

### Dendrology (SVK211)

Module designation	<i>Dendrology (SVK211)</i>
Semester(s) in which the module is taught	3
Person responsible for the module	<i>Iwan Hilwan</i>
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Cumpolsory Course</i>
Teaching methods	Small group discussion, Collaborative learning, cooperative learning
Teaching media and tools	<i>Powerpoint, textbooks, laboratory equipments (PPE (Protective Personal Equipment)), herbarium</i>
Workload	<i>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</i>
Credit points	<i>3 SCH x 1.44 = 4.32 ECTS</i>
Required and recommended prerequisites for joining the module	<i>Biology</i>
Module objectives/intended learning outcomes	<i>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.</i>
Course description	<i>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.</i>
Content	<ol style="list-style-type: none"> <li>1. Definition of "tree",</li> <li>2. Morphology (botanical characteristics) of trees,</li> <li>3. Principles of plant taxonomy,</li> <li>4. Forest botanical exploration activities, and</li> <li>5. Discussion of several tribes, genera, and tree species that are important in the field of forestry and forest ecosystems</li> </ol>
Examination forms	<i>Lecture examination (writing test in the midterm and final semester), practicum examination (writing test in the final semester and quiz)</i>
Study and examination requirements	<i>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%).</i>

Module designation	<i>Dendrology (SVK211)</i>
Reading list	<ol style="list-style-type: none"> <li>1. Harlow, W.M. and E.S. Harrar. 1985. <i>Textbook of Dendrology</i>. Mc Graw Hill Book Co., Inc. New York.</li> <li>2. Keng, H. 1978. <i>Orders and Families of Malayan Seed Plant</i>. Singapore University Press. Singapore.</li> <li>3. Lawrence, G.H.M. 1951. <i>Taxonomy of Vascular Plants</i>. MacMillan Publishing Co., Inc. New York.</li> <li>4. Samingan, T. 1985. <i>Dendrologi</i>. Gramedia. Jakarta.</li> <li>5. Tjirosoepomo, G. 1985. <i>Morfologi Tumbuhan</i>. Gajah Mada University Press. Yogyakarta</li> <li>6. Heyne K. 1987. <i>Tumbuhan Berguna Indonesia. Jilid II</i>. Jakarta (ID): Badan Litbang Kehutanan.</li> <li>7. Prawira, S.A dan IGM Tantra. 1973. <i>Pengenalan Jenis-jenis Pohon Penting (89 jenis)</i>. Lembaga Penelitian Hutan. Bogor.</li> <li>8. PROSEA. 1995. <i>Plant Resource of South-East Asia 5 : (1) Timber Trees : Major Commercial Timbers</i>. Bogor.</li> <li>9. PROSEA. 1995. <i>Plant Resource of South-East Asia 5 : (2) Timber Trees : Minor Commercial Timbers</i>. Bogor.</li> <li>10. Steenis CGGJ van. 1972. <i>Flora Pegunungan Jawa</i>. Kartawinata JA, penerjemah. Bogor (ID): Pusat Penelitian Bogor LIPI. Terjemahan dari: <i>The Mountain Flora of Java</i>.</li> <li>11. Wirjodarmodjo. 1959. <i>Pohon-pohon Terpenting di Indonesia Seri I</i>. Pengumuman No. 71. Lembaga Penelitian Hutan. Bogor.</li> </ol>

### Wildlife Ecology (KSH1211)

Module designation	<i>Wildlife Ecology (KSH1211)</i>
Semester(s) in which the module is taught	3
Person responsible for the module	<i>Dr. Ir. Abdul Haris Mustari, M.Sc.F.</i>
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University</i>
Teaching methods	<i>Lecture session, discussion and practicum session</i>
Teaching media and tools	<i>Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)</i>
Workload	<p><u>Total Workload</u></p> <p><i>Contact hour(s) (lecture session): 2 hours per week</i></p> <p><i>Contact hour(s) (practicum session): 3 hours per week</i></p> <p><i>Structured academic activities (doing in-class/take home assignment or homework): 2 hours per week</i></p> <p><i>Private in-depth study (literature reading): 2 hours per week</i></p>
Credit points	<i>3 SCH x 1.44 = 4.32 ECTS</i>
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> <li><i>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.</i></li> <li><i>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.</i></li> <li><i>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.</i></li> <li><i>4. Students acquire ability to be responsible of one's work to achieve the goals of one's organization or institution.</i></li> </ol>
Course description	<p><i>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 &amp; 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</i></p>

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	<i>framework for ecotourism programs and entrepreneurship capacity building.</i>
Content	<p><i>This course is consisted of 10 topics, namely:</i></p> <ol style="list-style-type: none"> <li><b>1. Introduction</b> <i>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.</i></li> <li><b>2. Components of wildlife habitat</b> <i>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.</i></li> <li><b>3. Types of wildlife habitat</b> <i>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.</i></li> <li><b>4. Wildlife as individual</b> <i>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.</i></li> <li><b>5. Wildlife as population</b> <i>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.</i></li> <li><b>6. Wildlife population growth</b> <i>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.</i></li> <li><b>7. Wildlife movement</b> <i>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.</i></li> <li><b>8. Wildlife distribution</b> <i>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.</i></li> </ol>

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	<p><b>9. Species interaction</b>  <i>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.</i></p> <p><b>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</b>  <i>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.</i></p>
Examination forms	<i>Written examination</i>
Study and examination requirements	<i>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%</i>
Reading list	<ol style="list-style-type: none"> <li>1. <i>Alikodra, H. S. 2002. Pengelolaan Satwaliar, Jilid I. Yayasan Penerbit Fakultas Kehutanan IPB. Bogor.</i></li> <li>2. <i>Krebs, C. J. 1978. Ecology: Experimental Analysis of Distribution and Abundance. Second Edition. Harper &amp; Row Publishers. New York.</i></li> <li>3. <i>Bailey, J. A. 1984. Principles of Wildlife Management. John Wiley &amp; Sons. New York.</i></li> <li>4. <i>Begon, M., Harper, J. L. and C. R. Townsend. 1990. Ecology: Individuals, Populations and Communities (Second Edition). Blackwell Scientific Publications. Boston.</i></li> <li>5. <i>Delany, M. J. 1982. Mammal Ecology. Blackie &amp; Sons Ltd. Glasgow.</i></li> <li>6. <i>Hildebrand, M. 1988. Analysis of Vertebrate Structure (Third Ed.). John Wiley &amp; Sons, Inc. New York.</i></li> <li>7. <i>Vaughan, T. A. 1978. Mammalogy. Sec Ed. W.B. Saunders Company. Philadelphia.</i></li> </ol>

**Biodiversity Conservation Data Analysis (KSH1212)**

Module designation	<i>Biodiversity Conservation Data Analysis (KSH1212)</i>
Semester(s) in which the module is taught	3
Person responsible for the module	<i>Prof. Dr. Ir. Yanto Santosa, DEA</i>
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University</i>
Teaching methods	<i>Lecturer session, discussion, assignment, quizzes</i>
Teaching media and tools	<i>Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)</i>
Workload	<p><u>Total Workload</u></p> <p><i>Contact hour(s) (lecture session): 2 hours per week</i></p> <p><i>Contact hour(s) (practicum session): 3 hours per week</i></p> <p><i>Structured academic activities (doing in-class/take home assignment or homework): 2 hoursperweek</i></p> <p><i>Private in-depth study (literature reading): 2 hours per week</i></p>
Credit points	<i>3 SCH x 1.44 = 4.32 ECTS</i>
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> <li><i>1. Have a strong foundation in the basic concepts of data analysis and statistical inference.</i></li> <li><i>2. Have a broad knowledge of applying statistical techniques in the fields of biodiversity conservation, social community, and ecotourism.</i></li> <li><i>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.</i></li> <li><i>4. Able to implement an adaptive data analysis process using statistical techniques with the help of software, supported by adequate programming skills.</i></li> <li><i>5. Students have the ability to generate, present and interpret general information from data.</i></li> <li><i>6. Students have the ability to process simple data collection and management to produce valid information.</i></li> </ol>
Course description	<p><i>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.</i></p>

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

### Outdoor Recreation and Ecotourism (KSH1251)

Module designation	<i>Outdoor Recreation and Ecotourism (KSH251)</i>
Semester(s) in which the module is taught	3
Person responsible for the module	<i>Prof. Dr. E. K. S. Harini Muntasib, M.S.</i>
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students</i>
Teaching methods	<i>Lecture session and discussion</i>
Teaching media and tools	<i>Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)</i>
Workload	<p><u>Total Workload</u></p> <p>Contact hour(s) (lecture session): 1 hour per week</p> <p>Structured academic activities (doing in-class/take home assignment or homework): 1 hour per week</p> <p>Private in-depth study (literature reading): 1 hour per week</p>
Credit points	<i>2 SCH x 1.44 = 2.88 ECTS</i>
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> <li>1. <i>Students acquire ability to understand the theoretical concept of living natural resources conservation and outdoor recreation.</i></li> <li>2. <i>Students acquire ability to plan the management of outdoor recreation and ecotourism.</i></li> </ol>
Content	<p><i>This course is consisted of 14 topics, namely:</i></p> <ol style="list-style-type: none"> <li> <p><b>1. Outdoor recreation, tourism, and ecotourism</b></p> <p><i>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.</i></p> </li> <li> <p><b>2. Policy and legislations on tourism</b></p> <p><i>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.</i></p> </li> <li> <p><b>3. The basic principles of outdoor recreation, tourism, and ecotourism</b></p> <p><i>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.</i></p> </li> </ol>



Module designation	Outdoor Recreation and Ecotourism (KSH251)
	<p><b>4. Leisure time</b>  <i>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.</i></p> <p><b>5. Resources inventory of outdoor recreation and ecotourism</b>  <i>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.</i></p> <p><b>6. Introduction to the variety of outdoor recreation and ecotourism</b>  <i>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.</i></p> <p><b>7. Example of activities in outdoor recreation and ecotourism</b>  <i>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.</i></p> <p><b>8. Services to the visitors of natural tourism area</b>  <i>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.</i></p> <p><b>9. Management of the variety of outdoor recreation and ecotourism</b>  <i>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.</i></p> <p><b>10. Protected Area as location of outdoor recreation and ecotourism</b>  <i>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 is the completeness and correctness of explanation which accounts for for 5%of the final score of this course.</i></p> <p><b>11. Example of outdoor recreation and ecotourism management</b>  <i>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.</i></p> <p><b>12. Market demand toward outdoor recreation and ecotourism</b></p>

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	<p><i>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.</i></p> <p><b>13. Introduction to tourism and ecotourism economics</b>  <i>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.</i></p> <p><b>14. Introduction to hazard and impacts from outdoor recreation and ecotourism</b>  <i>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.</i></p>
Examination forms	<i>Written examination</i>
Study and examination requirements	<p><i>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%</i></p>
Reading List	<ol style="list-style-type: none"> <li>1. <i>Jubenville, A. 1976. Outdoor Recreation Planning. W.B. Saunders Company. Toronto.</i></li> <li>2. <i>[WTO] World Tourism Organization. 1995. National and Regional Tourism Planning. Routledge. New York.</i></li> <li>3. <i>Douglas, R. W. 1982. Forest Recreation. Pergamon Press. Frankfurt.</i></li> <li>4. <i>Laws, E. 1995. Tourist Destination Management. Routledge. New York</i></li> <li>5. <i>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.</i></li> <li>6. <i>Wearing, S. and J. Neil. 2009. Ecotourism: Impacts, Potentials and Possibilities. 2nd Ed. Butterworth-Heinemann, Elsevier. Oxford.</i></li> <li>7. <i>Edington J. M. and M. A. Edington. 1985. Ecology, Recreation and Tourism. Cambridge University Press. Cambridge.</i></li> <li>8. <i>Hammit, W. E and D. N. Cole. Wildland Recreation. John Wiley and Sons. Singapore.</i></li> <li>9. <i>Ceballos-Lascurain, H. 1996. Tourism, Ecotourism and Protected Areas. IUCN. Gland, Switzerland.</i></li> <li>10. <i>Clawson, M. and J. L. Knetsch, 1966. Economics of Outdoor Recreation. The Johns Hopkins Press. Baltimore.</i></li> <li>11. <i>Jubenville, A., Twilight, B. W and R. H. Becker. 1987. Outdoor Recreation Management: Theory and Application Revised and Enlarged. Venture Publishing, Inc. State College. Philadelphia.</i></li> <li>12. <i>Godfrey, K. and J. Clarke. 2000. The Tourism Development Handbook: A Practical Approach to Planning and Marketing.</i></li> </ol>

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	<p><i>Cassell. London and New York.</i></p> <p><i>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.</i></p> <p><i>14. Young, H. 2004. Service Quality in Tourism. HK Tourism Symposium 2004: Quality and Diversity.</i></p>

### Tropical Plant Conservation (KSH1231)

Module designation	<i>Tropical Plant Conservation (KSH1231)</i>
Semester(s) in which the module is taught	3
Person responsible for the module	<i>Ir Siswoyo, MS</i>
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students</i>
Teaching methods	<i>Lecture session and discussion</i>
Teaching media and tools	<i>Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)</i>
Workload	<i>2 SCH x 1.44 = 2.88 ECTS</i>
Credit points	-
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> <li>1. <i>Students acquire ability to understand the theoretical concepts of biodiversity conservation, ecotourism, and forest environmental services, as well as socio-economic-cultural communities.</i></li> <li>2. <i>Students acquire ability to understand the politics and policies of national and international laws and regulations related to biodiversity conservation.</i></li> <li>3. <i>Students acquire ability to manage sustainable use in the field of forest conservation, biodiversity, ecosystem-environmental services and ecotourism</i></li> </ol>
Course description	<i>Definition, scope and objectives, supporting scientific disciplines toward 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.</i>

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	<i>Tropical Plant Conservation (KSH1231)</i>
	<p><i>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.</i></p> <p><b>9. Types and functions of ethnic-based traditional home yard in Indonesia</b></p> <p><i>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.</i></p> <p><b>10. Ethnozoology in Indonesia</b></p> <p><i>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.</i></p> <p><b>11. Ethnobiology of traditional communities in Sumatra, Kalimantan, and Papua (case study)</b></p> <p><i>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.</i></p> <p><b>12. Application of ethnobiological data and information for bio-cultural-diversity conservation to manifest nation's sovereignty with "Bhinneka Tunggal Ika"</b></p> <p><i>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.</i></p>
Examination forms	<i>Written examination</i>
Study and examination requirements	<i>Acquire a final score that qualifies for letter grade D at the minimum</i>

Module designation	<i>Tropical Plant Conservation (KSH1231)</i>
Reading list	<ol style="list-style-type: none"> <li data-bbox="619 248 1374 371">1. F. Merlin Franco, Magne Knudsen &amp; Noor Hasharina Hassan ((ed). 2022. <i>Case Studies in Biocultural Diversity from Southeast Asia— Traditional Ecological Calendars, Folk Medicine, and Folk Names</i>. Springer Nature.</li> <li data-bbox="619 383 1385 506">2. Ulysses Paulino Albuquerque, Reinaldo Farias Paiva de Lucena, Luiz Vital Fernandes Cruz da Cunha, Rômulo Romeu Nóbrega Alves. 2019. <i>Methods and Techniques in Ethnobiology and Ethnoecology [2nd ed.]</i>. Springer New York, Humana Press</li> <li data-bbox="619 517 1254 577">3. Albuquerque, U. P., Romeu, R. and N. Alves (Eds). 2016. <i>Introduction to Ethnobiology</i>. Springer.</li> <li data-bbox="619 589 1366 745">4. Aminah, Zuhud, E. A. M. and I. Z. Siregar. 2016. <i>Utilization of Jelutung (Dyera spp.) among Anak Dalam Tribe in Bukit Duabelas National Park</i>. <i>Media Konservasi: Jurnal Ilmiah Bidang Konservasi Sumberdaya Alam Hayati dan Lingkungan</i>. Vol 21, No. 2, August 2016: 168-173.</li> <li data-bbox="619 757 1374 880">5. Anderson, E. N., Pearsall, D. M., Huwas, E. S. and N. J. Turner, 2011. <i>Ethnobiology</i>. Wiley-Black Well. London. <i>Ready for phase 5 - current status of ethnobiology in Southeast Asia</i>. <i>Journal of Ethnobiology and Ethnomedicine</i> volume 11 (17).</li> <li data-bbox="619 891 1366 992">6. Hall, J. B., Tomlison, H.F., Oni, P. I., Buchy, M. and D. P. Aebischer. 1997. <i>Parkiabiglobosa</i>. A Monograph. School of Agricultural and Forest Science, University of Wales. Bangor, U.K.</li> <li data-bbox="619 1003 1345 1064">7. Harefa, A. 2000. <i>Menjadi Manusia Pembelajar</i>. Penerbit Harian Kompas. Jakarta.</li> </ol>

**Conservation and Environmental Policy (KSH1221)**

Module designation	<i>Conservation Policy and Institutions(KSH221)</i>
Semester(s) in which the module is taught	3
Person responsible for the module	<i>Dr. Ir. Rinekso Soekmadi, M.Sc.F.Trop.</i>
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University</i>
Teaching methods	<i>Lecture session and discussion</i>
Teaching media and tools	<i>Powerpoint, textbooks, videos, films, drone, laboratory equipments (example: PPE (Protective Personal Equipment), drone, microscope, etc.)</i>
Workload	<p><u>Total Workload</u></p> <p><i>Contact hour(s) (lecture session): 1 hour per week</i></p> <p><i>Structured academic activities (doing in-class/take home assignment or homework): 1 hourperweek</i></p> <p><i>Private in-depth study (literature reading): 1 hour per week</i></p>
Credit points	<i>2 SCH x 1.44 = 2.88 ECTS</i>
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> <li><i>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.</i></li> <li><i>2. Students acquire ability to manage conflicts.</i></li> </ol>
Content	<p><i>This course is consisted of 9 topics, namely:</i></p> <ol style="list-style-type: none"> <li><b><i>1. Introduction</i></b> <i>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 5% of the final score of this course.</i></li> <li><b><i>2. Sovereignty principles in the management of natural resources</i></b> <i>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 15% of the final score of this course.</i></li> <li><b><i>3. Values and ethics in living resources conservation</i></b> <i>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</i></li> </ol>



Module designation	Conservation Policy and Institutions(KSH221)
	<p>15% of the final score of this course.</p> <p><b>4. International convention and ethics on the conservation of living resources and environment</b></p> <p>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.</p> <p><b>5. National policy on the conservation of living resources and the environment</b></p> <p>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.</p> <p><b>6. Legislation on the conservation of living resources and the environment</b></p> <p>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.</p> <p><b>7. Convention on International Trade of Endangered Species Flora and Fauna (CITES)</b></p> <p>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 for for 5% of the final score of this course.</p> <p><b>8. Convention on Biological Diversity (CBD) and The United Nations Framework Convention on Climate Change (UNFCCC)</b></p> <p>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.</p> <p><b>9. Capita selecta</b></p> <p>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.</p>

Module designation	<i>Conservation Policy and Institutions(KSH221)</i>
Examination forms	<i>Written examination</i>
Study and examination requirements	<i>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%</i>
Reading list	<ol style="list-style-type: none"> <li>1. <i>de Klemm, C. 1993. Biological Diversity Conservation and the Law: Legal Mechanism for Conserving Species and Ecosystem. Environmental Policy and Law Paper No. 29. IUCN-The World Conservation Union. Gland-Switzerland.</i></li> <li>2. <i>Soehartono, T. and A. Mardiasuti. 2003. Pelaksanaan Konvensi CITES di Indonesia. JICA.</i></li> <li>3. <i>Aliadi, A., Kismadi, B. C. and D. W. Munggoro(Eds). 2000. Berbagi Pengalaman: Pengelolaan Sumberdaya Alam Berbasis Masyarakat. Pustaka Latin.</i></li> <li>4. <i>Ascher, W. 1999. Why Governments Waste Natural Resources: Policy Failures in Developing Countries. The Johns Hopkins University Press. Baltimore.</i></li> <li>5. <i>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.</i></li> <li>6. <i>Hardjosumantri, K. 1991. Hukum Perlindungan Lingkungan: Konservasi Sumberdaya Alam Hayati dan Ekosistemnya. Gajah Mada Press. Yogyakarta.</i></li> </ol>

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

Module designation	<i>Mapping, Geographical Information System (GIS), and Unmanned Aerial Vehicle (UAV) of Environment (KSH1241)</i>
Semester(s) in which the module is taught	3
Person responsible for the module	<i>Dr. Yudi Setiawan, S.P., M.Env.Sc.</i>
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory course for students of Department of Forest Resources Conservation and Ecotourism IPB University and elective course for other IPB University students</i>
Teaching methods	<i>Lecture session, discussion and practicum session</i>
Teaching media and tools	<i>Powerpoint, textbooks, videos, films, drone, laboratory equipment (example: PPE (Protective Personal Equipment), drone, laptop, etc.)</i>
Workload	<p><u>Total Workload</u></p> <p><i>Contact hour(s) (lecture session): 2 hours per week</i></p> <p><i>Contact hour(s) (practicum session): 3 hours per week</i></p> <p><i>Structured academic activities (doing in-class/take home assignment or homework): 2 hours per week</i></p> <p><i>Private in-depth study (literature reading): 2 hours per week</i></p>
Credit points	<i>3 SCH x 1.44 = 4.32 ECTS</i>
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> <li><i>1. Students have the ability to theoretical concepts of mapping, geographic information systems (GIS) and unmanned aerial vehicle (UAV) technology for the environment</i></li> <li><i>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</i></li> </ol>

Module designation	<i>Mapping, Geographical Information System (GIS), and Unmanned Aerial Vehicle (UAV) of Environment (KSH1241)</i>
Course description	<p><i>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.</i></p>
Content	<p><i>This course is consisted of 12 topics, namely:</i></p> <ol style="list-style-type: none"> <li data-bbox="606 1059 1414 1350"> <p><b>1. Introduction</b></p> <p><i>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.</i></p> </li> <li data-bbox="606 1352 1414 1574"> <p><b>2. Terrestrial mapping techniques</b></p> <p><i>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.</i></p> </li> <li data-bbox="606 1576 1414 1727"> <p><b>3. Map presentation technique (Cartography)</b></p> <p><i>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.</i></p> </li> <li data-bbox="606 1729 1414 1951"> <p><b>4. Introduction to GPS technology</b></p> <p><i>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.</i></p> </li> <li data-bbox="606 1953 1414 2175"> <p><b>5. Spatial reference (map projections, datum and coordinate systems)</b></p> <p><i>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.</i></p> </li> </ol>

Module designation	<i>Mapping, Geographical Information System (GIS), and Unmanned Aerial Vehicle (UAV) of Environment (KSH1241)</i>
	<p><b>6. Spatial concepts, GIS components, hardware/software, sources and characteristics of spatial data</b>  <i>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.</i></p> <p><b>7. Development of spatial data</b>  <i>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).</i></p> <p><b>8. Basic spatial analysis (tabular data and vector data)</b>  <i>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 &amp; Aspects</i></p> <p><b>9. Introduction of internet-based platform (Web-GIS) development and interactive Story Map</b>  <i>Students are able to understand current developments in GIS technology, internet-based platforms (Web-GIS) and interactive maps based on ArcGIS Online &amp; Story Map</i></p> <p><b>10. Online data collection</b>  <i>Students are able to understand online data collection and sharing methods based on ArcGIS Survey123</i></p> <p><b>11. Introduction of UAV drone (components and drone-system)</b>  <i>Students are able to understand the components and functions of the UAV drone system; including the types of sensors (RGB camera, multispectral and thermal)</i></p> <p><b>12. Drone photogrammetry, mission planning and drone image processing</b>  <i>Students are able to understand the principles of photogrammetry for the acquisition of UAV drone image data and to process drone-based imagery</i></p>
Examination forms	<i>Written examination and practicum examination</i>
Study and examination requirements	<i>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%</i>

Module designation	<i>Mapping, Geographical Information System (GIS), and Unmanned Aerial Vehicle (UAV) of Environment (KSH1241)</i>
Reading list	<ol style="list-style-type: none"> <li>1. <i>Aronoff, S. 1989. Geographic information systems: a management perspective. Ottawa, Canada: WDL Publications.</i></li> <li>2. <i>Maguire, D and M.F. Goodchild. 1991. Geographical Information System: Principles and Application. Longman Scientific and Technical. . New York</i></li> <li>3. <i>Goodchild, M.E. , L.T.Steyaert and B.O.Park. 1996. GIS and Environmental Modeling. GIS World Book. Fort Collins</i></li> <li>4. <i>Ervin, S.M. and H.H. Hasbrouck. 2001. Landscape Modeling. McGraw Hill. New York</i></li> <li>5. <i>Falero, E. M. and S.G. Alonso. 1995. Quantitative Techniques in Landscape Planning. Lewis Publisher. Boca Raton.</i></li> <li>6. <i>Lovett, A and Katy A. 2008. GIS for Environmental Decision-Making. CRC Press. New York. 259 p</i></li> <li>7. <i>Malczewski, Jacek.1999. GIS &amp; Multicriteria Decision Analysis. John Wiley &amp; Sons.New York. 392 p</i></li> <li>8. <i>Drone for Biodiversity Conservation and Ecological Monitoring, published by MDPI, 2019 (dapat diakses di <a href="https://www.mdpi.com/2504-446X/3/2/47/htm">https://www.mdpi.com/2504-446X/3/2/47/htm</a>)</i></li> <li>9. <i>Small-Format Aerial Photography and UAS Imagery: Principles, Techniques and Geoscience Applications, published by Elsevier, ScienceDirect, 2019 (detail dapat dilihat di <a href="https://www.sciencedirect.com/book/9780128129425/small-format-aerial-photography-and-uas-imagery#book-info">https://www.sciencedirect.com/book/9780128129425/small-format-aerial-photography-and-uas-imagery#book-info</a>)</i></li> <li>10. <i>UAV-Based Remote Sensing, published by MDPI, 2018 (dapat diakses di <a href="https://www.mdpi.com/books/pdfview/book/604">https://www.mdpi.com/books/pdfview/book/604</a>)</i></li> </ol>