindungan Lingkungan: Konservasi Sumberdaya Alam Hayati dan Ekosistemnya. Gajah Mada Press. Yogyakarta.*

Mapping, Geographical Information System (GIS), and Unmanned Aerial Vehicle (UAV) of Environment (KSH1241)

Module designation	*Mapping, Geographical Information System (GIS), and Unmanned Aerial Vehicle (UAV) of Environment (KSH1241)*
Semester(s) in which the module is taught	*3*
Person responsible for the module	*Dr. Yudi Setiawan, S.P., M.Env.Sc.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students*
Teaching methods	*Lecture session, discussion and practicum session*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipment (example: PPE (Protective Personal Equipment), drone, laptop, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 2 hours per week* *Contact hour(s) (practicum session): 3 hours per week* *Structured academic activities (doing in-class/take home assignment or homework): 2 hours per week* *Private in-depth study (literature reading): 2 hours per week*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students have the ability to theoretical concepts of mapping, geographic information systems (GIS) and unmanned aerial vehicle (UAV) technology for the environment* 2. *Students have the ability to apply an interdisciplinary approach in the utilization of environmental mapping, GIS and UAV in the fields of ecosystem management, wildlife management, bioprospecting management and plant conservation, environmental and geospatial analysis and management of natural recreation and ecotourism*

Module designation	*Mapping, Geographical Information System (GIS), and Unmanned Aerial Vehicle (UAV) of Environment (KSH1241)*
Course description	*This course offers an opportunity to gain proficiency in mapping, Geographic Information Systems (GIS), and the utilization of unmanned aerial vehicles (UAVs or drones) for environmental applications, such as wildlife monitoring, landscape ecology, and environmental services, including ecotourism. It covers key aspects such as spatial concepts, GIS components, software and hardware, data sources and characteristics, spatial data development and management, spatial references, GPS measurements, terrestrial mapping, and the latest advancements in GIS applications such as ArcGIS Online, Story Map, ArcGIS Survey123, and WebGIS platforms. Additionally, the course explores the use of UAVs to acquire scientific remote sensing data and the processing of UAV image data, with a specific focus on their relevance to forest conservation and ecotourism. In ecotourism application, mapping and GIS play a crucial role in identifying and assessing ecologically significant areas, creating visitor maps and guides, and managing natural resources responsibly. By using mapping and GIS technologies, ecotourism operators can analyze and visualize environmental data, such as biodiversity hotspots, hiking trails, and protected areas, enabling them to plan and promote sustainable tourism activities. The course also delves into the processing and analysis of drone-acquired data for ecotourism purposes, emphasizing the integration of mapping, GIS, and drone technologies to support ecologically conscious decision-making and enhance the visitor experience in ecotourism destinations.*
Content	*This course is consisted of 12 topics, namely:* ***1. Introduction*** *Students are expected to be able to understand the full picture of the course and the importance of understanding of environmental spatial analysis for the efforts to solve problems in forest resources conservation and ecotourism through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***2. Terrestrial mapping techniques*** *Students are able to understand methods and technologies used to create accurate maps and models of the Earth's surface and features. These techniques involve collecting data from the ground using various instruments and technologies to measure and record the characteristics of the terrain.* ***3. Map presentation technique (Cartography)*** *Students are able to understand the art and science of creating maps. It involves the design and presentation of geographic information on a map in a visually informative and meaningful way.* ***4. Introduction to GPS technology*** *Students are able to understand the use of geodetic/mapping GPS devices in various applications, including navigation, mapping, surveying, and tracking; including the principle of trilateration, which involves measuring the distance between a receiver and multiple GPS satellites.* ***5. Spatial reference (map projections, datum and coordinate systems)*** *Students are able to understand the spatial reference systems that define how geographic data is represented and related to the Earth's surface. Three key elements of spatial reference systems are map projections, datum, and coordinate systems.*

Module designation	*Mapping, Geographical Information System (GIS), and Unmanned Aerial Vehicle (UAV) of Environment (KSH1241)*
	6. Spatial concepts, GIS components, hardware/software, sources and characteristics of spatial data *Students are able to understand spatial concepts, GIS components, software/hardware, sources and characteristics of spatial data, both vector and raster data, and tabular data. Understanding these spatial concepts, GIS components, hardware/software, sources, and characteristics of spatial data is crucial for effectively working with geographic information and performing spatial analysis and decision-making.* ***7. Development of spatial data*** *Students are able to understand the development of spatial data involves several stages, starting from input data acquisition to the creation of features and data structures, including several process such as: Input Data Acquisition, Data Preprocessing, Feature Extraction, Data Structures (vector data and raster data).* ***8. Basic spatial analysis (tabular data and vector data)*** *Students are able to understand and perform basic spatial analysis, both based on spatial operations (buffering, interpolation, merge, union) and tabular data (join, relate), making Slopes, Elevations & Aspects* ***9. Introduction of internet-based platform (Web-GIS) development and interactive Story Map*** *Students are able to understand current developments in GIS technology, internet-based platforms (Web-GIS) and interactive maps based on ArcGIS Online & Story Map* ***10. Online data collection*** *Students are able to understand online data collection and sharing methods based on ArcGIS Survey123* ***11. Introduction of UAV drone (components and drone-system)*** *Students are able to understand the components and functions of the UAV drone system; including the types of sensors (RGB camera, multispectral and thermal)* ***12. Drone photogrammetry, mission planning and drone image processing*** *Students are able to understand the principles of photogrammetry for the acquisition of UAV drone image data and to process drone-based imagery*
Examination forms	*Written examination and practicum examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*

Module designation	*Mapping, Geographical Information System (GIS), and Unmanned Aerial Vehicle (UAV) of Environment (KSH1241)*
Reading list	1. *Aronoff, S. 1989. Geographic information systems: a management perspective. Ottawa, Canada: WDL Publications.* 2. *Maguire, D and M.F. Goodchild. 1991. Geographical Information System: Principles and Application. Longman Scientific and Technical. . New York* 3. *Goodchild, M.E. , L.T.Steyaert and B.O.Park. 1996. GIS and Environmental Modeling. GIS World Book. Fort Colins* 4. *Ervin, S.M. and H.H. Hasbrouck. 2001. Landscape Modeling. McGraw Hill. New York* 5. *Falero, E. M. and S.G. Alonso. 1995. Quantitative Techniques in Landscape Planning. Lewis Publisher. Boca Raton.* 6. *Lovett, A and Katy A. 2008. GIS for Environmental Decision-Making. CRC Press. New York. 259 p* 7. *Malczewski, Jacek.1999. GIS & Multicriteria Decision Analysis. John Wiley & Sons.New York. 392 p* 8. *Drone for Biodiversity Conservation and Ecological Monitoring, published by MDPI, 2019 (dapat diakses di https://www.mdpi.com/2504-446X/3/2/47/htm)* 9. *Small-Format Aerial Photography and UAS Imagery: Principles, Techniques and Geoscience Applications, published by Elsevier, ScienceDirect, 2019 (detail dapat dilihat di https://www.sciencedirect.com/book/9780128129425/small-format-aerial-photography-and-uas-imagery#book-info)* 10. *UAV-Based Remote Sensing, published by MDPI, 2018 (dapat diakses di https://www.mdpi.com/books/pdfview/book/604)*

Forestry Science and Environmental Ethics (MNH1101)

Module designation	*Forestry Science and Environmental Ethics (MNH1101)*
Semester(s) in which the module is taught	*2*
Person responsible for the module	*Endang Suhendang*
Language	*Bahasa Indonesia*
Relation to curriculum	*Cumpolsory Course*
Teaching methods	*Lecture (face-to-face lecture)*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Lecture class: 50 minutes x 2 sch x 14 weeks = 1400 minutes = 23 hours* *Exam: 120 minutes x 2 times = 240 minutes = 4 hours* *Self-study: 60 minutes x 4 times x 14 weeks = 3760 minutes = 63 hours* *Total: 5400 minutes = 90 hours*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	*Students having the ability to comprehend a number of concepts, definitions and requirements, functions and benefits of forests, forest activities, as well as forestry science and environmental ethics*
Content	1. *Introduction and Scope of Forestry Science* 2. *Role of Forestry Science in Humans' Life* 3. *Development of Scope of Forestry Science; Position of Introduction to Forest Science in Forestry Science* 4. *Definition of Forest; Forest Classification; Forestry as Activity, Science, Profession, and System Roles, Functions, and Benefits of Forests in Humans' Life Forest Condition in IndonesiaForester as a Profession and Professional 6. International Forestry 7. Basic of Environmental Ethics*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	1. *Suhendang E. 2013. Pengantar ilmu kehutanan: Kehutanan sebagai Ilmu Pengetahuan, Kegiatan, dan Bidang Pekerjaan. Bogor (ID): IPB Press 2.* 2. *2. Suhendang E. 2013. Perkembangan Paradigma Kehutanan. Diskusi pengelolaan hutan berbasis ekosistem sebagai pendekatan untuk pengelolaan hutan Indonesia dalam paradigma kehutanan Indonesia baru. Bogor (ID): Indonesia.*

Forest Ecology (SVK212)

Module designation	*Forest Ecology (SVK212)*
Semester(s) in which the module is taught	*4*
Person responsible for the module	*Cecep Kusmana*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory Course*
Teaching methods	*Small group discussion, collaborative learning, cooperative learning*
Teaching media and tools	*Powerpoint, textbooks, laboratory equipments (example: PPE (Protective Personal Equipment), haga hypsometer, thermometer, phi band, clinometer, etc.)*
Workload	*Lecture class: 50 minutes x 2 sch x 14 weeks = 1400 minutes = 23 hours* *Practice class: 60 minutes x 3 sch x 14 weeks = 2520 minutes = 42 hours* *Exam: 120 minutes x 2 times = 240 minutes = 4 hours* *Self-study: 60 minutes x 5 times x 14 weeks = 3940 minutes = 66 hours* *Total: 8100 minutes = 135 hours*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	*Dendrology*
Module objectives/intended learning outcomes	*Explaining forest ecology as a branch of ecology that studies the interrelationship between forest communities and their environment as a basis tropical forest management.*
Course description	*Forest ecology is one of the basic science courses in the field of forestry which describes the definition of forest ecology, the concept of tropical forest ecosystems, forests as plant communities, the relationship between plant communities and the environment, dynamics of forest communities, classification of forest vegetation, forest formations in Indonesia, how to study forest vegetation and understorey, selection of tree species, ecological approaches in critical land rehabilitation, the impact of forest disturbances and soil aspects in forest ecology.*
Examination forms	*Lecture examination (writing test in the midterm and final semester), practicum examination (writing test in the final semester and quiz)*
Study and examination requirements	*Assessment of students's achievement using proportion as follow: midterm exam (35%), final exam (35%), practicum (30%). The proportion of practicum score consists of quiz (15%), practicum (Ethics, cooperation, conformity of procedures, punctuality, activeness) (25%), report (40%), and practicum examination (20%).*

Module designation	*Forest Ecology (SVK212)*
Reading list	1. *Barnes BV, Zak DR, Denton SR, Spurr SH. 1998. Forest Ecology. John Wiley & Sons Inc. New York.* 2. *Cox GW. 1972. Laboratory Manual of General Ecology Second Edition, WMC. Publ. Dubuque Iowa.* 3. *De Santo RS. 1978. Concept Of Applied Ecology. Springer Verlag. New York. Heidelberg, Berlin.* 4. *Ewusie JY. 1980. Element of Tropical Ecology. Heineman Educational Books Ltd. London.* 5. *Misra R. 1968. Ecology Workbook. Oxford & IBU. Publ. House, New Delhi, Bombay, Calcuta.* 6. *Mueller – Dumbois D, Ellenberg DH. 1974. Aims and Methods of Vegetation Ecology. John Wiley & Sons, New York.* 7. *Odum EP. 1971. Fundamentals of Ecology. 3rd ed. Saunders, Philadelphia, Pensylvania.* 8. *Smith DM. 1997. The Practice of Silviculture: Applied Forest Ecology. John Wiley & Sons Inc. New York.* 9. *Smith RL. 1986. Elements of Ecology. Harper & Row, Publishers, New York.* 10. *Soerianegara I, Indrawan A. 2006. Ekologi Hutan Indonesia. Laboratorium Ekologi Hutan. Jurusan Manajemen Hutan Fakultas Kehutanan Institut Pertanian Bogor.* 11. *Turner IM. The Ecology of Trees. Cambridge University Press. New York.* 12. *Vickery ML. 1984. Ecology of Tropical Plant. John Wiley & Sons. New York. 13. Whitmore TC, Burnham CP. 1984. Tropical Rain Forest of the Far East. Oxford University Press.*

Silviculture (SVK225)

Module designation	*Silviculture (SVK225)*
Semester(s) in which the module is taught	*4*
Person responsible for the module	*Sri Wilarso Budi*
Language	*Bahasa Indonesia*
Relation to curriculum	*Cumpolsory Course*
Teaching methods	*Small group discussion, collaborative learning, cooperative learning*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Lecture class: 50 minutes x 2 sch x 14 weeks = 1400 minutes = 23 hours* *Practice class: 60 minutes x 3 sch x 14 weeks = 2520 minutes = 42 hours* *Exam: 120 minutes x 2 times = 240 minutes = 4 hours* *Self-study: 60 minutes x 5 times x 14 weeks = 3940 minutes = 66 hours* *Total: 8100 minutes = 135 hours*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Analyze problems and formulate alternative solutions for tropical forest management in general and specifically for the field of silviculture, based on data analysis and information using relevant theories and approaches of mathematics, statistics, biology, physics and chemistry, forest engineering, forestry economics and policy, sensory utilization, forest product management, and conservation of biological natural resources, and environmental ethics.* 2. *Produce high quality seeds, seedlings and trees in terms of genetic, physiological and physical through conventional or biotechnological approaches.* 3. *Design appropriate models and techniques in building, managing, monitoring and evaluating nurseries, planting, maintenance, protection and harvesting in various silvicultural systems.* 4. *Relate science and technology in the field of silviculture including forest productivity, silviculture systems, agroforestry, ecological fields including dendrology, forest ecology, forest syn-ecology, tropical tree ecology, and forest protection including pest, disease and forest fire management with forest dynamics and the environment to improve the quality and productivity of natural forests and plantations for the achievement of sustainable forest and environmental management.* 5. *Apply the basic and applied science of silviculture based on the principles of scientific research and writing.*

Module designation	*Silviculture (SVK225)*
Course description	*The Silviculture course is a compulsory subject which is followed by fourth semester students (department of silviculture) and five (department of forest management, department of forest product technology, and department of forest resource conservation and ecotourism) at the Faculty of Forestry, IPB. This course discusses: the meaning of silviculture, tree growth, the relationship of silviculture with other sciences, tree growth and reproduction, tree ecophysiology, nursery technology and forest development, silvicultural systems, planning for plantation forest development, nursery technology, maintenance and inventory of saplings in Indonesia. natural forest.*
Content	1. *The importance of silviculture in forestry, Definition and relation of silviculture with other sciences, The role and paradigm shift of silviculture in the future* 2. *Photosynthesis, Respiration, Translocation, Transpiration* 3. *Definition of tree growth, Shoot and trunk growth, Root growth, Tree reproductive system, Factors affecting tree growth* 4. *Definition and characteristics of plantation forests, Why are plantation forests needed, Legal basis for plantation forest development, Prerequisites for plantation forest development, Industry plantation forest (HTI) application procedure, IUPHHK-HTI area requirements, IUPHHK-HTI spatial layout, Silviculture system, Plant types and planting patterns* 5. *The Importance of Intensive Silviculture, Concept of Intensive Silviculture, Application of Intensive Silviculture* 6. *Nursery planning, Germination and vegetative propagation, Seedling media production, Rhizobium technology, Mycorrhiza technology, Weaning and maintenance, Seedling quality control, and seedling transportation, Prospects for seed or seedling business* 7. *Planting planning, Land preparation, Planting techniques and systems, Evaluation of planting* 8. *Forest and land rehabilitation in arid/semi-arid areas, Forest and land rehabilitation in former mining areas, Peatland rehabilitation* 9. *Weeding and weeding, Fertilization, Mulching, Wiwilan* 10. *Purpose of pruning, Pruning and wood quality, Pruning method* 11. *Clear-cutting, Selective logging, Shelterwood, Other systems*
Examination forms	*Lecture examination (writing test in the midterm and final semester), practicum examination (writing test in the final semester and quiz)*
Study and examination requirements	*Assessment of students's achievement using proportion as follow: midterm exam (35%), final exam (35%), practicum (30%). The proportion of practicum score consists of report (50%), quiz (15%), attendance (10%), and practicum examination (25%).*

Module designation	*Silviculture (SVK225)*
Reading list	1. *Anonim. 1993. Pedoman dan Petunjuk Teknis Tebang Pilih Tanam Indonesia (TPTI) Pada Hutan Alam Daratan. Departemen Kehutanan, Direktorat Jenderal Pengusahaan Hutan. Jakarta.* 2. *Budi, S.W. 2009. Petunjuk Praktikum Silvikultur. Laboratorium Silvikultur Fakultas Kehutanan IPB.* 3. *Daniels, T.W., J.A. Helms dan F.S. Baker. 1987. PrinsipPrinsip Silvikultur. Gadjah Mada University Press. Yogyakarta.* 4. *Departemen Kehutanan. 2003. Eksekutif Data Strategis Kehutanan. Bidang Statistik Kehutanan-Departemen Kehutanan. Jakarta* 5. *Departemen Kehutanan dan Perkebunan. 1999. Panduan Kehutanan Indonesia. Koperasi Karyawan Dephutbun. Jakarta* 6. *Dransfield, S. and E.A. Widjaja (Eds.). 1995. Bamboos. PROSEA. Bogor.* 7. *Evans, J. 1992. Plantation Forestry in the Tropics. Clarendon Press. Oxford.* 8. *Hartmann, H.T, D.E. Kester and F.T. Davies. 1990. Plant Propagation: Principles and Practices. Prentice-Hall International. New Jersey.* 9. *Haygreen, J.H. and Bowywr, J.L. 1989. Hasil hutan dan Ilmu Kayu, Suatu Pengantar. Gadjah Mada University Press.* 10. *Kobayashi, S. et al. (Eds.). 2001. Rehabilitation of Degraded Tropical Forest Ecosystems. CIFOR. Jakarta* 11. *Kozlowski, T.T and Pallardy, S.G. 1996. Physiology of Woody Plants. Academic Press. London.* 12. *Lamprecht, H. 1989. Silviculture in the Tropics. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmBH. Technical Cooperation-Federal Republic of Germany. Eschborn.* 13. *Prasetyo, L. et al. (Eds.) 2003. Survey on Silvicultural Techniques and Plantation Promoting Policies in Indonesia. FORDA-JICA. Bogor* 14. *Manan, S. 1976. Silvikultur. Proyek Pengembangan/Peningkatan Perguruan Tinggi. IPB. Bogor.* 15. *Matthews, J.D. 1989. Silvicultural Systems. Clarendon Press, Oxford.* 16. *Oliver, C.D and Larson, B.C. Forest Stand Dynamics. McGraw-Hill, Inc.* 17. *Princhett, W.L. 1979. Properties and Management of Forest Soils. John Wiley & Sons, New York* 18. *Schmidt, L. 2000. Guide to Handling of Tropical and Sub Tropical Forest Seed. Danida. Humlebaek, Denmark.* 19. *Yasman, I. Dan W.T.M. Smits. 1988. Metoda Pembuatan Stek Dipterocarpaceae. Asosiasi Panel Kayu Indonesia. Jakarta*

Communication and Social Science Conservation (KSH1222)

Module designation	*Communication and Social Science Conservation (KSH1222)*
Semester(s) in which the module is taught	*4*
Person responsible for the module	*Dr. Ir. Arzyana Sunkar, M.Sc*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecturer presentation, discussion, literature content observation, group discussion, case study, blended learning*
Workload	*Total Workload* *Contact hour(s) (lecture session): 50 minute per week* *Contact hour(s) (practicum session): 3 hours per week* *Structured academic activities (doing in-class/take home assignment or homework): 2 hours per week* *Private in-depth study (literature reading): 2 hours per week*
Credit points	*1 (2-1)*
Required and recommended prerequisites for joining the module	*No prerequisite*
Module objectives/intended learning outcomes	*By the end of this course, students will have developed:* *1. Knowledge of the importance of communication strategies and understanding of the human dimension in achieving conservation goals; effective communication methods through social media; communication and public engagement; and theory and practice in behavior change.* *2. Skills in writing effectively about conservation and applying storytelling techniques in conservation activities;* *3. Create and develop conservation marketing messages and programs; develop conservation campaigns and materials through social media; plan a social media strategy for engagement in conservation activities;* *4. Critically evaluate the choice of practices in communication.* *5. Ability to approach the theoretical and empirical material critically, to use the new material in the interpretation and analysis of other texts as well as in approaching applied problems.* *6. Improved analytic thinking skills, better scholarly research abilities, and greater aptitude in oral and written communication*

Module designation	*Communication and Social Science Conservation (KSH1222)*
Course descriptions	*The conservation of biodiversity and its ecosystem will succeed if supported by the community. Unfortunately, community engagement is frequently hindered by ineffective communication. This course provides the basis for communication approaches and social methods to engage the community in conserving natural resources and the environment. The materials are given to prepare students as leaders who can engage the community to become agents of change in conservation. Students will be given materials related to the basic principles of human behaviour, conservation psychology, traditional and cultural communication, ethnography, mass communication, environmental, socio-ecology, digital and social media, conservation education, conservation leadership and innovation, political communication, conservation partnerships, conservation and development, as well as diverse methods of social communication and their application in the areas of social, economic, political, ecological, tourism and environmental services. This course takes the form of class lectures including practicums. At the end of the course, the students will lead a biodiversity conservation campaign*
Content	*. This course is comprised of the following topics:* ***1. Introduction to Communication and Social Science Conservation*** *a. Background on the importance of understanding the social sciences* *b. Understanding the importance of communicating nature* *c. Natural interpretation* *d. Communication Science* *e. Explanation of the subject matter of lectures and practicum* ***2. Fundamentals of Conservation Communication*** *a. Communication for conservation, communication concepts and theories related to conservation challenges; the role of communicator in conservation organizations is also given; various methods of delivering conservation messages are emphasized to achieve goals in conservation communication.* *b. Communication as a tool in conservation* *c. The role of communication in enhancing conservation efforts through education and research* *d. Variety of communication media and examples* *e. How to communicate and things that must be mastered by a science communicator* *f. Design conservation messages and examples* *g. The role of social media, citizen science, environmental educators in communicating conservation* ***3. Environmental Sociology*** *a. Definition of socioecology* *b. Human-nature relationships* *c. The concept of People, Planet, Profit* *d. Nature conception according to socioecology* ***4. Traditional Communications*** *Various methods should be used to make sure that people have a god understanding of conservation messages. Some of the advantages of traditional communication channels are that they are realistic and based on the everyday lives of ordinary people. They can motivate people to change their behaviour and they can demonstrate problem-solving skills. This sub topic will explore and develop various local means, materials and methods of communication, such as songs and dances, puppet performances, poems, games stories*

Module designation	*Communication and Social Science Conservation (KSH1222)*
	5. Multispecies Ethnography *a. An introduction to modern debates on multi-species ethnography in anthropology and related disciplines.* *b. Current ecological issues, as well as emerging demands for the inclusion of alternative human-centred approaches in contemporary programmes, make emerge the redefinition of the aims of observing the human in its environment.* ***c.** Multispecies ethnographic approaches focus the multiple webs intermingling humans with other beings in both synchronic and diachronic perspectives* ***6. Community and Science:Communication Media and Conservation*** *Fundamentals of digital and social media, and online communication; new and emerging digital media platforms to communicate conservation; conservation organizations and the use of social media, podcasting, and video in communicating conservation* ***7. Community Based Conservation Education*** *Effective conservation is about integrating the needs of human with biological communities. This sub-topic provides guidance on the planning, implementation, and assessment of techniques for linking classrooms and communities with conservation. Conservation education techniques such as community-based research, participatory mapping and citizen science.* ***8. Leadership and Social Marketing*** *Principles in social marketing and conservation marketing are explained and evaluated. Students learn the techniques and tactics of political communication and leadership, including public speaking, government outreach and witnessing, and collaborative communications planning. The material will be filled in by guest lecturers who have field experience in conservation social science through behavior change. The topics in this material can be adjusted to the background of the guest lecturer.* ***9. Political Communications and Public Opinion*** *Political and leadership communication techniques and tactics, including public speaking skills, conservation diplomacy and collaborative communications planning.* ***10. Conservation Partnership*** *a. Definition* *b. Social associative processes* *c. Aims of Partnership* *d. Types and Forms of Partnerships in Conservation* *e. Study case examples* ***11. Conservation and Development: Mini Project on Conservation Campaign*** *a. The importance of students communicating conservation on campus* *b. Discussion of themes and topics to be communicated* ***12. Fundamentals of conservation campaigns***
Examination forms	*Oral presentation, Research Essay, Critical Summary, written examination, presentations*
Study and examination requirements	*Cognitive : midterm exam, final exam, quizzes, assignments Psychomotor : practice* *Affective : Assessed from the element /variables achievement, namely (a) Contributions (attendance, active participation, initiative, language), (b) Being on time, (c) Effort*

Module designation	*Communication and Social Science Conservation (KSH1222)*
Reading list	1. *Carson, R., 2002. Silent spring. Houghton Mifflin Harcourt.* 2. *Meadows, D.H., Meadows, D.L., Randers, J. and Behrens, W.W., 2018. The limits to growth. In Green planet blues (pp. 25-29). Routledge.* 3. *Welford, R., 1997. Hijacking of. Hijacking Environmentalism: Corporate Responses to Sustainable Development.* 4. *Gore, A., 2007. An inconvenient truth: The crisis of global warming. Penguin.* 5. *Diamond, J., 2011. Collapse: how societies choose to fail or succeed: revised edition. Penguin.* 6. *McKenzie-Mohr, D., 2011. Fostering sustainable behavior: An introduction to community-based social marketing. New society publishers.* 7. *Attenborough, D. 2020. A life on our planet: My witness statement and a vision for the future. Random House.* 8. *Clayton, S. and Myers, G., 2015. Conservation psychology: Understanding and promoting human care for nature. John Wiley & Sons.* 9. *Locke, P & U Münster. 2015. Multispecies Ethnography Oxford Bibliographies Online* 10. *Ogden, L, Hall, B & K Tanita. 2013. Animals, Plants, People, and Things: A Review of Multispecies Ethnography Environment and Society: Advances in Research 4 (1) 5-24.*

Conservation Education (KSH1252)

Module designation	*Conservation Education (KSH1252)*
Semester(s) in which the module is taught	*4*
Person responsible for the module	*Prof. Dr. E. K. S. Harini Muntasib, M.S.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students*
Teaching methods	*Lecture session, discussion and practicum session*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 2 hours per week* *Contact hour(s) (practicum session): 3 hours per week* *Structured academic activities (doing in-class/take home assignment or homework): 2 hours per week* *Private in-depth study (literature reading): 2 hours per week*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to understand the theoretical concept of conservation education.* 2. *Students acquire ability to organize conservation education.*
Content	*This course is consisted of 14 topics, namely:* **1. *The definition and the importance of conservation education*** *Students are expected to be able to explain the definition and the importance of conservation education through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **2. *The basic concept and communication for conservation education*** *Students are expected to be able to explain the basic concept and communication for conservation education through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **3. *Learning methods in conservation education*** *Students are expected to be able to explain and distinguish different approaches that can be used conservation education and various learning methods in conservation education through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **4. *Development of learning media for conservation education*** *Students are expected to be able to explain the roles of learning media in conservation education and steps to develop learning media through this topic. Assessment indicator for this topic is*

Module designation	*Conservation Education (KSH1252)*
	the completeness and correctness of explanation which accounts for for 5% of the final score of this course. ***5. Designing conservation education program*** *Students are expected to be able to name various conservation education programs, explain the components of a conservation education program, and steps in developing conservation education program through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***6. Introduction to examples of conservation education*** *Students are expected to be able to give various examples of conservation education based on target groups and areas through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***7. Designing non-formal conservation education program*** *Students are expected to be able to explain the steps in designing non-formal conservation education program and composing non- formal conservation education program design through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***8. Implementing non-formal conservation education program*** *Students are expected to be able to explain the strategy and various examples of implementing non-formal conservation education program through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***9. Non-formal conservation education program monitoring and evaluation*** *Students are expected to be able to explain the definition, the importance, the methods and instruments of monitoring and evaluation in non-formal conservation education program through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the* *final score of this course.* ***13. Non-formal conservation education program monitoring and evaluation*** *14. Students are expected to be able to explain the definition, the importance, the methods and instruments of monitoring and evaluation in non-formal conservation education nprogram through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***15. Designing formal conservation education program*** *16. Students are expected to be able to explain the steps in designing formal conservation education program and composing non- formal conservation education program design through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***17. Practitioner in developing conservation education*** *18. Students are expected to be able to explain the various tips used by practitioners in developing conservation education through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***19. Implementing formal conservation education program***

Module designation	*Conservation Education (KSH1252)*
	20. Students are expected to be able to explain the strategy and various examples of implementing formal conservation education program through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course. ***21. Formal conservation education program monitoring and evaluation*** *22. Students are expected to be able to explain the definition, the importance, the methods and instruments of monitoring and evaluation in formal conservation education program through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final* *23. score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	*1. Braus J. A. and D. Wood. 1994. Environmental Education in the Schools: Creatinga ProgramThat Works. North American Association for Environmental Education.* *2. Clayton, S. and G. Myers. 2009. Conservation Psychology: Understandingand Promoting Human Care for Nature. Wiley-Blackwell, A John Wiley & Sons, Ltd., Publication. West Sussex.* *3. Dissinger, J. and M. C. Monroe. 1994. Defining Environmental Education. University of Michigan. Ann Arbor.* *4. Ford, P. M. 1981. Principles and Practices of Outdoor/Environmental Education. John Wiley & Sons. Toronto.* *5. [KLH] Kementerian Lingkungan Hidup. 2004. Kebijakan Pendidikan Lingkungan Hidupdi Indonesia. Jakarta: Kementerian Lingkungan Hidup.* *6. Monroe, M. C (Ed.). 1999. What Works: A Guide to Environmental Education and Communication Projects for Practitioners and Donors. New Society Publishers. Gabriola Island.* *7. [Pokja PKSDHL] Kelompok Kerja Pendidikan Konservasi Sumberdaya Hutan dan Lingkungan. 2001. Model Pendidikan Hutan dan Lingkunganbagi Anak Sekolah. Bogor: Kerjasama Pusat Bina Penyuluhan Kehutanandan Fakultas Kehutanan Institut Pertanian Bogor.* *8. Stokking, H., van Aert, L., Meijberg, W. and A. Kaskens. 1999. Evaluating Environmental Education. IUCN. Gland, Switzerland and Cambridge, UK.* *9. Wholey, J. S., Hatry, H. P. and K. E. Newcomer (Eds.). 2004. Handbook of practical program evaluation. 2nded. Jossey-Bass, A Wiley Imprint. San Fransisco.* *10. Wittmann, H. 1997. Materi Pendidikan Lingkungan Hidup. Hanns Seidel Foundation. Jakarta.* *11. Wood, D. S. and D. W. Wood. 1985. Conservation Education: A Planning Guide. Peace Corps, Information Collection and Exchange Division. Washington, DC.* *12. Wood, J. T. 2007. Interpersonal Communication, Everyday* *13. Encounters. 5th Ed. Thomson Wadsworth. Belmont.*

Inventory and Monitoring of Wildlife (KSH1213)

Module designation	*Inventory and Monitoring of Wildlife (KSH1213)*
Semester(s) in which the module is taught	*4*
Person responsible for the module	*Dr. Ir. Mirza Dikari Kusrini, MS*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecture session, discussion and practicum session*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 2 hours per week* *Contact hour(s) (practicum session): 3 hours per week* *Structured academic activities (doing in-class/take home assignment or homework): 2 hours per week* *Private in-depth study (literature reading): 2 hours per week*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	*1. Students acquire ability to analyze roles of wildlife and measure wildlife potential.* *2. Students acquire ability to plan wildlife management.*
Content	*This course is consisted of 9 topics, namely:* ***1. Introduction*** *Students are expected to be able to understand the objectives of the course and to understand the definition, scope, and benefits of the knowledge of inventory and monitoring of wildlife through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***2. Determining wildlife spatial distribution pattern*** *Students are expected to be able to explain various kinds of wildlife spatial distribution pattern in its relation with sampling for inventory and monitoring of wildlife through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***3. Statistics methods and sampling procedure in inventory and monitoring of wildlife*** *Students are expected to be able to explain the statistical theory in its relation with wildlife inventory, including its parameters, through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.*

Module designation	*Inventory and Monitoring of Wildlife (KSH1213)*
	4. Animal census methods *Students are expected to be able to explain the use of census methods in inventory and monitoring of wildlife activities through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***5. Sampling method of inventory and determining animal's distribution pattern based on index or ordinal method*** *Students are expected to be able to explain the sampling method and index and ordinal method in determining animal's distribution pattern through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***6. Indirect methods*** *Students are expected to be able to explain the use of indirect methods in inventory and monitoring of wildlife through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***7. Bird population inventory methods*** *Students are expected to be able to explain and implement the use of bird inventory methods in wildlife management through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 20% of the final score of this course.* ***8. Herpetofauna inventory methods*** *Students are expected to be able to explain and implement the use of herpetofauna inventory methods in wildlife management through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 25% of the final score of this course.* ***9. Wildlife population monitoring methods*** *Students are expected to be able to explain and implement the use of inventory methods learned beforehand for wildlife monitoring in conservation activities through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 25% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	*1. Seber, G. 1982. The Estimation of Animal Abundance & Related Parameters. 2nd ed. Edward Arnold. London* *2. Norton-Griffiths, M. 1975. Counting Animals. African Wildlife Leadership Foundation. Kenya.* *3. Cochran, W. G. 1991. Teknik Penarikan Contoh. UI-Press.Jakarta.*

Forestry Field Practices (FHT200)

Module designation	*Forestry Field Practices (FHT200)*
Semester(s) in which the module is taught	*4*
Person responsible for the module	*Imam Wahyudi*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory Course*
Teaching methods	*Provisioning course, field practices, mentoring, and supervision.*
Teaching media and tools	*Powerpoint, videos, hygrothermometer, haga-hypsometer, binocular lens, rope, compass, phi-band,* kadukul*, bor, GPS.*
Workload	*Lecture session (provisioning) : 20.5 hours* *Practice field : 7 hours x 21 days = 147 hours* *Self-learning : 1.5 hours x 21 days = 31.5 hours* *TOTAL : 199 hours*
Credit points	*4 SCH x 1.44 = 5.76 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students are able to identify types of forest ecosystems and their components, interactions, processes, roles and functions of each type of forest ecosystem in Indonesia from coast to mountains.* 2. *Students are able to identify and measure parameters of ecosystem components from coastal to mountainous.* 3. *Students gain practical experience in forest management by deepening and stabilizing the understanding of concepts or theories through extracting information and understanding the implementation of theories by forest management units. information and understanding of the implementation of the theory by the forest management unit as well as the development of technical skills through the work of applying the theory at the practice location* 4. *Students acquire and build personality, teamwork skills, work ethic, work ethics, and professional ethics.*
Course description	*Practice of recognizing the types of forest ecosystems and their constituent components, as well as practice of introduction to the various aspects (production, environmental, social, etc.) of production forest management activities. In this field practice, students are given the opportunity to see, recognize, observe, and measure the various parameters of forest ecosystem components, recognize and practice production forest management activities (plantation forests) and conservation in the field.*
Content	1. *Forest Planning* 2. *Forest Development* 3. *Forest Protection* 4. *Forest Harvesting* 5. *Conservation of Living Natural Resources* 6. *Community Forestry*
Examination forms	*Written, daily quiz, group reports, presentation.*

Module designation	*Forestry Field Practices (FHT200)*
Study and examination requirements	*Provisioning course quiz (15%), supervisor assignment (10%), forest field practices examination (15%), activity report (15%), field implementation (15%), and forestry field practices seminar quiz (30%)*
Reading list	*NA (Not Applicable)*

Environmental Spatial Analysis (KSH342)

Module designation	*Environmental Spatial Analysis (KSH342)*
Semester(s) in which the module is taught	*5*
Person responsible for the module	*Prof. Dr. Ir. Lilik Budi Prasetyo, M.Sc.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students*
Teaching methods	*Lecture session, discussion and practicum session*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 2 hours per week* *Contact hour(s) (practicum session): 3 hours per week* *Structured academic activities (doing in-class/take home assignment or homework): 2 hours per week* *Private in-depth study (literature reading): 2 hours per week*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to analyze the benefits and measure the potential of protected area, wild animal, plant diversity, ecosystem services, nature recreation, and ecotourism.* 2. *Students acquire ability to plan and design the management of protected area, wild animal, plant diversity, ecosystem services, nature recreation, and ecotourism.*
Course description	*This course is a mandatory subject offered by the Department of Forest Resources Conservation and Ecotourism. It covers a wide range of topics, including the understanding and utilization of spatial data in both vector and raster formats. The subject is divided into two parts, with the first part focusing on vector-based spatial data over in 7 weeks. These sessions cover various aspects such as comprehending vector data, developing vector data, conducting spatial data queries, performing simple spatial analysis (such as buffer, Euclidean distance, union, and clipping), and exploring real-life examples of vector spatial data applications in the environmental field. The second part of the course spans 7 weeks and is dedicated to raster-based spatial data. During this period, students will learn about the fundamental concepts of raster data, satellite image data acquisition, data pre-processing techniques, and the classification/interpretation of raster data. Additionally, the students will explore practical applications of raster data in the environmental field. The software tools employed in this course include ArcGIS and ERDAS Imagine.*

Module designation	*Environmental Spatial Analysis (KSH342)*
Content	*This course is consisted of 8 topics, namely:* ***1. Introduction*** *Students are expected to be able to understand the full picture of the course and the importance of understanding of environmental spatial analysis for the efforts to solve problems in forest resources conservation and ecotourism through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***2. Concept of spatial data*** *Students are expected to be able to explain the definition of spatial data through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***3. Spatial approach in environmental or landscape analysis*** *Students are expected to be able to understand the importance of spatial approach to solve environmental problems within a landscape or ecoregion through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***4. Spatial data formation*** *Students are expected to be able to understand Global Information System (GIS) software through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* ***5. Spatial data quality*** *Students are expected to be able to understand the accuracy of data produced with remote sensing and GIS through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 15% of the final score of this course.* ***6. Spatial data analysis*** *Students are expected to be able to understand the composing of spatial rules in environmental or landscape analysis through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 15% of the final score of this course.* ***7. Global Positioning System (GPS)*** *Students are expected to be able to understand the functions and working of GPS through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 15%of the final score of this course.* ***8. Case study*** *Students are expected to be able to understand environmental spatial analysis in real terms through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for 20% of the final score of this course.*
Examination forms	*Written examination and practicum examination*

Module designation	*Environmental Spatial Analysis (KSH342)*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	1. *Maguire, D. and M. F. Goodchild. 1991. Geographical Information System: Principles and Application. Longman Scientific and Technical. New York.* 2. *Goodchild, M. E., Steyaert, L. T. and B. O. Park. 1996. GIS and Environmental Modelling. GIS World Book. Fort Colins* 3. *Huxhold, W. E. and A.G. Levinsohn. 1995. Managing Geographic Information System Projects. Oxford Univ. Press. New York.* 4. *Young, R.H., Green, D. R. and S. Cousins. 1993. Landscape Ecology and GIS. Taylor and Francis. London.* 5. *Richards, J. A. 1993. Remote Digital Image Analysis: An Introduction. Springer Verlag. New York.* 6. *Frohn, R. C. 1998. Remote Sensing for Landscape Ecology: New metric indicators for monitoring, Modellingand Assessment of Ecosystems. Lewis Pub. Washington.* 7. *Ervin, S. M. and H. H. Hasbrouck. 2001. Landscape Modelling. McGraw Hill. New York.* 8. *Falero, E. M. and S. G. Alonso. 1995. Quantitative Techniques in Landscape Planning. Lewis Publisher. Boca Raton.* 9. *Sharifi, A. and M. van Herwijnen. 2003. Spatial Decision Support System. International Institute for Geo-Information Science and Earth Observation.* 10. *Tjalingi, S. P. and A. A. de Veer. 1982. Perspectives in Landscape Ecology. Wageningen.* 11. *Soule, M. E. 1986. Conservation Biology: The science scarcity and diversity. Sinauer Assoc. Inc. Publisher.* 12. *Bennet, A. F. 1999. Linkages in the Landscape. The role of corridors and connectivity in the wildlife Conservation. IUCN.* 13. *De Santo, R. S. 1978. Concepts of applied Ecology. Springer Verlag.* 14. *Farina, A. 2000. Principles and Methods in Landscape Ecology. Kluwer Academic Publisher. London.* 15. *Forman, R. T. T. 1995. Land Mozaics: The Ecology of Landscape and Region. Cambridge Univ. Press. Cambridge.* 16. *Forman, R. T. T. and M. Godron. 1986. Landscape Ecology. John Wiley & Sons.* *Saunders, D.A., Hobbs, R. J. and P. R. Erlich. 1993. Reconstruction of Fragmented Ecosystem. In: Nature Conservation 3: Reconstruction of Fragmented Ecosystem. Surrey Beatty & Sons. Pp. 305-313*

Ethnobiology and Forest Bioprospection (KSH1332)

Module designation	*Ethnobiology and Forest Bioprospection (KSH1332)*
Semester(s) in which the module is taught	*5*
Person responsible for the module	*Prof. Dr. Ir. Ervizal A. M. Zuhud, M.S.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students*
Teaching methods	*Lecture session and discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to analyze the benefits and measure potential of wild animal and plant diversity based on local, traditional, or indigenous knowledge.* 2. *Students acquire ability to formulate plan to conserve wild animal and plant diversity on local, traditional, or indigenous knowledge.*
Content	*This course is consisted of 12 topics, namely:* 1. ***Introduction, definition, history, and prospects of ethnobiology*** *Students are expected to be able to explain the definition of ethnobiology and the objectives, scope, and interrelatedness between the discipline, history, and prospects of ethnobiology within forest conservation activities through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 2. ***Ethnobiology is a tangible manifestation of the principles of the uniqueness of the self-system in supporting food, medicine, and energy sovereignty*** *Students are expected to be able to explain how ethnobiology is a tangible manifestation of the principles of the uniqueness of the self-system for the independence or sovereignty of the nation's people and at the same time a form of biodiversity conservation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 3. ***Methods of ethnobiological study*** *Students are expected to be able to explain and implement various*

Module designation	*Ethnobiology and Forest Bioprospection (KSH1332)*
	methods of ethnobiological study through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course. 4. ***Ethnobotany of comestibles, plant products for energy, dyes, aromatics, poisons, decorations, and traditional or spiritual ceremonies*** *Students are expected to be able to explain the traditional processing of plant species for various kinds of dyes, decorations, aromatics, poisons, traditional comestibles, and spices by giving examples of their usage in ethnic communities through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* 5. ***Building community plantation forest based on traditional silviculture system and indigenous knowledge*** *Students are expected to be able to understand and explain the concept of building community plantation forest based on traditional silviculture system and indigenous knowledge through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* 6. ***Ethnobiology of medicinal plants (Ethnophytomedics)*** *Students are expected to be able to explain the use of plants for treating various disease based on knowledge of particular ethnic communities through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 7. ***Ethnobiology of the traditional people of Baduy and Sunda Kasepuhan*** *Students are expected to be able to explain the case of ethnobiology in traditional communities in Java through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* 8. ***Indigenous knowledge in Indonesia's agroforestry system: Case study in Kalimantan and Sumatra*** *Students are expected to be able to explain the examples of traditional agroforestry system in Indonesia through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* 9. ***Types and functions of ethnic-based traditional home yard in Indonesia*** *Students are expected to be able to explain the types and functions of the ethnic-based traditional home yard landscape in Indonesia through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* 10. ***Ethnozoology in Indonesia*** *Students are expected to be able to explain the examples of traditional knowledge of various ethnic communities in*

Module designation	*Ethnobiology and Forest Bioprospection (KSH1332)*
	Indonesia in utilizing animal diversity through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course. ***11. Ethnobiology of traditional communities in Sumatra, Kalimantan, and Papua (case study)*** *Students are expected to be able to explain the case study of Ethnobiology in the traditional people Sakai (Sumatra), Dayak Punan (Kalimantan), and Papua through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* ***12. Application of ethnobiological data and information for bio-cultural-diversity conservation to manifest nation's sovereignty with "Bhinneka Tunggal Ika"*** *Students are expected to be able to explain the application of the concept of ethnobiology in bio-cultural-diversity conservation program to support the sustainable development with "Bhinneka Tunggal Ika" in Indonesia through this topic. Assessment indicator for this topic is the completeness and correctness of explanationwhich accounts for for 10% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	*1. Albuquerque, U. P., Romeu, R. and N. Alves (Eds). 2016. Introduction to Ethnobiology. Springer.* *2. Aminah, Zuhud, E. A. M. and I. Z. Siregar. 2016. Utilization of Jelutung (Dyera spp.) among Anak Dalam Tribe in Bukit Duabelas National Park. Media Konservasi: Jurnal Ilmiah Bidang Konservasi Sumberdaya Alam Hayati dan Lingkungan. Vol 21, No. 2, August 2016: 168-173.* *3. Anderson, E. N., Pearsall, D. M., Huwas, E. S. and N. J. Turner, 2011. Ethnobiology. Wiley-Black Well. London.* *4. Hall, J. B., Tomlison, H.F., Oni, P. I., Buchy, M. and D. P. Aebischer. 1997. Parkiabiglobosa. A Monograph. School of Agricultural and Forest Science, University of Wales. Bangor, U.K.* *5. Harefa, A. 2000. Menjadi Manusia Pembelajar. Penerbit Harian Kompas. Jakarta.* *6. Harnov, Zuhud, E. A. M. and R. Soekmadi. 2016. Konservasi Hutan Belajar dari Nilai-Nilai Etik dan Tradisi Bejernang Suku Anak Dalam di Taman Nasional Bukit Duabelas. Provinsi Jambi. Risalah Kebijakan Pertaniandan Lingkungan, Rumusan Kajian Strategis Bidang Pertanian dan Lingkungan. Vol. 3 No. 1, April 2016: 24 - 38.* *7. Harris, D. R. and G. C. Hillman (Editor). 1989. Foraging and Farming. The Evolution of Plant Exploitation. One World Archaeology. Unwin Hyman. London.* *8. Helida, A., Zuhud, E. A. M., Hardjanto, Y., Purwanto, and A. Hikmat. 2015. The Importance of Cultural Significance Index of Plants Diversity for The Communities Within the Kerinci Seblat National Park, Kerinci Regency, Province of Jambi. Berita Biologi. Vol. 15 No. 1, April 2016: 7-15.* *9. Helida, A., Ervizal A.M. Zuhud; Hardjanto, Y., Purwanto, and A. Hikmat. 2015. Analysis of Pelak Agroforestry System Using Tri Stimulus Amar Pro Conservation Concept at Kerinci Seblat National*

Module designation	*Ethnobiology and Forest Bioprospection (KSH1332)*

Park. Proceeding: International Conference of Tropical Biology, SEAMEO BIOTROP, 12-13 October 2015. Published in November 2016.

10. *Helida, A., Zuhud, E. A. M., Hardjanto, Y., Purwanto, and A. Hikmat. 2016. Traditional Animals Knowledge of Kerinci Community in Sumatera, Indonesia. International Journal of Sciences: Basic and Applied Research (IJSBAR). Vol. 24 No. 1: 227-242*
11. *Helida, A., Zuhud, E. A. M. Hardjanto, Y., Purwanto, and A. Hikmat. 2016. Makna Nilai Penting Budaya Keanekaragaman Hayati Tumbuhan bagi Masyarakat Kerinci di Kabupaten Kerinci. Jurnal Berita Biologi LIPI 15 (1) April 2016 Edition.*
12. *Iswandono, E., Zuhud, E. A. M., Hikmat, A. and N. Kosmaryandi. 2015. Traditional Land Practice and Forest Conservation: Case Study of The Manggarai Tribe in Ruteng Mountains, Indonesia. Komunitas: International Journal of Indonesian Society and Culture. Vol. 8 No. 2: 257-266.*
13. *Koentjaraningrat. 1974. Kebudayaan, Mentalitet dan Pembangunan. PT. Gramedia. Jakarta.*
14. *Koentjaraningrat, et al. 1993. Masyarakat Terasingdi Indonesia. PT Gramedia Pustaka Utama. Jakarta*
15. *Kloppenburgh-Veerteegh, J. 1983. Petunjuk Lengkap Mengenai Tanaman-tanamandi Indonesiadan Khasiatnyasebagai Obat-obatan Tradisional. Jilid I. Bagian Botani. Yayasan Dana Sejahtera dan CD. RS. Bethesda Yokyakarta. Translated by CD. R.S. Bethesda Yogyakarta.*
16. *Laksono, P. M., Tjahjono, P., Adi, M., Aprilla, B. H., Gunawan, and R. Transpiosa. 2001. Kepulauan Padaido: Haruskah Habis Terkuras. KEHATI, PSAP-UGM, RUMSRAM. Yogyakarta.*
17. *Martin, G. J. 1998. Etnobotani. Natural History Publications (Borneo) and WWF. Kinibalu. Translated by Maryati Mohamed*
18. *McNeely, J. A. and J. W. Thorsell. 1991. Enhancingthe Role of Protected Areas in Conserving Medicinal Plants. In: O. Akerele, V. Heywood and H. Synge (eds) Conservationof Medicinal Plants. Cambridge University Press. Cambridge. Pp. 213-228*
19. *Nataatmadja, H. 2003. Intelegensi Spiritual. Intuisi Press. Depok.*
20. *Parrotta, J. A. and R. L. Trosper (Eds). 2012. Traditional Forest-Related Knowledge, Sustaining Communities, Ecosystems and Biocultural Diversity. Publishedby John Wiley& Sons, Inc.,Hoboken, New Jersey Published simultaneously in Canada.*
21. *Pradityo, T., Santoso, N. and E. A. M. Zuhud. 2016. Ethnobotanyin Dayak Iban's Tembawang Sungai Mawang Village, West Kalimantan. Media Konservasi. Vol 21, No. 2, August 2016: 183-198*
22. *Quedraogo, A-S. 1995. Parkiabiglobosa (Leguminosae) en Afrique de l'Quest: Biosystematique et Amelioration. Institut for Forestry and Nature Research IBN-DLO. Wageningen, The Netherlands.*
23. *Rachman A. M. A. 1991. Social Integration and Energy Utilization. In: Profiles in Cultural Evolution by A. Terry Rambo and Kathleen Gillogly. Ann Arbor, University of Michigan. USA. Pp. 311-331*
24. *Sangat, H. M., Zuhud, E. A. M. and E. K. Damayanti. 2000. Kamus Penyakit dan Tumbuhan Obat Indonesia (Etnofitomedika). Yayasan Obor Indonesia. Jakarta.*
25. *Schumacher, E. F. 1973. Kecil Itu Indah. Yayasan Obor. Jakarta.*
26. *Sitorus, et al. 2004. Potret Punan Kalimantan Timur. CIFOR. Bogor.*
27. *Suparlan, P. 1995. Orang Sakai di Riau. Masyarakat Terasing dalam Masyarakat Indonesia. Yayasan Obor Indonesia. Jakarta.*
28. *Tadjudin, D. 2000. Manajemen Kolaborasi. Pustaka Latin. Bogor.*
29. *Metananda, A. A., Zuhud, E. A. M. and A. Hikmat. 2015. Population, Distribution of Kepuh(Sterculia foetida L.) and its Association in Sumbawa Regency, West Nusa Tenggara. Media*

Module designation	*Ethnobiology and Forest Bioprospection (KSH1332)*
	Konservasi. Vol. 20 No. 3, December 2015: 277-287. 30. *Simanjuntak, R., Zuhud, E. A. M. and A. Hikmat. 2015. The Ethnobotany of O Hongana Ma Nyawa Community in Wangongira Village, North Halmahera Regency. Media Konservasi. Vol. 20 No. 3, December 2015: 252-260.* 31. *Tanjungsari, R. J., Zuhud, E. A. M. and I. Z. Siregar. 2016. Ecology and Population Potention Estimation of Jelutung (Dyera costulata (Miq) Hook.F) in Harapan Rainforest (HRF-PT REKI). Media Konservasi. Vol. 21 No. 1, April 2016: 1-8.* 32. *Zikri, M., Hikmat, A. and E. A. M. Zuhud. 2016. Retensi Pengetahuan Tumbuhan Pangan Suku Rejangdi Kampung Rindu Hati dalam Ketahanan Pangan. Media Konservasi: Jurnal Ilmiah Bidang Konservasi Sumberdaya Alam Hayati dan Lingkungan. Vol 21, No. 3, December 2016: 270-277.* 33. *Zuhud, E. A. M. 2016. Nature Philosophy of Minangkabau Ethnic in West Sumatera, Indonesia. In: Traditional Knowledge for Ecosystem Services in ASEAN Countries - Folk Culture: Proverbs, Old Sayings and Community Rules. 2-4 March, 2016. Kuala Lumpur, Malaysia. Extended Abstracts: 18-21. APAFRI, FRIM (Forest Research Institute Malaysia) and NIFOS.* 34. *Zuhud, E. A. M., Kasno, Sari, R. K. and I. Kumara. 2016. Pengembangan Madu Organik Hutan Tropika Indonesia: Suatu "Proses Pembelajaran". In: Pengembangan Pertanian Organik di Indonesia, Pemikiran Guru Besar IPB. IPB Press. Bogor. Pp. 325-360* 35. *Zuhud, E. A. M. 2017. Gerakan Kebangkitandan Pengembangan Desa-Kampung Konservasi Keanekaragaman Hayati Indonesia Untuk Mendukung Kedaulatan Pangan, Energi, dan Obat Keluarga dalam Menghadapai Ancaman Krisis Baru Ekonomi Dunia di Era Globalisasi. In: Kumpulan Naskah Orasi Ilmiah Guru Besar Institut Pertanian Bogor: Peningkatan Produksi, Manfaat, dan Sustainability Biodiversitas Tanaman Indonesia. Vol. 2: 311-358.* 36. *Zuhud, E. A. M., Helida, A. and E. Iswandono. 2017. Indonesia Oral Tradition Collecting: Proverbs, Old Sayings and Community Rulesof the Kerinci and Manggarai Communities. In: Collecting: Proverbs, Old Sayings and Community Rulesrelated to Climate Change and Forest Management in ASEAN Countries. APAFRI, Forest Research Institut Malaysia and National Institute of Forest Science (South Korea). Pp. 7-35*

Research Methodology and Scientific Writing (KSH1302)

Module designation	*Research Methodology and Scientific Writing (KSH1302)*
Semester(s) in which the module is taught	*5*
Person responsible for the module	*Dr. Ir. Yeni A. Mulyani, M.Sc.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecture session and discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to analyze the benefits and measure the potential of protected area, wild animal, plant diversity, ecosystem services, nature recreation, and ecotourism.* 2. *Students acquire ability to create scientific works.*
Course description	*This course provide students with understanding and skills in scientific writing and research methodoly. It provide students with the definition of scientific research, scientific ethics, critical thinking, critical reading, literature; identification, problem formulation and research objectives; literature; hypotheses and assumptions; review of research methodology in the exact and social fields; writing structure starting from the introduction, methods, results, discussion, conclusions, bibliography, and abstract; oral presentations and posters.*

Module designation	*Research Methodology and Scientific Writing (KSH1302)*
Content	*This course is consisted of 12 topics, namely:* ***1. Introduction*** *Students are expected to be able to explain the definition of scientific research, research principles, ethics and norms in science, and plagiarism through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***2. Scientific writing*** *Students are expected to be able to explain the types and criteria of scientific writing through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***3. Variety of scientific research and stages in scientific research*** *Students are expected to be able to explain and exemplify the variety of scientific research and stages in scientific research through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts forfor 5% of the final score of this course.* ***4. Identification and formulation of research problems*** *Students are expected to be able to explain the definition of research problems and steps in identification and formulation of research problems through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of identification and formulation which accounts for for 10% of the final score of this course.* ***5. Bibliography*** *Students are expected to be able to explain the definition and importance of bibliography and procedures of citing and writing references and bibliography in scientific research and writing through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***6. Research hypothesis, variables, and data*** *Students are expected to be able to explain and formulate research hypothesis and determine research variables and data through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***7. Approach and techniques of data collection, processing, and analysis*** *Students are expected to be able to explain types of approach and techniques as well as the use of instruments in data collection and processing through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of instruments use which accounts for for 10% of the final score of this course.* ***8. Illustration writing and language*** *Students are expected to be able to explain, distinguish, and write various forms of illustration writing as well as the proper and correct use of language in scientific writing through this topic.*

Module designation	*Research Methodology and Scientific Writing (KSH1302)*
	Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of writing which accounts for for 10% of the final score of this course. ***9. Writing abstracts and summary of research results*** *Students are expected to be able to explain the definition of abstract and summary as well as to write the abstract and summary of some research result through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of writing which accounts for for 5% of the final score of this course.* ***10. Writing research proposal*** *Students are expected to be able to explain the scope of some research proposal content and to write an example of research proposal through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of writing which accounts for for 10% of the final score of this course.* ***11. Writing undergraduate thesis (report of research result)*** *Students are expected to be able to explain the objectives and importance of writing undergraduate thesis, to exhibit the scope of thesis content and thesis writing procedures through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of writing which accounts for for 15% of the final score of this course.* ***12. Techniques of presenting research results*** *Students are expected to be able to explain the of presenting research results and writing presentation materials in the form of articles (handouts) and power points for oral presentation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as communication skill and level in presenting research results which accounts for for 15% of the final score of this course*
Examination forms	*Written examination, presentations,individual report, group report, scientific paper analysis*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	1. Renck Jalongo, M., & Saracho, O. N. 2016. Writing for Publication. Springer International Publishing. https://doi.org/10.1007/978-3-319-31650-5 2. Blackwell J, Martin J. 2011. A Scientific Approach to Scientific Writing. Springer New York. 112 p. 3. Bassham, G., Irwin, W., Nardone, H., & Wallace, J. M. (Eds.). (2010). Critical thinking: A student's introduction (4th ed). McGraw-Hill Higher Education. 4. Moore BN, Parker R. 2007. Critical Thinking. Eight Edition. McGraw-Hill International edition. Boston. 5. [Tim Penulis IPB]. 2020. Pedoman Penulisan Karya Ilmiah IPB

Pollutions and Environmental Impact Control (KSH341)

Module designation	*Pollutions and Environmental Impact Control (KSH341)*
Semester(s) in which the module is taught	*5*
Person responsible for the module	*Dr. Ir. Siti Badriyah Rushayati, M.Si.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students*
Teaching methods	*Lecture session and discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to understand the theoretical concept of living natural resources conservation and environmental pollutions.* 2. *Students acquire ability to elaborate and implement policies and regulations regarding environmental pollutions.* 3. *Students acquire ability to analyze and measure environmental pollutions.* 4. *Students acquire ability to solve environmental pollutions.*
Course description	
Content	*This course is consisted of 13 topics, namely:* 1. ***Definition, scope of study, and environmental problems*** *Students are expected to be able to explain environmental pollutions and environmental problems through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7% of the final score of this course.* 2. ***Source, process, and impacts of air pollution toward plants, animals, and humans*** *Students are expected to be able to explain the source, process, and the impacts of air pollution toward plants, animals, and humans through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accountsfor 7% of the final score of this course.* 3. ***Impacts of air pollution toward environment*** *Students are expected to be able to explain Impacts of air pollution toward environment through this topic. Assessment indicator for*

Module designation	*Pollutions and Environmental Impact Control (KSH341)*
	this topic is the completeness and correctness of explanation which accounts for for 16% of the final score of this course. **3. *Air pollution control and countermeasure*** *Students are expected to be able to explain and implement the air pollution control and countermeasure through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7% of the final score of this course.* **4. *Source, process, and negative impacts of water pollution*** *Students are expected to be able to explain the source, process, and negative impacts of water pollution through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7% of the final score of this course.* **5. *Source, impacts, anticipation, and countermeasures of detergent waste*** *Students are expected to be able to explain the pollution caused by detergent waste through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7% of the final score of this course.* **6. *Source, impacts, anticipation, and countermeasures of oil pollution*** *Students are expected to be able to explain the oil pollution through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts forfor 7% of the final score of this course.* **7. *Source, impacts, and management of toxic and hazardous waste*** *Students are expected to be able to explain the toxic and hazardous waste through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7% of the final score of this course.* **8. *Assessment, monitoring, and control of water pollution*** *Students are expected to be able to explain and implement the assessment, monitoring, and control of water pollution through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7% of the final score of this course.* **9. *Policy and legislation concerning the management of aquatic environment*** *Students are expected to be able to explain policy and legislation concerning the management of aquatic environment through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7% of the final score of this course.* **11. *Source, impacts, and management of solid waste*** *Students are expected to be able to explain the source, impacts, and management of solid waste through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7% of the final score of this course.* **12. *Source, process, negative impacts, and countermeasures of ground pollution***

Module designation	*Pollutions and Environmental Impact Control (KSH341)*
	Students are expected to be able to explain the source, process, negative impacts, and countermeasures of ground pollution through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7% of the final score of this course. ***13. Controlling and improving environment quality (ground, water, and air)*** *Students are expected to be able to explain the environmental pollutions (ground, water, and air) and implement the control and improvement of environment quality through this topic.* *Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	1. *Abel PD. 1989. Water Pollution Biology. Ellis Horwood Ltd. Chicheste, England.* 2. *Carson R. 1962. Silent Spring. New York: Houghton Mifflin Company.* 3. *Connely DW, Miller GJ. 1995. Kimia dan Ekotoksikologi Pencemaran. Penerbit Universitas Indonesia. Jakarta* 4. *Darmono. 2001. Lingkungan Hidup dan Pencemaran Lingkungan. Penerbit Universitas Indonesia. Jakarta.* 5. *ECIFM, 2019. Agricultural Contribution to Environmental Degradation. Subject 3. The University of Reading, UK. http://www.ecifm.rdg.ac.uk/subject3.htm)* 6. *FAO, 2019. Innovative actions towards a pollution free-planet: Implementing the UNEA-3 resolution on soil pollution.(http://web.unep.org/environmentassembly/innovative-actions-towards-pollution-free-planet-implementing-unea-3-resolution-soil-pollution)* 7. *Irwan ZD. 2008. Tantangan Lingkungan dan Lansekap Hutan Kota. PT. Bumi Aksara. Jakarta* 8. *Monteith J.L. 1975. Vegetation and the Atmosphere. Academic Press INC. London.* 9. *Murdiyarso D and Tsuruta H. 2000. The Impact of land use/cover change on greenhouse gas emissions in Tropical Asia. Global Change Impacts Centre for Southeast Asia (IC-SEA). Bog0r, Indonesia.* 10. *Murdiyarso D. 2003. Sepuluh Tahun Perjalanan Negosiasi Konvensi Perubahan Iklim. PT Kompas Media Nusantara. Jakarta.* 11. *Murtadho, Said EG. 1988. Penanganan dan Pemanfaatan Limbah Padat. PT. Mediyatama Sarana Perkasa. Jakarta.* 12. *Pandey GN and Caarney GC. 1991. Environmental Engineering. Tata McGraw-Hill Publishing Company Limited. New Delhi.* 13. *[PP] Peraturan Pemerintah RI. No, 74 tahun 2001 tentang Pengelolaan Bahan Berbahaya dan Beracun. 2001.* 14. *[PP]. Peraturan Pemerintah RI No. 101 tahun 2014 tentang Pengelolaan Limbah Bahan Berbahaya dan Beracun. 2014.* 15. *Rukaesih A. 2004. Kimia lingkunga. Penerbit Universitas Negeri Jakarta. Jakarta.* 16. *Saeni MS. 1989. Kimia Lingkungan. Departemen Pendidikan dan Kebudayaan, Direktorat Jenderal Pendidikan Tinggi. Indonesia.* 17. *Stoytcheva M (ed.) 2011. Pesticides in the Modern World - Pests Control and Pesticides Exposure and Toxicity Assessment. InTech.* 18. *Wiedmann T, Barrett J. 2010. A Review of the Ecological Footprint Indicator—Perceptions and Methods. Sustainability*

Module designation	*Pollutions and Environmental Impact Control (KSH341)*
	2: 1645–1693. *19. Yasman I, Banowati L, Lasmini, Septiani Y. 2009. Peluang Pemanfaatan Potensi Karbon Hutan dalam Isu Perubahan Iklim. Yayasan Resource Development Center. Jakarta.* *20. Yasman I, Banowati L, Lasmini, Septiani Y. 2009. Peluang Pemanfaatan Potensi Karbon Hutan dalam Isu Perubahan Iklim. Yayasan Resource Development Center. Jakarta.*

Wild Animal Behavior (KSH1314)

Module designation	*Wild Animal Behavior (KSH1314)*
Semester(s) in which the module is taught	*5*
Person responsible for the module	*Ir. Dones Rinaldi, M.Sc.F.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecture session and discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to analyze roles of wildlife and measure wildlife potential.* 2. *Students acquire ability to plan wildlife management.* 3. *Students acquire ability to manage the utilization of wildlife.* 4. *Students acquire ability to preserve genetic resources and germplasm of living natural resources.*
Course description	*This course reviews the history of the development of wildlife behavior science, the urgency of animal behavior science in the application of wildlife management; animal behavior development; basic mechanism of animal behavior; motivation and learning processes, classification and behavior patterns in wildlife; communication behavior, social and reproductive behavior, home range, territory, migration and spatial orientation; and an introduction to animal behavior research methods. In applying wildlife-based ecotourism development, this course provides the basics of observing wildlife that can be applied in developing tourism activities such as bird watching, sport hunting, etc. Furthermore, this course also provides the basics of understanding animal behavior that can be applied in efforts to reduce and mitigate conflicts between communities and wild animals.*

Module designation	*Wild Animal Behavior (KSH1314)*
Content	*This course is consisted of 10 topics, namely:* ***1. Introduction*** *Students are expected to be able to explain the purpose and objectives as well as benefits of learning wildlife behavior and the scope and interrelatedness of wildlife ethology with other field of knowledge through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***2. The history and development of wildlife ethology*** *Students are expected to be able to explain the history and development of wildlife ethology through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***3. Wildlife behavior development*** *Students are expected to be able to explain wildlife behavior development stages such as pre-natal and post-natal, early experience, and factors that influence them through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***4. The basic mechanism of animal behavior*** *Students are expected to be able to explain the principles and basis for behavior in animals through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* ***5. Motivation and learning process*** *Students are expected to be able to understand and explain behavioral motivation and learning process in animals through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* ***6. Behavior classification and pattern*** *Students are expected to be able to explain animal behavior classification and important behaviors for species conservation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***7. Communication behavior*** *Students are expected to be able to explain communication behavior in animals through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***8. Social and reproduction behavior*** *Students are expected to be able to explain social and reproduction behavior in animals through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* ***9. Home rage, territory, migration, and spatial orientation*** *Students are expected to be able to explain home rage, territory, migration, and orientation in animals through this topic.*

Module designation	*Wild Animal Behavior (KSH1314)*
	Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course. ***10. Introduction to animal behavior research methods*** *Students are expected to be able to explain methods of research and data analysis in animal behavior research through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 40% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	*1. Barnard, C. J. 1983. Animal Behavior: Ecology and Evolution. Wiley-Interscience Publication, John Wiley & Sons. New York.* *2. Kamil, T. W. 1983. Perilaku Binatang. (Translated from Animabal Behavior by Niko Tinbergen). Tira Pustaka. Jakatrta.* *3. Lehner, P. N. 1979. Handbook of Ethological Methods. Garland STPM Press. New York and London.* *4. Slater, P. and R. M. Alexander (Eds). 1986. The Encyclopaediaof Animal Behavior and Biology. Equinox (Oxford) Ltd. Oxford.* *5. Suratmo, F. G. 1979. Prinsip Dasar Tingkah Laku Satwa Liar. School of Environmental Conservationmanagement (ATA-190). Bogor.* *6. Poole, T. B. 1985. Social Behavior in Mammals. Blackie& Sons Limited. Glasgow*.

Nature and Environment Interpretation (KSH1353)

Module designation	*Nature and Environment Interpretation (KSH1353)*
Semester(s) in which the module is taught	*5*
Person responsible for the module	*Prof. Dr. E. K. S. Harini Muntasib, M.S.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students*
Teaching methods	*Lecture session and discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to understand the theoretical concept of nature interpretation.* 2. *Students acquire ability to analyze benefits and measure the potential of living resources and their ecosystem* 3. *Students acquire ability to plan the management of nature interpretation.*
Course description	
Content	*This course is consisted of 12 topics, namely:* ***1. Introduction to interpretation*** *Students are expected to be able to explain the nature interpretation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***2. Interpretation objects and paths*** *Students are expected to be able to explain the interpretation objects and paths through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***3. Types of interpretation*** *Students are expected to be able to explain the types of interpretation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for 5% of the final score of this course.* ***4. Interpretation program***

Module designation	*Nature and Environment Interpretation (KSH1353)*
	Students are expected to be able to explain the interpretation program through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course. **4. *Interpretation themes*** *Students are expected to be able to explain the interpretation themes through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **5. *Characteristics and behaviors of visitors*** *Students are expected to be able to explain the characteristics and behaviors of visitors through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **6. *Communication in interpretation*** *Students are expected to be able to explain the communication in interpretation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as communication skill which accounts for for 10% of the final score of this course.* **7. *Interpretation techniques*** *Students are expected to be able to explain the interpretation techniques through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skills in implementing interpretation techniques which accounts for for 15% of the final score of this course.* **8. *Interpretation planning*** *Students are expected to be able to explain the interpretation planning through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 15% of the final score of this course.* **9. *Ethics and techniques of tourist guiding*** *Students are expected to be able to explain the ethics and techniques of tourist guiding through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **10. *Interpretation media and examples of its application*** *Students are expected to be able to explain the interpretationmedia and examples of its application through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 15% of the final score of this course.* **11. *Signs and labels for interpretation*** *Students are expected to be able to explain and make signs and labels for interpretation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 10%of the final score of this course.*

Module designation	*Nature and Environment Interpretation (KSH1353)*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	*1. Muntasib, E. K. S. H. 2003. Interpretasi Wisata Alam. Laboratorium Rekreasi alam, DKSH Fahutan IPB. Bogor.* *2. Mackintosh, B. 1986. Interpretation in The National Park Service: A Historical Perspective. History Division, National Park Service Department of The Interior. Washigton, D. C.* *3. Sharpe, G. W. 1982. Interpreting the Environment. John Wiley & Sons.* *4. Ham, S. H. 1992. Environmental Interpretation: Practicum Guide for People with Big Ideas and Small Budgets. North American Press. Colorado.* *5. Everhart, W. C. 1973. A Report on National Park Service Interpretation.* *6. Berkmuller, K. Guidelines and Techniques for Environmental Interpretation. The Netherlands Foundation for International Nature Protection.* *7. Lucas, P. H. C. 1970. Conserving New Zealand's Heritage.* *8. Harris, S. Guidelines for Site Interpretation Planning.* *9. Domroese, M. C. and E. J. Sterling. 1999. Interpreting Biodiversity: A Manual for Environmental Educators in The Tropics. American Museum of Natural History.* *10. Tilden, F. 1957. Interpreting Our Heritage: Principles and Practices for Visitor Services in Parks, Museum and Historic Places. Chapel Hill. The University of North Carolina Press.*

Environmental Services (KSH1344)

Module designation	*Environmental Services (KSH1344)*
Semester(s) in which the module is taught	*5*
Person responsible for the module	*Ir. Agus Priyono, M.Si*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students*
Teaching methods	*Lecture session, discussion and practicum session*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to understand the theoretical concept of environmental services and impact control.* 2. *Students acquire ability to elaborate and implement policies and regulations in the field of environment.* 3. *Students acquire ability to analyze benefits and measure environmental services and impact control.* 4. *Students acquire ability to manage the utilization environmental services.*
Course description	
Content	*This course is consisted of 11 topics, namely:* ***1. Introduction*** *Students are expected to be able to explain the definition of environmental services and impact control, to identify environmental services and possible negative impact and hazard control through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***2. Roles of watershed ecosystem and its damage issues*** *Students are expected to be able to explain the management of watershed and source, type, and process of impact occurrence through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for 10% of the final score of this course.* ***3. Potential of aquatic ecosystem and environmental services*** *Students are expected to be able to explain aquatic environmental*

Module designation	*Environmental Services (KSH1344)*
	services and the impacts of the utilization of aquatic ecosystem through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course. **4.** ***Potential of mangrove ecosystem and environmental services*** *Students are expected to be able to explain mangrove environmental services and the impacts of the utilization of mangrove ecosystem through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* **5.** ***Potential of forest ecosystem and environmental services*** *Students are expected to be able to explain forest environmental services and the impacts of the utilization of forest ecosystem through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* **6.** ***Roles of forest in hydrological function*** *Students are expected to be able to explain forest environmental services in hydrological system and the impact of the utilization of forest ecosystem on the occurrence of floods and landslides through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* **7.** ***Roles of air in the concept of environmental services*** *Students are expected to be able to explain environmental services of air and the impact of air pollution through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **8.** ***Concept of environmental services in climate maintenance*** *Students are expected to be able to explain environmental services in its relation with climate maintenance through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **9.** ***Environmental impact analysis and*** *Students are expected to be able to explain the roles of environmental impact analysis in environmental impact control through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for 5% of the final score of this course.* **10.** ***Management and control of ecotourism impacts within environmental management system*** *Students are expected to be able to explain and implement the management and control of impacts as part of environmental management system through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* **11.** ***Definition of Payment for Environmental Services (PES), stakeholder identification, and mechanism of PES*** *Students are expected to be able to explain implement the management of PES through this topic. Assessment indicator for this topic is the*

Module designation	*Environmental Services (KSH1344)*
	completeness and correctness of explanation which accounts for for 10% of the final score of this course.
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	1. *Alikodra, H. S. 2004. Bumi makin Panasbanjir makin Luas: menyibak tragedi kehancuranhutan. Yayasan Nuansa Cendekia. Bandung.* 2. *Andrianto, T. T. 2002. Audit Lingkungan. Global Pustaka Utama. Yogyakarta.* 3. *Arsyad, S. 1989. Konservasi Tanah dan Air. IPB Press. Bogor.* 4. *Asmoro, P. B. 1995. Panduan Patroli di Lahan Basah. Direktorat Jenderal Perlindungan Hutan dan Pelestarian Alam dan Asian Wetland Bureau. Jakarta.* 5. *Bell, J. N. B. and M. Treshow. 2002. Air Pollution and Plant Life. John Wiley & Sons LTD.* 6. *Connell, D. W. and Gregory J. M. 1995. Kimia dan Ekotoksikologi Pencemaran. Penerbit Universitas Indonesia. Jakarta.* 7. *Darmono. 1995. Logam dalam Sistem Biologi Makhluk Hidup. UI-Press. Jakarta.* 8. *Darmono. 2001. Lingkungan Hidupdan Pencemaran: hubungannya dengan toksikologi senyawa logam. UI-Press. Jakarta.* 9. *Fardiaz, S. 1992. Polusi Air dan Polusi Udara. Departemen Pendidikandan Kebudayaan, Direktorat Jenderal Pendidikan Tinggi, Pusat Antar Universitas Pangandan Gizi, Institut Pertanian Bogor. Bogor.* 10. *Foley, G. 1993. Pemanasan Global: Siapakahyang Merasa Panas? Yayasan Obor Indonesia, Konphalindo, PANOS. Jakarta.* 11. *Mansfield, T. A. 1976. Effects of Air Pollutants on Plants. Cambridge University Press. London.* 12. *Maryono, A. 2002. Eko-Hidraulik Pembangunan Sungai: Menanggulangi Banjir dan Kerusakan Lingkungan Wilayah Sungai. Program Magister Sistem Teknik, Fakultas Teknik, Universitas Gadjah Mada. Yogyakarta.* 13. *Murdiyarso, D. 2003. CDM: Mekanisme Pembangunan Bersih. Penerbit Buku Kompas. Jakarta.* 14. *Murtadho, D. and E. G. Sa'id. 1988. Penanganan dan Pemanfaatan Limbah Padat. Mediatama Sarana Perkasa. Jakarta.* 15. *Salim, E. 1986. Pembangunan Berwawasan Lingkungan. PT. Pustaka LP3ES Indonesia. Jakarta.* 16. *Soedomo, M. 2001. Pencemaran Udara. Penerbit ITB Bandung. Bandung.* 17. *Soemarwoto, O. 2001. Atur Diri Sendiri: Paradigma Baru Pengelolaan lingkungan Hidup (Pembangunanramahlingkungan, berpihak padarakyat, ekonomi berkelanjutan). Gadjah Mada University Press. Yogyakarta.* 18. *Suratmo, F. G. 1993. Analisis mengenai Dampak Lingkungan. Gadjah Mada University Press. Yogyakarta.* 19. *Yasman I, Banowati L, Lasmini, Septiani Y. 2009. Peluang Pemanfaatan Potensi Karbon Hutan dalam Isu Perubahan Iklim. Yayasan Resource Development Center. Jakarta.* 20. *Yasman I, Banowati L, Lasmini, Septiani Y. 2009. Peluang Pemanfaatan Potensi Karbon Hutan dalam Isu Perubahan Iklim. Yayasan Resource Development Center. Jakarta.*

Protected Areas and Essential Ecosystems (KSH1323)

Module designation	*Protected Areas and Essential Ecosystems (KSH1323)*
Semester(s) in which the module is taught	*5*
Person responsible for the module	*Prof. Dr. Ir. Sambas Basuni, M.S.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students*
Teaching methods	*Lecture session and discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to analyze and measure the potential utilization of protected area, wild animal, plant diversity, ecosystem services, nature recreation, and ecotourism.* 2. *Students acquire ability to plan and design the management of protected area within the context of landscape, wild animal, plant diversity, ecosystem services, nature recreation, and ecotourism.* 3. *Students acquire ability to manage the utilization of protected area, wild animal, plant diversity, ecosystem services, nature recreation, and ecotourism sustainably.* 4. *Students acquire ability to mobilize resources in the management of protected area, wild animal, plant diversity, ecosystem services, nature recreation, and ecotourism.* 5. *Students acquire ability to manage conflicts.* 6. *Students acquire ability to implement interdisciplinary approach in the management of protected area, wild animal, plant diversity, ecosystem services, nature recreation, and ecotourism.*
Course description	*Definition and objectives of Protected Area management; Protected Area management perspective; category of Protected Area; basic principles of Protected Area management; selection of Protected Area locations; Protected Area planning; area management approach: participation and collaboration; buffer area management; evaluation of the effectiveness of area management.*
Contents	*This course is consisted of 11 topics, namely:*

Module designation	*Protected Areas and Essential Ecosystems (KSH1323)*
	1. ***Introduction*** *Students are expected to be able to correctly explain the definition and scope of protected area management as well as the objectives and targets of protected area management through this topic.* *Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 2. ***History of protected area establishment*** *Students are expected to be able to explain history of protected area establishment in Indonesia and abroad through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 3. ***Protected area management perspectives*** *Students are expected to be able to explain the motivation, values, and benefits of protected area toward life as well as the position of protected area management in national and regional development through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 4. ***Categories of protected area*** *Students are expected to be able to explain the categories of protected area based on its management objectives through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 5. ***Basic principles of protected area management*** *Students are expected to be able to explain the basic principles of protected area management with consideration of ecology integrity through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 6. ***Selection for protected area location*** *Students are expected to be able to identify the basic principles of selecting location or sites for protected area with consideration for characteristics of biogeography, biodiversity, migrant species, hydrological and socio-political function, and potential utilization of the area for tourism through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 7. ***Protected Area planning*** *Students are expected to be able to explain the basics of protected area planning which covers feasibility study, management plan, operational plan, and area zonation system through this topic.* *Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 8. ***Protected area with distinctive ecosystem and values*** *Students are expected to be able to explain and analyze*

Module designation	*Protected Areas and Essential Ecosystems (KSH1323)*
	discrepancy between the theory of protected area management and the management of protected area management with distinctive ecosystem and values through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course. ***9. Implementation of protected area management: Participatory and collaborative approach*** *Students are expected to be able to explain the basic principles of protected area management and the important aspects that should be considered in area management through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 15% of the final score of this course.* ***10. Protected area buffer zone*** *Students are expected to be able to explain the concept of protected area management development concept through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* ***11. Management effectiveness evaluation*** *Students are expected to be able to analyze the effectiveness of protected area management using objective evaluation instruments through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 15% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	*1. Alexander, M. 1995. Management Planning in relation to Protected Areas. Protected Areas Programme. PARKS (Parks and Information Technology). Vol. 5 No. 1, February 1995: 2-11.* *2. Amend, S. and T. Amend (Eds). 1995. National Parks without People? The South American Experience. IUCN-The World Conservation Union, Gland, Switzerland.* *3. Barborak, J. R. 1995. Institutional Options for Managing Protected Areas. (in Expanding Partnerships in Conservation edited by Jeffrey A. McNeely). Island Press, Washington, D.C. Pp. 30-38* *4. Borrini-Feyerabend, G. 1999. Collaborative Management of Protected Areas (in Partnerships for Protection: New Strategies for Planningand Management for Protected Areas edited by Stolton, Sue and Nigel Dudley). IUCN-The World Conservation Union, Eartscan Publications Ltd, London. Pp. 224-234.* *5. Brandon, K. E. and M. Wells. 1992. Planning for People and Parks: Design Dillemas. Journal World Development Vol. 20 No. 4. Pergamon Press Ltd., Great Britain. Pp. 557-570* *6. Bruner, A. G., Gullison, R. E., Rice, R. E. and G. A.B. da Fonseca.* *2001. Effectiveness of Parks in Protecting Tropical Biodiversity. Science Magazine Vol. 291 No. 5501, Issue of*

Module designation	*Protected Areas and Essential Ecosystems (KSH1323)*

5 January 2001. The American Association of the Advancement of Science. Pp:125-128; http://www.sciencemag.org/cgi/content/full/291/5501/125 date of download: 20.02.01

7. *Dower, M. 1995. Workingwith People Who Live in Protected Areas in McNeely, Jeffrey A. (Ed.), Expanding Partnerships in Conservation. IUCN-The World Conservation Union, Gland- Switzerland. Pp. 215-222*
8. *Hess Jr., K. 2001. Parks Are for People – But Which People? in The Politics and Economics of Park Management, Edited by Terry L. Anderson and Alexander James. Rowman and Littlefield Publisher, Oxford. Pp. 159-181*
9. *Hockings, M. and A. Phillips. 1999. How well are we doing? – some thoughts on the effectiveness of protected areas. PARKS – Protected Areas Programme Vol. 9 No. 2 June 1999. IUCN-The World Conservation Union, Gland, Switzerland.*
10. *IUCN. 1992. Protected Areas and Demographic Change: Planning for the Future (A Working Report of Workshop 1.6). IVth World Congress on National Parksand Protected Areas held in Caracas, Venezuela 10-21 February 1992, IUCN The World Conservation Union, Gland, Switzerland.*
11. *IUCN The World Conservation Union. 1994. Guidelines for Protected Area Management Categories. IUCN Commission on National Parks and Protected Areas (CNPPA) – World Conservation Monitoring Centre (WCMC), Gland-Switzerland and Cambridge-UK.*
12. *Lewis, C. (Ed.). 1996. Managing Conflicts in Protected Areas. IUCN The World Conservation Union, Gland-Switzerland.*
13. *MacKinnon, J., K. MacKinnon, Child, G and J. Thorsell. 1986. Managing Protected Areas in the Tropics, International Union for Conservation of Nature and Natural Resources (IUCN). Gland- Switzerland.*
14. *McNeely, J. A. and J. Thorsell. 1991. Guidelines for Preparing Protected Area System Plans. PARKS the international magazine dedicated to the protected areas of the world. Vol. 2 No. 2, July 1991 (System Planning): 4-8.*
15. *McNeely, J. A. (Ed.). 1995. Expanding Partnerships in Conservation. IUCN, Island Press, Washington DC.*
16. *McNeely, J. A. 1999a. Mobilizing Broader Support for Asia's Biodiversity: How Civil Society Can Contribute to Protected Area Management. Asian Development Bank – The World Conservation Union, Manila, the Philippines.*
17. *Meganck, R. A., and R. E Saunier. (Eds.). 1995. Conservation of Biodiversity and the New Regional planning. Department of regional Development and Environment, Executive Secretariat for Economic and Social Affairs, General Secretariat of Organization of American States – IUCN The World Conservation Union.*
18. *Sayer, J. 1991. Buffer Zones in Rainforest: Fact or Fantasy?. PARKS the international magazine dedicated to the*

Module designation	*Protected Areas and Essential Ecosystems (KSH1323)*
	protected areas of the world. Vol. 2 No. 2, July 1991 (System Planning): 20-24. 19. *Soekmadi, R. 2002. National Park Management in Indonesia: Focused on Decentralization and Local Participation. Cuvilier Verlag. Göttingen, Germany.* 20. *UNDP/FAO National Park Development Project. 1982. Rencana Konservasi Nasional Jilid I: Pendahuluan, Metoda Evaluasi dan Tinjauan Kekayaan Alam (berdasarkan karya John MacKinnin-FAO).* 21. *Wells, M. and K. E. Brandon (with Lee Hannah). 1995. People and Parks: Linking Protected Area Management with Local Communities (3rd Ed.). The World Bank, WWF, and USAID, Washington, D.C.* 22. *Westley, F., Seal, U., Byers, O. and G. D. Ness. People and Habitat Protection. PARKS Protected Areas Programme (the International Journal for Protected Area Managers Vol. 8 No 1. February 1998). IUCN – The Conservation Union, Cambridge – UK. Pp. 15-26* 23. *Walkey, M; Swingland, I and Russel, S. 1999. Integrated protected area management. London: Kluwer Academic Publisher* 24. *Basuni, S. 2023. Kebijakan, Dasar-dasar Teoritis, dan Metode Evaluasi Keseusian Fungsu Kawasan Hutan Konservasi. Bogor: IPB Press* 25. *Pemerintah Republik Indonesia. 2021. Peraturan Menteri Lingkungan Hidup Dan Kehutanan Republik Indonesia Nomor 7 Tahun 2021 Tentang Perencanaan Kehutanan, Perubahan Peruntukan Kawasan Hutan Dan Perubahan Fungsi Kawasan Hutan, Serta Penggunaan Kawasan Hutan* *IUCN. 1994. Guidelines for Protected Area Management Categories*

Wildlife Ex-Situ Conservation and Wildlife Captivity(KSH1315)

Module designation	*Wildlife Ex-Situ Conservation and Wildlife Captivity(KSH1315)*
Semester(s) in which the module is taught	*6*
Person responsible for the module	*Dr. Ir. Burhanuddin Masy'ud, M.S.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students*
Teaching methods	*Lecture session, discussion, and practicum*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 2 hours per week* *Contact hour(s) (practicum session): 3 hours per week* *Structured academic activities (doing in-class/take home assignment or homework): 2 hours per week* *Private in-depth study (literature reading): 2 hours per week*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to plan the management of wildlife ex-situ Protected Area.* 2. *Students acquire ability to manage the utilization of wildlife in ex-situ.* 3. *Students acquire ability to preserve genetic resources and germplasm of living natural resources.* 4. *Students acquire ability to breed species of wild animals.*
Course description	*This course describes in full detail the technical aspects of ex-situ conservation and captivity of wild animals, including the procurement of potential broodstock, capture and immobilization of animals, aspects of maintenance (including adaptation and acclimatization, housing and artificial habitat design, nutrition, animal health care), aspects of animals breeding (reproduction) as well as aspects of utilizing the results of ex-situ conservation and captivity of wild animals, both in the form of goods and services including post-harvest technology, and the use of wild animals from ex-situ conservation and captive breeding of wild animals to support population increase and preservation of wild animals in their natural habitat (in-situ), through a release program. The final part of the course will discuss the design of the development of ex-situ conservation and captive wildlife, including master plans, site plans, and management plans, including analysis and formulation of the feasibility of ex-situ conservation and captive wildlife businesses.*

Module designation	*Wildlife Ex-Situ Conservation and Wildlife Captivity(KSH1315)*
Content	***3. Population status and vulnerability*** *Students are expected to be able to correctly explain the phenomena that can explain the mechanism of animal population vulnerability, minimum viable population size, and genetic consideration through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* ***4. Species differentiation and population structure in population viability analysis*** *Students are expected to be able to correctly explain the methods to determine animal population viability, species differentiation, and PVA Population Viability Analysis) through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* ***5. Molecular genetics of threatened species*** *Students are expected to be able to correctly explain the definition of species and subspecies, issues on preservation and inter breed in the application of molecular genetic techniques through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* ***6. Reintroduction*** *Students are expected to be able to correctly explain the definition and mechanism of reintroduction, habitat restoration, and conservation introduction through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.* ***7. Methods of ex-situ conservation*** *Students are expected to be able to correctly explain the methods of ex-situ conservation, including cryopreservation and genomic libraries through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* ***8. Measurement and utilization of genetic diversity*** *Students are expected to be able to explain selection, migration, mutation, and genetic drift correctly through this topic. the Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* *Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*

Module designation	*Wildlife Ex-Situ Conservation and Wildlife Captivity(KSH1315)*
Content	*This course is consisted of 8 topics, namely:* ***1. Introduction*** *Students are expected to be able to correctly explain the definition and scope of ex-situ conservation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation, explain the definition, two main objectives of captive breeding, categories, captive breeding system, utilization development and animal-based entrepreneurship, legal foundation and policy concerning captive breeding, and the position and scope of the field of animal captive breeding within the framework of biodiversity conservation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course, which accounts for for 5% of the final score of this course.* ***2. Preserving animal genetic diversity andits management*** *Students are expected to be able to correctly explain the basic theory of animal genetic diversity and its ex-situ management through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.*
Reading list	1. *Auffenberg, W. 1981. The Behavioral Ecologyof the Komodo Monitor. Univ. Presses of Florida. Gainesville.* 2. *Anonymous. 1993. Managing Global Genetic Resources: Livestock. Committee on Managing Global Resources: Agricultural Imperatives. Board on Agriculture, Nat. Res. Council. Nat. Acad. Press. WashingtonD.C.* 3. *Bailey, J. A. 1984. Principle of Wildlife Management. John Wiley& Sons. New York. Pp. 142-194* 4. *Cook, L. M. 1991. Genetic and Ecological Diversity: the sport of nature. Chapman& Hall. London. Pp. 19-20* 5. *FAO. 1998. User's Manual for National Coordinators for the Management of Farm Animal Genetic Resources.* 6. *KMNLH. 1994. Keanekaragaman Hayati di Indonesia. Jakarta.* 7. *Olney, P. J. S., Mace, G. M. and A. T. C. Feistner. 1994. Creative Conservation: Interactive management of wild and captive animals. Chapman & Hall. London. Pp. 144-162; 167-175; 178-198; 243-262; 265-284; 287-300; 304-310; 321-323; 329-335; 338-350; 352-363; 365-381; 420-429; 467-476; 478-484; 486-494; 495-503* 8. *Primack, R. B. 1993. Essentials of Conservation Biology. Sinauer Assoc. Inc. Publ. Sunderland, Massachusetts, USA. Pp. 170-174; 175; 201; 203-211; 370-374; 378-390; 405-451; 438-451* 9. *Price, M. K. S. 1989. Animal Re-introductions: the Arabian Oryx in Oman. Cambridge Univ. Press. Cambridge.*

Tropical Forest Medicinal Plant and Food (KSH1333)

Module designation	*Tropical Forest Medicinal Plant and Food (KSH1333)*
Semester(s) in which the module is taught	*6*
Person responsible for the module	*Prof. Dr. Ir. Ervizal A. M. Zuhud, M.S.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students*
Teaching methods	*Lecture session, discussion and practicum session*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 2 hours per week* *Contact hour(s) (practicum session): 3 hours per week* *Structured academic activities (doing in-class/take home assignment or homework): 2 hours per week* *Private in-depth study (literature reading): 2 hours per week*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to analyze the benefits and measure the potential of tropical medicinal plants and food and food.* 2. *Students acquire ability to identify traditional and indigenous knowledge in the utilization of tropical medicinal plants and food.* 3. *Students acquire ability to manage the utilization of tropical medicinal plants and food.* 4. *Students acquire ability to breed species of tropical medicinal Plants and food.*
Content	*This course is consisted of 13 topics, namely:* **1. *Introduction*** *Students are expected to be able to explain the definition, scope, objectives, and interrelatedness of various knowledge discipline which supports the tropical forest medicinal plant conservation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **2. *Forest and public health: Forest pharmacy*** *Students are expected to be able to explain the roles of forest for public health through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **3. *Rarity and extinction of plant species and food*** *Students are expected to be able to explain proses of rarity and extinction of plant species through this topic. Assessment indicator*

Module designation	*Tropical Forest Medicinal Plant and Food (KSH1333)*
	for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course. 4. ***Introduction to species of medicinal plants and food*** *Students are expected to be able to explain several species of superior medicinal plants through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 5. ***Indonesia medicinal plants conservation strategy with conceptual approach of "Tri-Stimulus AMAR Pro-Konservasi "(Tri-stimulus of AMAR (Natural, Beneficial, Voluntary) for Pro-conservation Behaviors)*** *Students are expected to be able to explain Indonesia medicinal plants conservation strategy with conceptual approach of "Tri-Stimulus AMAR Pro-Konservasi" through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* 6. ***Introduction to dangerous or poisonous plants*** *Students are expected to be able to explain several species of dangerous or poisonous plants through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* 7. ***Techniques of potential estimation and natural collection of medicinal plants and food in tropical natural forests*** *Students are expected to be able to explain sustainable techniques to collect and estimate the potential of medicinal plants and food in tropical natural forests through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well asskill and correctness of analysis which accounts for for 10%of the final score of this course.* 8. ***Development of medicinal plants and food conservation based on bioregion in several forest areas*** *Students are expected to be able to explain the concept of medicinal plants and food development through domestication and medicinal plants cultivation based on bioregional resources through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts forfor 10% of the final score of this course.* 9. ***Overview of the main groups of bioactive ingredients in medicinal plants and medicinal plant extraction techniques*** *Students are expected to be able to explain the characteristics of groups of bioactive ingredients in medicinal plants through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* 10. ***Medicinal plants post-harvest technology*** *Students are expected to be able to understand and explain the post-harvest technology (drying and storage) and extraction techniques for medicinal plants through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 10% of the final score of this course.*

Module designation	*Tropical Forest Medicinal Plant and Food (KSH1333)*
	11. Government policy on research of "jamu" (Indonesian herbal medicines) *Students are expected to be able to understand and explain the legislations related to "jamu" and the Regulation of Health Minister of Republic of Indonesia Number 003/MENKES/PER/I/2010 through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* ***12. The process of testing the benefits or efficacy of medicinal plants into standardized "jamu" and phytopharmaceuticals*** *Students are expected to be able to explain the procedures to test the benefits or efficacy and stages to make the formula of standardized traditional medicines and phytopharmaceuticals through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 10% of the final score of this course.* ***13. Revitalization of Family Medicinal Plants Conservation Villages (Kampung Konservasi TOGA)*** *Students are expected to be able to explain the functions, benefits, and strategy of development of Kampung Konservasi TOGA to maintaining the health of Indonesian families as well as families as actors in medicinal plants conservation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of analysis which accounts for for 5% of the final score of this course.*
Examination forms	*Written examination and practicum examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	*1. Akarele, O. 1991. Proposals for International Collaboration, in: O. Akerele, V. Heywood and H. Synge (eds) Conservationof Medicinal Plants. Cambridge University Press. Cambridge. Pp. 359-362* *2. Cunningham, A.B. 1993. Ethics, Ethnobiological Research and Biodiversity. WWF. Meyrin, Switzerland.* *3. IUCN, UNEP and WWF. 1991. Caring for the Earth, A Strategy for Sustainable Living. Switzerland.* *4. Klemm, C. 1990. Wild Plant Conservation and the Law. IUCN.* *5. Lokubandara, W. J. M. 1991. Policies and Organisation for Medicinal Plant Conservation in Sri Lanka. In: O. Akerele, V. Heywood and H. Synge (eds) Conservationof Medicinal Plants. Cambridge University Press. Cambridge. Pp. 241-248* *6. Mathe, 1988. An Ecological Approach to Medicinal Plant Introduction. In: Craker, L.E. and Simon, J.E. (eds) Herbs, Spices, and Medicinal Plants: Recent Advances in Botany, Horticulture, and Pharmacology, Volume 3. The Oryx Press. Phoenix. USA. Pp. 176-198* *7. McNeely, J. A. and Thorsell, J. W. 1991. Enhancingthe Role of Protected Areas in Conserving Medicinal Plants. In: O. Akerele, V. Heywood and H. Synge (eds) Conservationof Medicinal Plants. Cambridge University Press. Cambridge. Pp. 213-228* *8. Nor, S. M., Kadir, A. A., Shaari, K. and Jantan, I. 1995. Medicinal Products drom the Tropical Rainforests of the Far East. In: Zakri,*

Module designation	*Tropical Forest Medicinal Plant and Food (KSH1333)*
	A.H. (ed.) Prospects in Biodiversity Prospecting. Genetics Society of Malaysia. Kuala Lumpur. 5: 95-105. *9. Peters, C. M. 1995. Pemungutan Secara Lestari Sumberdaya Tumbuhan Non-Kayudalam Hutan Tropis Basah. (Translated). Biodiversity Support Program, WWFConsortium, TNC and WRI.* *10. Plotkin, M. J. 1991. Traditional Knowledge of Medicinal Plants-the Search for New Jungle Medicines. In: O. Akerele, V. Heywood and H. Synge (eds) Conservation of Medicinal Plants. Cambridge University Press. Cambridge. Pp. 55-63* *11. Principe, P. P. 1989. The Economics significance of plants and their constituents as drugs, in: H. Wegner, H. Hikino and N.R. Farnsworth (eds.) Economic and Medicinal Plant Research, Volume 3. Academic Press, London, UK. Pp. 1-17* *12. Synge, H. dan V. Heywood. 1991. Information Systems and Databases for the Conservationof Medicinal Plants. In: O. Akerele, V. Heywood and H. Synge (Eds) Conservationof Medicinal Plants. Cambridge University Press. Cambridge. Pp. 148-164* *13. WHO, IUCN, and WWF. 1993. Guidelines onthe Conservationof Medicinal Plants. IUCN. Gland, Switzerland.* *14. Muhtaman, D. R., and E. A. M. Zuhud. 1997. Akses Pemanfaatan Sumberdaya Keanekaragaman Hayati Indonesia. FAHUTAN IPB – LATIN. Bogor.* *15. Zuhud, E. A. M. and Haryanto (Ed). 1994. Pelestarian Pemanfaatan Keanekaragaman Tumbuhan Obat Hutan Tropika Indonesia. FAHUTAN IPB – LATIN. Bogor*

Environmental Management Instruments (KSH1303)

Module designation	*Environmental Management Instruments (KSH1303)*
Semester(s) in which the module is taught	*6*
Person responsible for the module	*Dr. Ir. Nyoto Santoso, MS*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course*
Teaching methods	*Lecturer session*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment orhomework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	*Students know, understand and can plan/implement Certification and Assessment Techniques, as well as Sustainable Environmental Management Implementation Strategies.*
Course description	*This course explains the scope of "Environmental Management Instruments", Background and History of Sustainable Environmental Management, Definition and Scope of 12 Environmental Management Instruments (Indonesia Law No.32 of 2009), Environmental Damage and Environmental Recovery, Principles of Sustainability of Environmental Management, Criteria and Indicators of Sustainable Resource Management, Certification and Environmental Management Sustainability Assessment Techniques (ISO, PHPL, FSC, ISPO, RSPO, ICMM, IFC, Bonsucro, SAI, ISCC), and Implementation Strategies for Sustainable Environmental Management.*

Module designation	*Environmental Management Instruments (KSH1303)*
Content	1. *Introduction* *Introduction to the lecture, Lecture contract, Outline of the lecture, Background, Definition, Purpose, Object of Study, Component or Scope, Relation with Other Sciences, Importance in Sustainable Resource/Environment Management* 2. *Environmental Management Instruments as Policy* *Explanation 12 Environmental Management Instruments which include: Strategic Environmental Assessment, Spatial Planning, Environmental Quality Standard, Environmental Damage Standard Criteria, Environmental Impact Analysis, Environmental Management Efforts (UKL) and Environmental Monitoring Efforts (UPL), Environmental Licensing, Environmental Economic Instruments, Environment-Based Legislation, Environment-Based Budget, Environmental Risk Analysis, and Environmental Audit* 3. *Project Stages and Environmental Permitting Mechanism* *Baseline Survey, Project Feasibility Study, Activity Stages and Activity Plan, Amdal & RKL/RPL, UKL-UPL, Environmental Permit* 4. *Environmental damage and loss value analysis* *Definition of Environmental Damage, environmental damage assessment and Environmental Loss Value, Environmental Recovery Analysis* 5. *Principles and Criteria for Sustainable Environmental Management Indicators in Forestry and Plantation Sector* *Principles, Criteria and indicators of Sustainable Environmental Management in Forest Management (PHPL, SVLK, FSC). Principles, Criteria and indicators of Sustainable Environmental Management in Oil Palm Plantation (ISPO, RSPO)* 6. *Principles and Criteria for Indicators of Sustainable Environmental Management in the Mining Sector* *Principles, Criteria and indicators of Sustainable Environmental Management in Mineral and Coal Mining. Principles, Criteria and indicators of Sustainable Environmental Management in Oil and Gas Mining* 7. *Environmental Management Sustainability Certification and Assessment Techniques (PHPL, FSC, ISPO, RSPO, ICMM, IFC, Bonsucro, SAI, ISCC)* *Purpose, Benefits of Certification, Certification Mechanism and Implementation (Mandatory, Voluntary), Environmental Management Certification (Assessor, Certification Body, Complain and Settlement Mechanism), Environmental Management Sustainability Assessment Techniques (case example: ISPO and RSPO; PHPL and Ecolabeling)* 8. *Sustainable Environmental Management Implementation Strategy* *Understand prerequisites (vision, mission, goals, programs, activities), Equalize perception and internal commitment, Preparation of Information, Human Resources and Organizational Data, Carrying out management and monitoring activities in the field, Internal Audit (1,2,3 depending on readiness), Certification (invite Certification Body, Pre-assessment-final assessment-certificate)*
Examination forms	*Written examination*

Module designation	*Environmental Management Instruments (KSH1303)*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	*1. Undang-Undang Nomor 32 tahun 2009 ttg Perlindungan dan Pengelolaan Lingkungan Hidup* *2. Undang-Undang Nomor 41 tahun 1999 tentang Kehutanan* *3. Undang-Undang Nomor 5 tahun 1990 ttg Konservasi kehati dan Ekosistemnya* *4. Undang Undang Nomor 26 tahun 2007 tentang Rencana Tataruang* *5. Perdirjen KSDAE No. P.5/KSDAE/SET/KUM.1/9/2017 tentang Petunjuk Teknis Penentuan ABKT* *6. HCVRN, 2013. Common Guidance for the Identification of HCV* *7. HCVRN. 2018. Guidance for using the HCV-HCSA assessment report template.* *8. RSPO. 2013. Principe and Criteria for the Production of Sustainable Palm Oi* *9. Peraturan Presiden Nomor 44 tahun 2020. Sistem Sertifikasi Perkebunan Kelapa Sawit Berkelanjutan Indonesia.* *10. Permen LHK.Nomor 21 tahun 2020. Penilaian Kinerja Pengelolaan Hutan Produksi Lestari dan Verifikasi Legalitas Kayu pada Pemegang Izin, Hak Pengelolaan, Hutan Hak, atau Pemegang Legalitas Pemanfaatan Hasil Hutan Kayu* *11. FSC. 2022. Pedoman FSC Forest Management* *12. FSC-STD-RAP-IDN-01-2022 Hutan Tanaman_Standar Pengelolaan Hutan FSC Bagi Petani-Hutan Di Indonesia* *13. FSC. 2022. Digital Guidebook Pengenalan Kebijakan FSC dan Sertifikasi FSC Forest Management* *14. FSC. 2022. Standar Pengelolaan Hutan Nasional FSC untuk Indonesia (Terjemahan dari FSC National Forest Stewardship Standard of Indonesia, FSC-STD-IDN-02.1-2020 EN)* *15. ICMM. 2005. Good Practice Guidance for Mining and Biodiversity.* *16. ICMM. 2015. Sustainable Development Framework: ICMM Principles* *17. Redi, A.A.N.P & Putra., I Nyoman Mardika (2021). ISO 9001:2015 Pengantar Standar Manajemen Mutu. Website Magister Teknik Industri Bina Nusantara.* *18. https://www.iso.org/iso-9001-quality-management.html* *19. https://asq.org/quality-resources/iso-9001* *20. Hinsch, Martin. ISO 9001: 2015 for Everyday Operations: All Facts–Short, Concise and Understandable. Springer, 2019.* *21. Phillips, Ann W. ISO 9001: 2015 internal audits made easy: tools, techniques, and step-by-step guidelines for successful internal audits. Quality Press, 2015.* *22. Gaspersz, Vincent. "All-in-one Bundle of ISO 9001, ISO 14001, OHSAS 18001, ISO 22000, ISO 26000, ISO 28000, ISO 31000, ISO 13053-1, ISO 19011." Bogor: Tri-Al-Bros Publishing (2013).* *23. https://www.qualitygurus.com/seven-quality-management-principles/*

Protected Areas Planning (KSH1324)

Module designation	*Protected Areas Planning (KSH1324)*
Semester(s) in which the module is taught	*6*
Person responsible for the module	*Prof. Dr. Ir. Sambas Basuni, M.S.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecture session, discussion and Project-Based Learning (PBL)*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to plan and design the management of protected area within the context of landscape, wild animal, plant diversity, ecosystem services, nature recreation, and ecotourism.* 2. *Students acquire ability to implement interdisciplinary approach in the management of protected area, wild animal, plant diversity, ecosystem services, nature recreation, and ecotourism.*
Content	*This course is consisted of 8 topics, namely:* **1. *Introduction*** *Students are expected to be able to correctly explain the definition and scope of conservation planning in the context of regional management and development through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 5% of the final score of this course.* **2. *Review on Protected Area planning policy*** *Students are expected to be able to correctly explain the definition and scope of Protected Area planning in the context of regional management and development through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* **3. *Theoretical basis and conceptual framework of Protected Area planning*** *Students are expected to be able to explain the theoretical basis of Protected Area planning holistically, from the perspective of either ecological, social, cultural, and economic aspect which is important for Protected Area planning through this topic.*

Module designation	*Protected Areas Planning (KSH1324)*
	Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course. 3. ***Benefits of Protected Area for regional development*** *Students are expected to be able to explain the ecological, social, cultural, and economic benefits of Protected Area and its biodiversity and ecosystem in the context of regional developmentthrough this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.* 4. ***Instruments of Protected Area planning*** *Students are expected to be able to explain and implement the use of variety of instruments in Protected Area planning through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.* 5. ***Allocation and establishment of Protected Area*** *Students are expected to be able to explain the definition of criteria and indicators to establish a Protected Area, and their implementation through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 20% of the final score of this course.* 6. ***Performance criteria and indicators of Protected Area management*** *Students are expected to be able to explain the definition of performance criteria and indicators of Protected Area management, and methods of their formulation through this topic.Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.* 7. ***Case study and capita selecta*** *Students are expected to be able to explain the definition of performance criteria and indicators of Protected Area management, and methods of their formulation through this topic.Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 15% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	1. *Ayala, F. J and J. W. Valentine. 1979. Evolving: the theory and processes of organic evolution. The Benyamin/Cummings Publ. Co., Inc. London.* 2. *Avers, C. J. 1974. Evolution. Harper & Row Publ. London.* 3. *Borrini-Feyerabend, M. G., Farvar, T., Nguinguiri, J. C and Ndangang, V. A. 2000. Co-management of Natural Resources: Organising, Negotiatingand Learning-by-Doing. IUCN-GTZ.* 4. *Brown, L. R. 2000. Eco-Economy: Building an Economy for the Earth. W. W. Norton & Co., New York.* 5. *Eghenter, C., Sellato, B. and G. S. Devung. 2003. Social Science Research and Conservation Management in the Interior of Borneo: Unravelling past andpresent interactions of people and forests.*

Module designation	*Protected Areas Planning (KSH1324)*
	CIFOR, WWF Indonesia, UNESCO and Ford Foundation. 6. *Groenendijk, L. 2003. Planningand Management Tools. ITC, Enschede. Netherland.* 7. *Hengeveld, R. 1990. Dynamic Biogeography. Cambridge Univ. Press.* 8. *Kartawinata, K. and A. J. Whitten.1991. Krisis Biologi: hilangnya keanekaragaman hayati. Yayasan Obor Indonesia. Jakarta.* 9. *Magurran, A. E. 1983. Ecological Diversity and Its Measurement. Croom Helm. London. Sydney.* 10. *McNeely, J. A. 1988. Economics and Biological Diversity: Developing and Using Economic Incentives to Conserve Biological Resource. IUCN. Gland, Switzerland.* 11. *McNeely, J. A., Miller, K. R., Reid, W. V., Mittermeier, R. A and T. B. Werner. 1990. Conserving the World's Biological Diversity. World Bank, WRI, IUCN, Conservation International, WWF.* 12. *Mackinnon, J., Mackinnon, K., Child, Gand Thorsell, J. 1990. Pengelolaan Kawasan Dilindungi di Daerah Tropik(Translated). Gadjah Mada University Press.* 13. *Meffe, G. K. and C. R. Carroll. 1994. Principles of Conservation Biology. Sinauer Associates, Inc. Sunderland, Massachusetts.* 14. *Shafer, C. L. 1990. Island Theory and Conservation Practice. Smithsonian Institution Press. Washingtonand London.* 15. *Soule, M. E. (Ed.), 1987. Viable Population for Conservation. Cambridge University Press. Cambridge.* 16. *Wollenberg, E., Edmunds, D. and L. Buck. 2001. Mengantisipasi Perubahan Skenario: Sebagai Sarana Pengelolaan Hutan Secara Adaptif. CIFOR.*

Wildlife Management (KSH1316)

Module designation	*Wildlife Management (KSH1316)*
Semester(s) in which the module is taught	*6*
Person responsible for the module	*Dr. Ir. Jarwadi Budi Hernowo, M.Sc.F.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecture session and discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 1 hour per week* *Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week* *Private in-depth study (literature reading): 1 hour per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to analyze the benefits and measure the potential of wildlife.* 2. *Students acquire ability to plan wildlife management.* 3. *Students acquire ability to manage the utilization of wildlife.* 4. *Students acquire ability to mobilize resources in the management of wildlife.* 5. *Students acquire ability to manage human-wildlife conflicts.* 6. *Students acquire ability to implement interdisciplinary approach in the management of wildlife.*
Content	*This course is consisted of 6 topics, namely:* **1. *Wildlife management*** *Students are expected to be able to explain the scope and importance of wildlife management through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* **2. *Management principles*** *Students are expected to be able to explain and implement the wildlife management principles through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.* **3. *Population management*** *Students are expected to be able to explain and implement the wildlife population management through this topic. Assessment*

Module designation	*Wildlife Management (KSH1316)*
	indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of population management which accounts for for 25% of the final score of this course. ***4. Habitat management*** *Students are expected to be able to explain and implement the wildlife habitat management through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of habitat management which accounts for for 25% of the final score of this course.* ***5. Forms of wildlife management*** *Students are expected to be able to explain and implement some examples of wildlife management through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of in implementing some examples of wildlife management which accounts for for 20% of the final score of this course.* ***6. Dealing with wildlife disturbance*** *Students are expected to be able to explain wildlife disturbances. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 10% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	1. *Alikodra, H. S. 1990. Pengelolaan Satwaliar Jilid I. Departemen Pendidikandan Kebudayaan Direktorat Jenderal Pendidikan Tinggi. Pusat Antar Universitas Ilmu Hayati. Institut Pertanian Bogor. Bogor.* 2. *Brower, J. E. and J. H. Zar. 1977. Field and Laboratory Methods for General Ecology. Wm. C. Dubuque, Brown Company Publishers. Iowa.* 3. *Dunn, E. H., Bart, J., Collins, B. T., Craig, B., Dale, B., Downes, C. M., Francis, S. M., Woodley, S. and P. Zorn. 2006. Monitoring bird population in small geographic areas. Canadian Wildlife Service. Ottawa.* 4. *Heyer, W. R., Donnelly, M. A., McDiarmid, R. W., Lee-Ann, C. H. and M. S. Foster. 1994. Measuringand Monitoring Biological Diversity: Standard Methods for Amphibians. Smithsonian.* 5. *Krebs, C. J. 1978. Ecology: The Experimental Analysis of Distribution and Abundance. The University of British Columbia.* 6. *Kusmana, C. 1997. Metode Survey Vegetasi. IPB Press. Bogor.* 7. *Kusrini, M. D. 2008. Pedoman Penelitian dan Survey Amfibi di Alam. Fakultas Kehutanan IPB. Bogor.* 8. *Mustari, A. H. 2011. Metode Survey dan Inventarisasi Mamalia. Institut Pertanian Bogor. Bogor.* 9. *Ripley, T. H. 1980. Planning Wildlife Management Investigations and Projects. US Departement of Agriculture, Forest Service. West Virginia.* 10. *Rosenzweig, M. L. 1995. Species Diversity in Space and Time. Cambridge University Press. Cambridge.* 11. *Tarumingkeng, R. C. 1994. Dinamika Populasi: Kajian Ekologi Kuantitatif. Pustaka Sinar Harapan. Jakarta.*

Urban Forest Conservation (KSH1345)

Module designation	*Urban Forest Conservation (KSH1345)*
Semester(s) in which the module is taught	*6*
Person responsible for the module	*Dr. Ir. Rachmad Hermawan, M.Sc.F*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecture session and discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Total Workload* *Contact hour(s) (lecture session): 2 hours per week* *Structured academic activities (doing in-class/take home assignment or homework): 2 hours per week* *Private in-depth study (literature reading): 2 hours per week*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Students acquire ability to analyze the benefits and measure the potential of urban forests.* 2. *Students acquire ability to plant urban forest within landscape context.* 3. *Students acquire ability to manage urban forests.*
Content	*This course is consisted of 10 topics, namely:* **1. *Urban environmental pollution*** *Students are expected to be able to elaborate the urban environment quality condition through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.* **2. *Life Quality Index and human activities*** *Students are expected to be able to explain the human behaviors which can cause the decrease of Life Quality Index in urban areas through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.* **3. *Life Quality Index and human behaviors in rural and urban areas*** *Students are expected to be able to explain Life Quality Index in urban areas through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which ccounts for 7.5% of the final score of this course.* **4. *Development design and activities*** *Students are expected to be able to elaborate the efforts to*

Module designation	*Urban Forest Conservation (KSH1345)*
	develop environmentally friendly cities through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course. ***5. Strengths and weaknesses of open green space and urban forest*** *Students are expected to be able to analyze the strengths and weaknesses of open green spaces, city parks, and urban forest through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.* ***6. Definition of urban forest according to experts*** *Students are expected to be able to identify several definitions of urban forest and to explain the strengths and weaknesses of each definition through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.* ***7. Functions of urban forest*** *Students are expected to be able to elaborate several functions of urban forest through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.* ***8. Determination of urban forest area*** *Students are expected to be able to measure and determine the minimum area required for urban forest through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of measurement which accounts for for 15% of the final score of this course.* ***9. Types and forms of urban forest*** *Students are expected to be able to explain the types and forms of urban forest through this topic. Assessment indicator for this topic is the completeness and correctness of explanation which accounts for for 7.5% of the final score of this course.* ***10. Designing urban forest*** *Students are expected to be able to design an example of urban forest according to site characteristics through this topic. Assessment indicator for this topic is the completeness and correctness of explanation as well as skill and correctness of design which accounts for for 25% of the final score of this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	*1. Adam G, Hermawan R, Prasetyo LB. 2017. Use of Geographical Information System (GIS) and remote sensing in development of urban forest types and shapes in Tangerang Selatan City. IOP Conference Series: Earth and Environmental Science. 54 (012051).* *2. Al-Reza DD, Hermawan R, Prasetyo LB. 2017. Potensi cadangan karbon di atas permukaan tanah di Taman Hutan Raya Pancoran Mas, Depok. Media Konserv. 22 (1): 71-78.* *3. Arlita T, Yanti LA, Farida A, Umam AH, Anhar A, Maimunah S, Samek JH, Muslih AM. 2022. Total carbon stock in Langsa Urban*

Module designation	*Urban Forest Conservation (KSH1345)*
	Forest, Langsa City, Aceh Province. IOP Conf. Series: Earth and Environmental Science. 951(2022) 012092. doi:10.1088/1755-1315/951/1/012092. 4. *Badrulhisham N, Othman N. 2016. Knowledge in tree pruning for sustainable practices in urban setting: improving our quality of life. Procedia - Social and Behavioral Sciences 234 (2016) 210 – 217.* 5. *Badrulhisham N, Othman N. 2020. Assessing pruning knowledge towards effective tree maintenance: A case study of four Local Authorities in Malaysia. Environment-Behaviour Proceedings Journal. 5(13): 223–229. https://doi.org/10.21834/e-bpj.v5i13.2054* 6. *Baeumler A, Vasquez EI, Mehndiratta S. 2012. Sustainable low-carbon cities in China: why it matters and what can be done. Di dalam: Baeumler A, Vasquez EI, Mehndiratta S, editor. Sustainable Low-Carbon City Development in China. Washington: The World Bank* 7. *Dahlan, E. N. 1992. Hutan Kota Untuk Pengelolaan Lingkungan Hidup di Perkotaan. APHI. Jakarta.* 8. *Dahlan, A. 1992. Hutan Kotauntuk Pengelolaan dan Peningkatan Kualitas Lingkungan Hidup. IPB-APHL. Jakarta.* 9. *Dahlan, E. N. 2007. Kota Hijau Hutan Kota. IPB Press. Bogor.* 10. *Danner, M., Locherer, M., Hank, T. and K. Richter. 2015. Measuring Leaf Area Index (LAI) with the LI-Cor LAI 2200C or LAI-2200 (+2200Clear Kit). Enmap Consortium. Postdam.* 11. *Fahruddin. 2010. Bioteknologi Lingkungan. Alfabeta. Bandung.* 12. *Fandeli, C. M. 2009. Prinsip-prinsip Dasar Mengkonservasi Lanskap. Gadjah Mada University Press. Yogyakarta.* 13. *Grey, G. W. and F.I. Deneke, 1978. Urban Forestry. John Willey and Sons.* 14. *Handoko, Hidayati, R., June, T. and A. N. Nasir. 1994. Klimatologi Dasar. Pustaka Jaya. Bogor* 15. *Miller, R. W. 1998. Urban Forestry: Planningand Managing Urban Greenspaces. Prentice Hall. Englewood.* 16. *Nazaruddin. 1996. Penghijauan Kota. Penebar Swadaya. Jakarta.* 17. *Noer, I. S. 2004. Bioindikator Sebagai Alat Untuk Menengarai Adanya Pencemaran Udara. Forum Komunikasi Lingkungan III. Bandung.* 18. *Yusniawati. 2003. Polusi Udara di Kota-kota Besar Dunia. Universitas Sumatera Utara. Medan.*

Conservation Bussiness (KSH1325)

Module designation	*Conservation Business (KSH1325)*
Semester(s) in which the module is taught	*6*
Person responsible for the module	*Dr. Ir. Tutut Sunarminto, MS*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecture session and discussion*
Workload	*Total Workload* *Contact hour(s) (lecture session): 2 hours per week* *Structured academic activities (doing in-class/take home assignments or homework): 2 hours per week* *Private in-depth study (literature reading): 2 hours per week*
Credit points	*2 SCH x 1.44 = 2.88 ECTS*
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	*Students gain knowledge and understanding of conservation business in the context of business development in the form of goods products, namely non-timber forest products as well as those in the form of ecotourism and other ecosystem/environmental services.* *Students gain knowledge and understanding in building a conservation business and its various challenges by considering all existing factors, including the availability of forest resources, laws and regulations, stakeholders in the conservation sector, and community readiness.*
Course description	*This course will provide mastery of business theory and practice in the field of biological resource conservation and ecotourism which includes: business concepts and business ecosystems; entrepreneurial spirit; forms of business entities and business scale; conservation business conditions; conservation business opportunities and risks; strategies and techniques for building conservation businesses; conservation business planning; conservation business management; best experience of conservation business practices; and evaluation of conservation business success.*
Content	***1. Introduction to Conservation Business*** *Students are expected to be able to explain correctly the meaning and scope of conservation business as part of efforts to solve forest resource conservation problems by studying various opportunities and challenges of business development in producing to marketing products in the form of non-timber forest products and ecotourism and other ecosystem / environmental services. The assessment indicator of this course is the completeness and correctness of the explanation which is worth 5% of the final grade of this course.* ***2. Building a Business*** *Students are expected to be able to understand and explain correctly the business context, manage and organize business enterprises. The*

Module designation	*Conservation Business (KSH1325)*
	assessment indicator for this topic is the completeness and correctness of the explanation which accounts for 7.5% of the final grade for this course. ***3. Flora business potential, opportunities and challenges*** *Students are expected to be able to understand and explain correctly the abundance of flora in Indonesia, utilization of flora as input and output, development and challenges of flora business. The assessment indicator for this topic is the completeness and correctness of the explanation which accounts for 7.5% of the final grade for this course.* ***4. Fauna business potential, opportunities and challenges*** *Students are expected to be able to understand and explain correctly the abundance of fauna in Indonesia, utilization of fauna as input and output, development and challenges of fauna business. The assessment indicator for this topic is the completeness and correctness of the explanation which accounts for 7.5% of the final grade for this course.* ***5. Environmental services business potential, opportunities and challenges*** *Students are expected to be able to understand and explain correctly environmental services as a product of conservation, utilization of environmental services with economic value along with opportunities and challenges of environmental services business. The assessment indicator for this topic is the completeness and correctness of the explanation which accounts for 7.5% of the final grade for this course.* ***6. Ecotourism business potential, opportunities and challenges*** *Students are expected to be able to understand and explain correctly ecotourism in Protected Areas, ecotourism business development, the economic value of ecotourism along with ecotourism business opportunities and challenges. The assessment indicator for this topic is the completeness and correctness of the explanation which accounts for 7.5% of the final grade for this course.* ***7. Business ethics*** *Students are expected to be able to understand and explain correctly ethical issues in business, the application of ethics in organizing business companies, social responsibility, and the application of ethics in building business products. The assessment indicator for this topic is the completeness and correctness of the explanation which accounts for 5% of the final grade for this course.* ***8. Preparation of forest resources for conservation business development*** *Students are expected to be able to understand and explain correctly the condition of forest resources in Protected Areas, forest resource management in Protected Areas, problems and achievements of forest resource management in Protected Areas, and build forest resource management as the core of conservation business development.* *The assessment indicator for this topic is the completeness and correctness of the explanation which accounts for 7.5% of the final grade for this course.* ***9. Protected Area management in conservation business development*** *Students are expected to be able to understand and explain correctly the current management of Protected Areas, the objectives of Protected Area management, the problems and achievements of Protected Area management, and building Protected Area management for conservation business development.* *The assessment indicator for this topic is the completeness and correctness of the explanation which accounts for 5% of the final grade for this course.* ***10. The role of stakeholders in conservation business*** *Students are expected to be able to understand and correctly explain stakeholders in Protected Area management, the role of stakeholders in conservation business, and strategies for optimizing the role of stakeholders in conservation business. The assessment indicator for this topic is the*

Module designation	*Conservation Business (KSH1325)*
	completeness and correctness of the explanation which accounts for 7.5% of the final grade for this course. ***11. Institutional readiness in conservation business development*** *Students are expected to be able to understand and explain correctly the conservation business development laws and regulations, identify the problems of laws and regulations and institutions in conservation business development, and institutional strategies in conservation business development. The assessment indicator for this topic is the completeness and correctness of the explanation which accounts for 7.5% of the final grade for this course.* ***12. Community readiness in conservation business*** *Students are expected to be able to understand and explain correctly the community's knowledge of conservation, the community's knowledge and skills of business, conservation business by the community, and problems and solutions for conservation business development in the community. The assessment indicator for this topic is the completeness and correctness of the explanation which accounts for 7.5% of the final grade for this course.* ***13. Marketing in the conservation business*** *Students are expected to be able to understand and explain correctly the role of marketing in conservation business, concepts, strategies and marketing costs. The assessment indicator for this topic is the completeness and correctness of the explanation which accounts for 7.5% of the final grade for this course.* ***14. Conservation Business Planning and Implementation*** *Students are expected to be able to understand and explain correctly how to develop a conservation business plan, assess the feasibility of a conservation business, run a conservation business, and assess the profit and loss of a conservation business. The assessment indicator for this topic is the completeness and correctness of the explanation which accounts for 10% of the final grade for this course.*
Examination forms	*Written examination*
Study and examination requirements	*Acquire a final score that qualifies for letter grade D at the minimum; Mid-semester Examination : 30%, Final-semester Examination : 30%, Assessment method : 25%, Online Study : 15%*
Reading list	***1.*** *Goeldner, C. R., and J. R. B. Ritchie. 2009. Tourism: Principles, Practices, Philosophies 11th Edition. Hoboken, NJ: John Wiley & Sons.* ***2.*** *HCVRN. 2017. General Guidelines for the Identification of High Conservation Values. www.hcvnetwork.org* ***3.*** *James P. Kimmins. 2004. Forest Ecology: a foundation for sustainable forest management and environmental ethics in forestry, 3rd Edit. Prentice Hall, Upper Saddle River, NJ, USA.* ***4.*** *[PRI] Government of the Republic of Indonesia. 2008. Government Regulation No. 6 Year 2007 jo. Government Regulation No. 3 of 2008 on Forest Planning and Preparation of Forest Management Plans, and Forest Utilization. State Secretariat - Jakarta.* ***5.*** *[PRI] Government of the Republic of Indonesia. 2009. Law No. 32 Year 2009 on Environmental Protection and Management. State Secretariat - Jakarta.* ***6.*** *[Government of the Republic of Indonesia. 2017. Government Regulation No. 46 Year 2017 on Environmental Services Instrument. State Secretariat - Jakarta.* ***7.*** *[PRI] Government of the Republic of Indonesia. 2007. Regulation of the Minister of Forestry Number: P.35/Minhut-ii/2007 concerning Non-Timber Forest Products. State Secretariat - Jakarta.*

Module designation	*Conservation Business (KSH1325)*
	8. *Sacande, M. & Parfondry, M. 2018. Non-timber forest products: from restoration to income generation. FAO* ***9.*** *Tinelle D. Bustam and Taylor Stein. c2022. Principles For Developing Your Ecotourism Business Plan. [accessed september 2022]. https://edis.ifas.ufl.edu/publication/FR299* ***10.*** *UNWTO. 2020. G20 Bali Guidelines For Strengthening Communities And MSMEs As Tourism Transformation Agents. G20 Indonesia 2022. UNWTO.* ***11.*** *UNWTO. 2023. Understanding and Quantifying Mountain Tourism. The Food and Agriculture Organization of the United Nations (FAO), Rome, Italy, and the World Tourism Organization (UNWTO), Madrid, Spain.*

Thematic Services Learning Program (IPB400)

Module designation	*Thematic Services Learning Program (IPB400)*
Semester(s) in which the module is taught	*6*
Person responsible for the module	*Ninuk Purnaningsih*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory Course*
Teaching methods	*Live in the community and work with thematics services learning program partners, super-visioning by lecturer, discussion*
Teaching media and tools	*Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)*
Workload	*Lecture session (provisioning) : 20.5 hours* *Practice field : 7 hours x 21 days = 147 hours* *Self-learning : 1.5 hours x 21 days = 31.5 hours* *TOTAL : 199 hours*
Credit points	*4 SCH x 1.44 = 5.76 ECTS*
Required and recommended prerequisites for joining the module	*Forestry Field Practices, had a minimum 2.00 GPA and completed at least 108 SCH*
Module objectives/intended learning outcomes	1. *Increase a sense of care and empathy for the problems faced in the community, as well as an understanding of customs and problems faced in the community, as well as an understanding of the customs and culture of the community as well as national insight* 2. *Able to identify, plan, implement, and evaluate community empowerment programs in the fields of agriculture in a broad sense, agriculture-based industries, and the environment in an integrated in an integrated manner, both multidisciplinary and interdisciplinary between fields of science at IPB;* 3. *Caring and highly committed, skillful in communicating, and collaborating between fields of science to contribute in overcoming cooperation between fields of science to contribute in overcoming problems in society; and* 4. *Able to initiate and develop a network of cooperation with stakeholders in problem solving efforts to overcome problems in society; and stakeholders in problem solving efforts to fulfill the needs in the dynamics of actual life in society*
Course description	*A form of education by providing learning experience for students to live in the middle of community outside the campus, which directly together with the community to identify and deal with agricultural problems in a broad sense and the environment and other development problems faced in the region.*
Examination forms	*Written examination, program workshop (loka karya), logbook, mass media publication, video, program documentation.*
Study and examination requirements	*Attandance (17%), Inisiative (17%), Program Implementation (17%), Partnership (17%), Peer Assessment (17%), Written examination (15%)*
Reading list	*NA (Not Applicable)*

Wildlife Management Practices (KSH1404)

Module designation	*Wildlife Management Practices (KSH404)*
Semester(s) in which the module is taught	*7*
Person responsible for the module	*Lecturer team*
Language	*Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecture, discussion, field practices, supervision, and presentation*
Teaching media and tools	*PowerPoint, textbooks, videos, films, drone, laboratory and field equipments*
Workload	*Total Workload:* *Learning hours = 135 hours* *Practice day = 30 days* *Lecture: 2 days* *Discussion: 1 day* *Presentation: 1 day* *Report writing: 4 days*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	*1. Plant Conservation* *2. Wildlife Management*
Module objectives/intended learning outcomes	*1. Recognize, know, and analyze elements of planning and management of wildlife (animals and plants) in the National Park;* *2. Presenting a series of observed data properly and correctly, analyzing the data obtained, and interpreting the results.* *3. Analyzing the planning and management aspects of wildlife concerning the management of the National Park comprehensively.* *4. Identify problems and formulate solutions to problems related to the planning and management of wildlife (wildlife and plants)* *5. Write the results of his practice into a report in a coherent, systematic manner, following scientific principles and writing ethics*
Course description	*This practical activity includes the implementation of wildlife (animal) management practices, namely animals and plants.* *Wildlife management practice provides insight and field experience to practical students regarding the in-situ management of wildlife populations. This activity includes collecting data on demographic parameters, habitat conditions, and wildlife behavior, analyzing, and synthesizing for wildlife management purposes.*

Module designation	*Wildlife Management Practices (KSH404)*
Content	***1. Wildlife (animal) management*** *1) History and Status of the area* *2) Wildlife management planning* *3) Wildlife management (species management, habitat management, population management)* *4) Wildlife Operational Plan/Annual Plan* *5) Management Facilities and Infrastructure* *6) Area Protection and Security* *7) Education and Research Services* *8) Human Resources* *9) Finance* ***2. Plant Conservation Management*** *The practice material for plant conservation aspects is divided into 2 (two) types: ex-situ and in-situ plant conservation. Aspects observed in the field of in-situ plant conservation include:* *1. Potential plants in an area* *2. Condition of rare/protected plant species* *3. Disturbance to plants* *4. Protection of plant species* *5. Extension of important plant species* *6. Regulatory policies related to plant conservation* *7. institutions in plant conservation* *8. Plant development research* *While the aspects observed in the field of ex-situ plant conservation include:* *1.Breeding Useful Plants* *2.Cultivation of Useful Plants Carried Out by the Community*
Examination forms	*Provisioning lecture test score (15%), supervision score (10%), attendance and activeness score (10%), score for presentation and discussion of practice results (25%), reporting score (20%), examination score (20%)*
Study and examination requirements	*Acquire a final score that qualifies for letter grade C at the minimum*
Reading list	*NA (Not Applicable)*

Practices of Protected Area Management, Ecotourism and Environmental Services (KSH1405)

Module designation	*Practice of Protected Area, Ecotourism, and Environmental Services Management (KSH1405)*
Semester(s) in which the module is taught	*7*
Person responsible for the module	*Lecturer team*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University*
Teaching methods	*Lecture and discussion session (provisioning lectures), practices in the field, supervision by lecturers and field supervisors, presentation and discussion of practice results*
Teaching media and tools	*Powerpoint, textbooks, videos, films, laboratory equipments (GPS, camera, surber), software of ArcGIS, Erdas, and GEE, PPE (Protective Personal Equipment), field guide, conservatian area (National Parks)*
Workload	*Total Workload* *Learning hours = 135 hours* *Practice day = 30 days*
Credit points	*3 SCH x 1.44 = 4.32 ECTS*
Required and recommended prerequisites for joining the module	*Subjects of Protected Area Planning, Environmental Spatial Analysis, Environmental Services, Enviromental Pollution and Impact Control*
Module objectives/intended learning outcomes	*Students are expected to be able to:* *1. Know and analyze elements of planning and management of Protected Areas, ecotourism, and environmental services in National Parks;* *2. Presenting a series of observed data properly and correctly, analyzing the data obtained and interpreting the results;* *3. Identify problems and try to formulate solutions to problems related to the planning and management of Protected Areas, ecotourism and environmental services* *4. Analyzing the aspects of planning and management of Protected Areas, ecotourism, and environmental services in relation to the management of National Parks in a comprehensive manner;* *5. Writing the results of the practice into a report that is a coherent, systematic manner, following scientific principles and writing ethics*
Course description	*The scope of practice consists of* *1) Field observation (seeing, taking notes, inventorying, experimenting/feeling) area management, ecotourism and environmental services;* *2) Identify problems in area management, ecotourism, and environmental services, biophysical potential including area services in the management of National Parks;*

Module designation	*Practice of Protected Area, Ecotourism, and Environmental Services Management (KSH1405)*
	3) Analysis and synthesis of various problems in area management, ecotourism and environmental services and formulate those related to the management of the National Park and its environment and the development of potential utilization; *4) Preparation of reports and presentations of practices activities.*
Content	*This practice is consisted of 6 topics, namely:* ***1. Protected Area Planning and Management*** *Students are expected to be able to explain theories, concepts, and the application of science and technology in the field of management in National Parks, which includes history and area planning, area management, human resources and cooperation, and financial support.* ***2. Analysis of Land Cover in Protected Areas*** *The condition of land cover is very dynamic, experiencing changes caused by many factors, both naturally (natural factors) and human activities (anthropogenic factors). This is no exception in Protected Areas. Students are expected to be able to examine changes in land cover in Protected Areas. This data and information can be used as an indicator of the success of area conservation management. In addition, this data can also be used as a basis for determining priority scales for area protection and as a basis for determining priority habitat restoration.* ***3) Management of Environmental Services Related to Water*** *One of the important regulatory services of forest ecosystems is their role in the hydrological cycle, controlling erosion and sedimentation in water bodies. Forest ecosystems that are still intact are expected to contribute to the quantity, quality, and community of water needed by humans and other living things. The government has regulated the use of water in Protected Areas through the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number P.18/Men-LHK/Setjen/KUM.1/4/2019 concerning Utilization of Water and Water Energy in Wildlife Reserves, National Parks, Forest Parks Raya, and Nature Tourism Park. The practice is directed so that students examine various mechanisms of cooperation in water use, efforts to maintain or increase water resources, analyze the condition of forest cover with the quantity and quality of water.* ***4) Forest Carbon Measurement*** *Forests are one of the agents that can control CO2 emissions through a process of absorption (sequestration) for the photosynthesis process, which is then stored in wood in the form of cellulose and hemicellulose which is called carbon stock. Trees are the main habitus that makes up a forest, which has advantages compared to other habitats (eg shrubs, lianas) in controlling carbon emissions, namely their long life span (years) and large biomass so that large amounts of carbon can be absorbed and stored. This practice is directed so that students can study various forest carbon management schemes in the field. In addition, students are also expected to be able to learn to predict forest carbon stocks.* *5)* ***Supply and Demand for Nature Recreation and Ecotourism-Nature and Environment Interpretation*** *Recreation is all activities carried out in spare time with the aim of returning to creativity (re-creation). Currently recreation is*

Module designation	*Practice of Protected Area, Ecotourism, and Environmental Services Management (KSH1405)*
	one of the basic human needs, especially in dealing with daily routines with all the busyness. While tourism is a travel activity carried out by someone with a specific purpose. To be able to build and develop a recreation and/or tourism area, knowledge and skills are needed to identify the tourism products to be offered and to whom these products are offered. This practice is carried out so that students can design tourism development in an area. Therefore they are expected to be able to identify the supply and demand conditions of tourism in an area. ***6) Nature Recreation and Ecotourism Support System-Interpretation of Nature and the Environment*** *The development of a tourist area does not only depend on the condition of supply and demand for tourism that is owned. Tourism development also requires a good institutional system so that this development can run well. Apart from that, tourism development will also involve various parties, apart from tourism area managers, to be able to support these development efforts. In this practice, students are expected to be able to identify and analyze a good tourism management institutional system. In addition, students are also expected to be able to identify and analyze various forms of stakeholder involvement in tourism development in an area.*
Examination forms	*Provisioning lecture test score (15%), supervision score (10%), attendance and activeness score (10%), score for presentation and discusion of practice results (25%), reporting score (20%), examination score (20%)*
Study and examination requirements	*Acquire a final score that qualifies for letter grade C at the minimum*
Reading list	***1.*** *Allen JC, Barnes DF. 1985. The Causes of Deforestation in Developing Countries. Annals of the Association of American Geographers, 75(2), 163–184. https://doi.org/10.1111/j.1467-8306.1985.tb00079.x* ***2.*** *Casson A. 1999. The Hesitant Boom : Indonesia ' s Oil Palm Sub-Sector in an Era of Economic Crisis and Political Change. 62(251), 1–75.* ***3.*** *de Groot RS, Matthew AW, Boumnas RMJ. 2002. A typologi for the classification, description and valuation of ecosystem functions, goods and services. Ecological Economics. 41: 393-408.Maxim, L., Spangenberg, J. H., & O'Connor, M. (2009). An analysis of risks for biodiversity under the DPSIR framework. Ecological Economics, 69(1), 12–23. https://doi.org/10.1016/j.ecolecon.2009.03.017* ***4.*** *[IPCC] Intergovernmental Panel on Climate Change. 2006. IPCC Guidelines for National Greenhouse Gas Inventories. IPCC National Greenhouse Gas Inventories Programme. IGES, Japan Kodoatie RJ. 2012. Tata Ruang Air Tanah. Yogyakarta: Penerbit ANDI.* ***5.*** *[KLHK] Kementerian Lingkungan Hidup dan Kehutanan. 2021. Indonesia Long-Term Strategy for Low Carbon and Climate Resilience 2050 (Indonesia LTS-LCCR 2050). Jakarta: Kementerian Lingkungan Hidup dan Kehutanan.* ***6.*** *[KRHTI 2008] Konsorsium Revisi HCV Toolkit Indonesia. 2008. Panduan Kawasan Bernilai Ekonomi Tinggi di Indonsia. Jakarta:*

Module designation	*Practice of Protected Area, Ecotourism, and Environmental Services Management (KSH1405)*

Tropenbos Internasional Indonesia.

7. *Maxim L, Spangenberg JH, O'Connor M. 2009. An analysis of risks for biodiversity under the DPSIR framework. Ecological Economics, 69(1), 12–23. https://doi.org/10.1016/j.ecolecon. 2009.03.017*
8. *[MEA] Millennium Ecosystem Assessment. 2005. Ecosystems and Human Well-being: Synthesis. Washington,DC: Island Press*
9. *Prasetyo LBP, Wibowo SA , Kartodihardjo H, Onny FT, Aryanto H, Onaji RS, Etiawan YS. 2008 . Land use and land-cover changes of Protected Area during transition to regional autonomy : Case study of Balairaja Wildlife Reserve in Riau Province , Indonesia. Tropics, 17(2).*
10. *Permenhut 2004] Peraturan Menteri Kehutanan Nomor P.14/Menhut-II/2004 tentang Tatacara Aforestasi dan Reforestasi Dalam Kerangka Mekanisme Pembangunan Bersih. 2004.Prasetyo, L. B. P., Ibowo, A. W., Artodihardjo, H. K., Onny, F. T., Aryanto, H., Onaji, R. S., & Etiawan, Y. S. (2008). Land use and land-cover changes of Protected Area during transition to regional autonomy : Case study of Balairaja Wildlife Reserve in Riau Province , Indonesia. Tropics, 17(2).*
11. *Samsoedin I, Wibowo A. 2012. Analisis potensi dan kontribusi pohon di perkotaan dalam menyerap gas rumah kaca. Studi kasus: Taman Kota Monumen Nasional, Jakarta. Jurnal Penelitian Sosial dan Ekonomi Kehutanan. 9 (1): 42–53.*
12. *Shahzad U, Riphah. 2015. Global warming: causes, effects and solutions. Durreesamin Journal 1(4).*
13. *[SNI] Standar Nasional Indonesia 7724. 2011. Pengukuran dan penghitungan cadangan karbon- Pengukuran lapangan untuk penaksiran cadangan karbon hutan (ground based forest carbon accounting). Jakarta: Badan Standardisasi Nasional.*
14. *Sunderlin, WD., Resosudarmo IAP. (2n.d.). Rates and Causes of Deforestatiob in Indonesia : Towards a Resolution of the Ambiguities (Vol. 62, Issue 9).*
15. *Syahrinudin. 2005. The potential of oil palm and forest plantations for carbon sequestration on degraded land in Indoensia. Ecology and Development Series. (28): 1-112.*
16. *[UU] Undang-undang No. 18 Tahun 2013 Tentang Pencegahan dan Pemberantasan Perusakan Hutan. 2013.*
17. *Wani SA, Asif M, Lone S, Showket A, Asif S. 2013. Global warming and its impact on environment. International Journal of Recent Scientific Research. 4 (4): 490- 494.*
18. *Wibowo A, Samsoedin I, Nurtjahjawilasa, Subarudi, Muttaqin Z. 2013. Petunjuk Praktis Menghitung Cadangan Karbon Hutan. Bogor: Pusat Penelitian dan Pengembangan Perubahan Iklim dan Kebijakan Badan Penelitian dan Pengembangan Kehutanan Kementerian Kehutanan, Republik Indonesia Kerjasama dengan United Nations Educational, Scientific and Cultural Otganization (UNESCO).*
19. *Wilson PJ. 2014. The Meaning of Tree. Arboriculture Association.*
20. *Zhang H, Wang K, Xu X, Song T, Xu Y, Zeng F. 2015. Biogeographical patterns of biomass allocation in leaves, stems and roots in China's forests. Scientific Report. 5(15997): 1-12.*

Colloqium (KSH1406)

Module designation	*Colloqium (KSH1406)*
Semester(s) in which the module is taught	*7 and more*
Person responsible for the module	*Dede Aulia Rahman, S.Hut, M.Si, Ph.D*
Language	*Bahasa Indonesia or English*
Relation to curriculum	*Compulsory Course*
Teaching methods	*Presentation, discussions*
Workload	*Preparation of research proposals equivalent to 3 to 4 hours per week in one semester or 4 to 5 hours a day for 2/3 months up to 17 working days*
Credit points	*1 SCH x 1.44 = 1.44 ECTS*
Required and recommended prerequisites for joining the module	*Has completed all courses, including Common Core Course (CCC), Fundamental Prodi (FP), Foundational Literacy (FL), Academic Core Course (ACC), In-Depth Prodi Course (IPC), Enrichment Course (EC), and Final Year Project (FYP: Forestry Field Practies; Thematic Services Learning Program; Wildlife Manaement Practies; Practies of Protected Area Management, Ecotourism and Environmental Sevices) with a total of 139 SCH*
Module objectives/intended learning outcomes	1. *Students are able to identify and analyze the latest research topics according to the research plan.* 2. *Students are able to determine the position of research to be carried out.* 3. *Provide an assessment of the readiness of each student participating in the colloquium course in making a relevant literature review related to the issues raised in the research proposal.* 4. *Providing a forum for students to practice making presentations and interacting with fellow academics in making argumentative accountability for their learning outcomes for one semester, as presented in the proposal papers written.*
Content	*This course is designed to allow students to interact with faculty and other students from the Department of Forest Resources Conservation and Ecotourism and other departments, programs, and schools around a central theme or topic that varies from year-to-year, but is broad enough to accommodate the interests of most FRCE students. Each student devises a research project related to the theme or topic and, from that project, prepares a final research proposal, a shortened version of which is presented at the General Colloquium held every semester. This event is open to the university community and the wider public. At the colloquium, students prepare proposal papers and presentation materials, and the Colloquium Lecturers from the same Scientific Division were selected as experts on the theme or topic of the General Colloquium, providing comments on each paper presented. The floor is then opened to questions from other seminar participants and the audience.*
Examination forms	*Assessed from the element /variables achievement, namely (a) skills in compiling research proposal, (b) presenting research plan, and (c) discussing them in front of the examiners.*

<table>
<tr><td>Module designation</td><td>Colloqium (KSH1406)</td></tr>
<tr><td>Study and examination requirements</td><td>
The formula evaluates the colloquium:
N = (0.4 A + 0.3 B + 0.3 C) (If the supervisory committee consists of two supervisors) or
N = (0.7 A + 0.3 C) (If the supervisory committee consists of one supervisor)
Where:
N (final seminar score) = 40% score from chief supervisor + 30% score from member supervisor + 30% score from seminar lecturer (If the supervisory committee consists of two supervisors) or
N (final seminar score) = 70% score from chief supervisor + 30% score from seminar lecturer (If the supervisory committee consists of one supervisor)
A and B = scores from the chief supervisor and member supervisor, particularly
C = scores from the seminar lecturer

Research proposal colloquium assessment format
<table>
<tr><th>No</th><th>Elements assessed</th><th>Weight (W)</th></tr>
<tr><td>1</td><td>Relevance of literature sources to the chosen research topic</td><td>10</td></tr>
<tr><td>2</td><td>Up-to-date literature sources</td><td>20</td></tr>
<tr><td>3</td><td>Concept suitability</td><td>10</td></tr>
<tr><td>4</td><td>Adequacy of literature sources</td><td>15</td></tr>
<tr><td>5</td><td>Systematic preparation of the matrix and presentation materials</td><td>20</td></tr>
<tr><td>6</td><td>Ability to convey ideas</td><td>10</td></tr>
<tr><td>7</td><td>Ability to defend ideas</td><td>15</td></tr>
<tr><td colspan="2">Total</td><td></td></tr>
</table>

Passing Limit Score ≥ 80
$$Score = \frac{\sum W \times S}{100}$$
</td></tr>
<tr><td>Reading list</td><td>NA (Not Applicable)</td></tr>
</table>

Internship (IPB303)

Module designation	*Internship (IPB303)*
Semester(s) in which the module is taught	*3-7*
Person responsible for the module	
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory Course*
Teaching methods	*Teaching Factory (TEFA) and Problem Based Learning (PBL)*
Workload	*3 sks*
Credit points	
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. *Recognizing and understanding the entire business process at the internship location, including identification of challenges faced by business actors.* 2. *Comparing theories/concepts in college with the implementation of activities on location.* 3. *Finding the implicit meaning (attributing) to the entire business process at the internship location.* 4. *Formulate feedback (generating feedback) on the implementation of activities at the internship location.*
Content	*The innovative learning process through group internships is expected to accelerate the process of achieving learning covering aspects of attitudes, knowledge, and skills in the development of forestry and environmental conservation issues. Through Presidential Instruction No. 1 of 2023 concerning Mainstreaming Biodiversity Conservation in Sustainable Development, the Indonesian government seeks to encourage collective awareness to protect biodiversity for sustainable development. Therefore, conservation and environmental problems cannot only be solved through one aspect alone, but multi-aspects and multi-stakeholders. Through group internships designed for partners in Protected Areas and non-Protected Areas, students are expected to have broader insights into the paradigm of conservation and sustainable development.*
Examination forms	1. *Proposal Preparation* 2. *Public lecture* 3. *Quiz* 4. *Recognizing the entire business process at the internship location.* 5. *Comparing theories/concepts in college with the implementation of activities on location.* 6. *Finding the implicit meaning (attributing) to the entire business process at the internship location.* 7. *Formulate feedback (generating feedback) on the implementation of activities at the internship location.* 8. *Prepare interim reports.* 9. *Supervision* 10. *Compilation of Final Report*
Study and examination requirements	-
Reading list	*NA (Not Applicable)*

Seminar (KSH1408)

Module designation	*Seminar (KSH1408)*
Semester(s) in which the module is taught	*7 and more*
Person responsible for the module	*Dede Aulia Rahman, S.Hut, M.Si, Ph.D*
Language	*Bahasa Indonesia or English*
Relation to curriculum	*Compulsory Course*
Teaching methods	*Presentation, discussions*
Workload	*Preparation of papers equivalent to 3 to 4 hours per week in one semester or 4 to 5 hours a day for 2/3 months up to 17 working days*
Credit points	*1 SCH x 1.44 = 1.44 ECTS*
Required and recommended prerequisites for joining the module	*Has completed all courses, including Common Core Course (CCC), Fundamental Prodi (FP), Foundational Literacy (FL), Academic Core Course (ACC), In-Depth Prodi Course (IPC), Enrichment Course (EC), and Final Year Project (FYP: Forestry Field Practies; Thematic Services Learning Program; Wildlife Manaement Practies; Practies of Protected Area Management, Ecotourism and Environmental Sevices; Colloquium) with a total of 140 SCH*
Module objectives/intended learning outcomes	1. *Students learn to express their own ideas, in accordance with their areas of interest or fields of study to be tested and assessed truth by other seminar participants.* 2. *Students learn to speak scientifically in public and defend their own papers.* 3. *Students gain experience related to seminar topics from other participants from all seminar participants who attended.* 4. *Students learn to listen to input and respect differences of opinion from seminar participants who attend.*
Content	*This course is designed to allow students to interact with faculty and other students from the Department of Forest Resources Conservation and Ecotourism and other departments, programs, and schools around a central theme or topic that varies from year-to-year, but is broad enough to accommodate the interests of most FRCE students. Each student devises and prepares a final research paper, a shortened version of which is presented at the Seminar held every semester. This event is open to the university community and the wider public. At the Seminar, students prepare research papers and presentation materials, and the Seminar Lecturers from the same Scientific Division were selected as experts on the theme or topic of the Seminar, providing comments on each paper presented. The floor is then opened to questions from other seminar participants and the audience.*
Examination forms	*Assessed from the element /variables achievement, namely (a) skills in compiling research papers, (b) presenting research objectives, general research problems, methodology, result, and general conclusion, and (c) discussing them in front of the examiners.*

Module designation	*Seminar (KSH1408)*
Study and examination requirements	*The formula evaluates the seminar:* *N = (0.4 A + 0.3 B + 0.3 C) (If the supervisory committee consists of two supervisors) or* *N = (0.7 A + 0.3 C) (If the supervisory committee consists of one supervisor)* *Where:* *N (final seminar score) = 40% score from chief supervisor + 30% score from member supervisor + 30% score from seminar lecturer (If the supervisory committee consists of two supervisors) or* *N (final seminar score) = 70% score from chief supervisor + 30% score from seminar lecturer (If the supervisory committee consists of one supervisor)* *A and B = scores from the chief supervisor and member supervisor, particularly* *C = scores from the seminar lecturer* *By score distribution:* *1. 80–100 : if the questions are answered properly and correctly directly and are able to answer questions that are a continuation of the initial question.* *2. 70–79 : if the question is answered properly and correctly directly.* *3. 65–69 : if the questions are answered properly and correctly with the direction of the questioner or other examiner.* *4. 60–64 : if the questions are answered and most of the answers are good and correct.* *5. 55–60 : if the question is answered and a small number of the answers are good and correct.* *6. < 55 : if the question is answered incorrectly or not answered.*
Reading list	*NA (Not Applicable)*

Final Thesis/Non-Thesis Project (KSH1409)

Module designation	*Final Thesis/Non-Thesis Project (KSH1409)*
Semester(s) in which the module is taught	*7 and more*
Person responsible for the module	*Dede Aulia Rahman, S.Hut, M.Si, Ph.D*
Language	*Bahasa Indonesia or English*
Relation to curriculum	*Compulsory Course*
Teaching methods	*Presentation and discussion*
Workload	*16 hours/week for 1 semester. Learning hours include data collection and research data analysis, mentoring with supervisors, final thesis preparation, and thesis/non-thesis project examination.*
Credit points	*6 SCH x 1.44 = 8.64 ECTS*
Required and recommended prerequisites for joining the module	*Has completed all courses, including Common Core Course (CCC), Fundamental Prodi (FP), Foundational Literacy (FL), Academic Core Course (ACC), In-Depth Prodi Course (IPC), Enrichment Course (EC), and Final Year Project (FYP: Forestry Field Practies; Thematic Services Learning Program; Wildlife Manaement Practies; Practies of Protected Area Management, Ecotourism and Environmental Sevices; Colloquium; Seminar) with a total of 141 SCH*
Module objectives/intended learning outcomes	1. *Students are able to think logically and systematically.* 2. *Students have scientific sensitivity and sensitivity to the environment and current conditions both in their field of knowledge and other matters of a general nature.* 3. *Students are able to research phenomena in the study program according to their specialization (division) so that they are able to compose scientific work (undergraduate thesis/non-thesis project) and test theories correctly.* 4. *Students are able to apply research methods that have been studied.* 5. *Students can put their ideas into research results into scientific writing in the form of an undergraduate thesis/non-thesis project to achieve scientific competence as a Bachelor of Forestry in the field of Conservation of Forest Resources and Ecotourism.*
Content	*Final Draft Undergraduate Thesis or Final Report of Non-Thesis Project and Presentation Materials*
Examination forms	*Assessed from the element /variables achievement, namely (a) skills in compiling undergraduate thesis/report of non-thesis project, (b) attitude and ability to deliver presentations, and (c) discussing them in front of the examiners (mastery of material and depth of discussion and ability to answer questions in the undergraduate thesis/non-thesis project exam).*

Module designation	*Final Thesis/Non-Thesis Project (KSH1409)*
Study and examination requirements	*The formula evaluates the final thesis/non-thesis project:* *N = (0.35 A + 0.25 B + 0.3 C + 0.1 D) (If the supervisory committee consists of two supervisors) or* *N = (0.6 A + 0.3 C+ 0.1 D) (If the supervisory committee consists of one supervisor)* *Where:* *N (final seminar score) = 35% score from chief supervisor + 25% score from member supervisor + 30% score from examiner + 10% score from chairman of the undergraduate thesis examination (If the supervisory committee consists of two supervisors) or* *N (final seminar score) = 60% score from chief supervisor + 30% score from examiner + 10% score from chairman of the undergraduate thesis examination (If the supervisory committee consists of one supervisor)* *A and B = scores from the chief supervisor and member supervisor, particularly* *C = score from the examiner* *D = score from the chairman of the undergraduate thesis examination* *By score distribution:* 1. *80–100 : if the questions are answered properly and correctly directly and are able to answer questions that are a continuation of the initial question.* 2. *70–79 : if the question is answered properly and correctly directly.* 3. *65–69 : if the questions are answered properly and correctly with the direction of the questioner or other examiner.* 4. *60–64 : if the questions are answered and most of the answers are good and correct.* 5. *55–60 : if the question is answered and a small number of the answers are good and correct.* 6. *< 55 : if the question is answered incorrectly or not answered.* • *The score interval of each Examining Lecturer Team = 0-100* • *Interval of undergraduate final exam scores = A ≥ 80; 75 ≤ AB < 80; 70 ≤ B < 75; 65 ≤ BC < 70; 60 ≤ C < 65* • *Students are declared to have passed the final undergraduate thesis exam if the final score (score x weight) is ≥ 65*
Reading list	1. *Tim Revisi Edisi Ke-4. 2019. Pedoman Penulisan Karya Ilmiah Tugas Akhir Mahasiswa Edisi Ke-4. Bogor, IPB Press.* 2. *Institut Pertanian Bogor. 2019. Peraturan Rektor Institut Pertanian Bogor Nomor 27/IT3/PP/2019 tentang Pedoman Penulisan Karya Ilmiah Tugas Akhir Mahasiswa. Bogor, Institut Pertanian Bogor*