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	*Compulsary 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.*

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 theycan 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 hourperweek* *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.*

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	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*

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	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.*

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.*