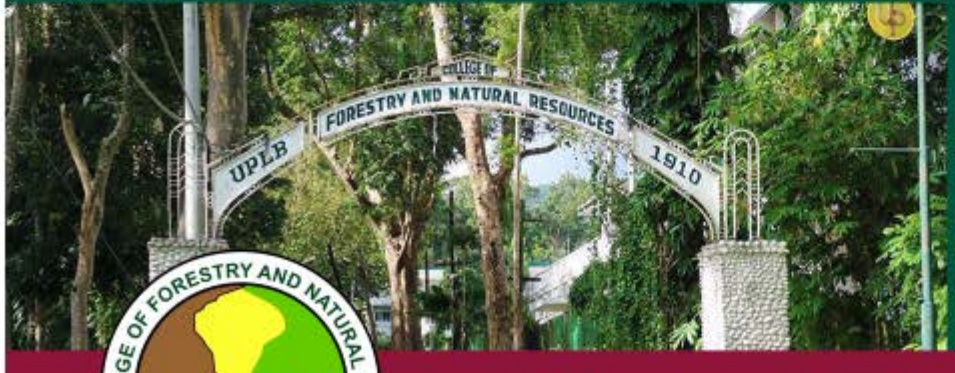
University of the Philippines
LOS BAÑOS



UPLB COLLEGE OF FORESTRY AND NATURAL RESOURCES
1910

College of Forestry and Natural Resources

COLLEGE OF FORESTRY AND NATURAL RESOURCES

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Lerma SJ. Maldia, *Director, Makiling Center for Mountain Ecosystems*
Dixon T. Gevaña, *Director, Forestry Development Center*

HISTORY

The College of Forestry and Natural Resources (CFNR) is one of the 11 degree-granting units of the University of the Philippines Los Baños (UPLB). Established in 1910, CFNR holds the distinction of being the oldest and premier academic institution for higher learning in forestry in the Philippines. It has been recognized as a Center of Excellence in Forestry Education by the Philippine Commission on Higher Education. In 2017, the BS Forestry program offered by CFNR achieved the quality assurance certification standards of the ASEAN University Network (AUN). This prestigious certification was reaffirmed in 2024, following a rigorous evaluation by AUN assessors, underscoring CFNR's continued commitment to excellence in forestry education.

The teaching, research, and extension programs of CFNR are at the forefront of various fields such as watershed management, climate change, silviculture, ecology, biodiversity, biotechnology, physiology, agroforestry, pulp and paper technology, natural resources management, policy formulation, governance, economics, and social forestry.

PROGRAMS

The UPLB College of Forestry and Natural Resources offers a sub-professional course, a course in the baccalaureate level, three master's degree programs and a doctor of philosophy program.

1. **Associate of Science in Forestry (AScF)** – A ladderized, two-year curriculum leading to BS Forestry and is geared towards producing well-rounded graduates that are envisioned to provide technical support in the implementation of policies, programs, and projects in forestry and other related sectors. The AScF program replaced the former Certificate in Forestry (CiF) program.

2. **Bachelor of Science in Forestry (BSF)** – A four-year program composed of a curriculum aligned with the principles of Outcomes-Based Education and the K to 12 Basic Education Program, particularly with its content and performance standards and learning competencies. The BSF curriculum was recalibrated to make it more responsive to evolving challenges and paradigms in the forestry sector and its implications to the environment and society. The general curriculum is also divided into three streams: 1) Environmental Forestry, 2) Production and Industrial Forestry, and 3) Social Forestry and Agroforestry.

VISION

A world-class leader in the education, science, and responsible management of tropical forests, natural resources, and the environment.

MISSION

a. Developing globally competitive and locally adaptive human resources imbued with technical, social, and moral competencies for forestry, natural resources, and environmental management.

b. Pioneering knowledge generation and innovative enterprise management and technologies through research and development programs and policy initiatives that increase natural productivity, strengthen cultural values, enhance ecosystem services, and respond to national issues and imperatives.

c. Empowering people institutions and communities for sustainable forests, natural resources and environmental development and governance towards a better quality of life.

d. Strengthening institutional capability and enhancing public appreciation of the role of forestry in environmental protection and national development.

OBJECTIVES

In general, the CFNR aims to develop and implement programs to promote sustainable development in the forestry and natural environment sectors primarily through instruction, research, and extension. Specifically, it will:

1. Produce professionals and scientists in forestry, agroforestry, natural resource management, pulp and paper technology and allied fields.

2. Train forestry and natural resource technicians.

3.Develop and transfer appropriate technologies in forestry and the natural development.

4.Promote community empowerment and participation in sustainable resource management.

5.Play an active role in shaping and reshaping policies in forestry and the natural environment in response to the present and future demands of sustainable development.

6.Promote continuing education in forestry and natural resources.

7.Develop and maintain Mt. Makiling as a model in the sustainable management of mountain ecosystem and as a center for biodiversity conservation.

FIVE-POINT STRATEGIC PROGRAMS

1. Advancing distinctive excellence in forests and natural resources education.

2. Developing world-class research and development capacity.

3. Instituting responsive extension services for community and national development.

4. Promoting enabling environment through good governance and effective support system.

5. Generating resources for productivity.

ASSOCIATE OF SCIENCE IN FORESTRY

UP BOR Approval 1373rd Meeting 25 August 2022

FIRST YEAR

First Semester	***Units***	***Second Semester***	***Units***
COMM 10. Critical Perspectives in Communication	3	ARTS 1. Critical Perspectives in the Arts	3
FBS 10. Biology of Tropical Forest Plants	4	ETHICS 1. Ethics and Moral Reasoning in Everyday Life	3
FOR 1. Introduction to Forests and Forestry	3	FBS 21. Taxonomy of Forest Plants	4
FPPS 11. Wood Structure and Identification	3	WLDL 101. Introduction to Philippine Wildlife	3
SFI 30. Forest Nurseries	3	SFFG 101. Principles and Concepts of Social Forestry	3
FRM 92. Forest Engineering	3	SFFG 123. Forest Policy and Institutions	3
HK 11. Wellness and Basic Injury Management	(2)	HK 12 OR 13. Human Kinetics Activities or Advanced Human Kinetics Activities	(2)
	19	NSTP 1. National Service Training Program	(3)
			19

SECOND YEAR

KAS 1/HIST 1. Kasaysayan ng Pilipinas/ History of the Philippines	3	PI 10. The Life and Works of Rizal	3
STS 1. Science, Technology, and Society	3	FPPS 182. Production Planning and Control	3
FPPS 127. Properties and Utilization of Forest Products	4	FRM 165. Forest Surveys	3
FRM 61. Forest Biometry	3	NRC 140. Introduction to Geographic Information Systems	3
FRM 94. Forest Products Harvesting	3	SFFG 113. Forestry Extension	3
SFFG 180. Organizing Forest-Dependent Communities	3	SFI 103. Fundamentals of Agroforestry	3
HK 12 OR 13. Human Kinetics Activities or Advanced Human Kinetics Activities	(2)	HK 12 OR 13. Human Kinetics Activities or Advanced Human Kinetics Activities	(2)
NSTP 2. National Service Training Program	(3)		18
	19		

TOTAL NUMBER OF UNITS 75

BACHELOR OF SCIENCE IN FORESTRY

(Effective First Semester 2018-2019)

First Semester	*Units*	*Second Semester*	*Units*
		FIRST YEAR	
FOR 1. Introduction to Forests and Forestry	3	SFFG 101. Principles and Concepts of Social Forestry	3
SFI 100. Geology and Forest Soils	3	FRM 92. Forest Engineering	3
FBS 10. Biology of Tropical Forest Plants	4	FBS 21. Taxonomy of Forest Plants	4
ECON 11. General Economics	3	FRM 120. Forestry Economics	3
ARTS 1. Critical Perspectives in the Arts	3	G.E. Elective	3
PI 10. Life and Works of Rizal	3	G.E. Elective	3
HK 11. Wellness and Basic Injury Management	(2)	HK 12 OR 13. Human Kinetics Activities or Advanced Human Kinetics Activities	(2)
	19	NSTP 1. National Service Training Program	(3)
			19
		SECOND YEAR	
SFFG 123. Forest Policies and Institutions	3	NRC 170. Watershed Management	3
FPPS 11. Wood Structure and Identification	3	FPPS 127. Properties & Utilization of Forest Products	4
FBS 31. Plant Physiology	3	FBS 36. Fundamentals of Forest Ecology	3
NRC 140. Introduction to GIS	3	SFI 103. Fundamentals of Agroforestry	3
KAS 1 OR HIST 1. Kasaysayan ng Pilipinas/ History of the Philippines	3	G.E. Elective	3
ETHICS 1. Ethics and Moral Reasoning in Everyday Life	3	STS 1. Science, Technology and Society	3
NSTP 2. National Service Training Program	(3)	HK 12 OR 13. Human Kinetics Activities or Advanced Human Kinetics Activities	(2)
HK 12 OR 13. Human Kinetics Activities or Advanced Human Kinetics Activities	(2)		19
	18		
		THIRD YEAR	
FRM 61. Forest Biometry	3	FPPS 128. Non-Timber Forest Products	3
SFI 140. Tropical Silviculture	3	SFI 142. Plantation Forestry	3
FBS 45. Forest Insect Pests and Diseases	4	FBS 172. Forest Genetics	3
SFFG 113. Forestry Extension	3	FOR 195. Research Methods in Forestry and Natural Resources	3
FBS 101. Forest Biodiversity	3		
SC 1. Specialization Course	3	SC 2. Specialization Course	3
	19	SC 3. Specialization Course	3
			18
		MIDYEAR	
FOR 198. Internship	3		
		FOURTH YEAR	
FOR 200. Undergraduate Thesis	3	FOR 200. Undergraduate Thesis	3
SFFG 125. Political Economy and Administration of Forestry Development	3	FPPS 147. Furniture and Handicraft Production	3
		FRM 183. Timber Production Management	3
FRM 131. Forest-based Enterprise Development and Management	3	FRM 184. Integrated Forest Resource Management	3
COMM 10. Critical Perspectives in Communication	3	SC 4. Specialization	3
SFFG 152. Sociology of Natural Resources	3		15
FOR 199. Undergraduate Seminar	1		
	16		

TOTAL NUMBER OF UNITS 146

COURSES

INSTITUTE OF RENEWABLE NATURAL RESOURCES

Forest Resources Management

FRM 16. Fundamentals of Small-scale Forest-based Enterprises (3). Economic and business concepts as applied to the establishment of small-scale forest-based enterprises. 3 hrs (class). (2)

FRM 61. Forest Biometry (3). Measurements of standing and felled timber, tree growth, and of non-timber forest products; tree inventory methods. 5 hrs (2 class, 3 lab). PR. FBS 21. (1,2)

FRM 62. Forest Mensuration (4). Elements of forest mensuration; tree measurements; forest products measurements and volume determination; and basic computer applications. 8 hrs (2 class, 6 lab). (1,2)

FRM 90. Elementary Forestry Cartography (1). Lettering, orthographic and auxiliary projection; sectioning and dimensioning methods; detailed working drawing; isometric and oblique representation; technical sketching. 3 hrs (lab). (1,2)

FRM 92. Forest Engineering (3). Forest surveying and topographic mapping; direct and indirect leveling; elementary road engineering. 7 hrs (1 class, 6 lab). (1,2)

FRM 93. Elementary Forest Surveying and Mapping (4). Basic surveying; methods of measurements and instrumentation; techniques and procedures in map-making. 8 hrs (2 class, 6 field). PR. FRM 62 and FRM 90. (2)

FRM 94. Forest Products Harvesting (3). Techniques and management of forest products harvesting. 5 hrs (2 class, 3 lab). PR. FRM 92. (1)

FRM 100. Introduction to Forest Resources Management (3). General forest management; its relation to the forest products industries. 3 hrs (class). (1,2)

FRM 102. Fundamentals of Environmental Forest Management (3). Structure and dynamics of forest ecosystems, principles, decision-making tools and strategies in environmental forest management. 3 hrs (class). PR. FOR 1 and FBS 36 or COI. (2)

FRM 119 (or FPPS 119). Marketing of Forest Products (3). Forest products marketing, the structure of forest products' market, output and pricing policies and strategic trends. 5 hrs (2 class, 3 lab). PR. ECON 11. (1)

FRM 120. Forestry Economics (3). Economics of production, distribution, and consumption of forest products and services. 3 hrs (class). PR. ECON 11. (1,2) CORE

FRM 121. Accounting (3). Theory and practice of accounting. 5 hrs (2 class, 3 lab). (2)

FRM 122. Forest Finance (3). Forest ecosystem services valuation and financing. 3 hrs (class). PR. FRM 120. (1)

FRM 131. Forest-based Enterprise Development and Management (3). Entrepreneurship and business concepts as applied to the establishment and management of forest-based enterprises. 5 hrs (2 class, 3 lab). PR. FRM 120. Forestry Economics or COI. (1,2) CORE

FRM 143. Sampling Methods in Forestry (3). Sampling problems with special reference to timber inventory of forest area. 5 hrs (2 class, 3 lab). PR. FRM 61. (1)

FRM 144. Experimental Designs in Forestry Research (3). Principles of experimental designs; basic and other experimental designs and analysis applied in forestry research; treatment comparisons; regression and correlation. 5 hrs (2 class, 3 lab). (2)

FRM 145. Tropical Forests and Climate Change (3). Climate change assessment methods, mitigation and adaptation in tropical forests. 5 hrs (2 class, 3 lab). PR. FBS 36 or COI. (1)

FRM 146. Production Planning and Control in Logging Operations (3). Preparation of production and cost standards; job analysis; production planning and control techniques; machine selection and replacement. 5 hrs (2 class, 3 lab). (1)

FRM 165. Forest Surveys (3). Techniques, instruments, procedures in planning and implementing forest surveys; analysis and presentation of data. 7 hrs (1 class, 6 field). PR. FBS 21, FRM 61 and FRM 92. (1,2)

FRM 170. Forest Range Management (3). Principles of range management, range condition, classification and analysis, range ecology, improvement and management planning; identification of range pasture and forage plants. 5 hrs (2 class, 3 lab). PR. FRM 61. (1)

FRM 183. Timber Production Management (3). Theories and techniques in timber management and harvesting in natural and plantation forests. 5 hrs (2 class, 3 lab). PR. FRM 61 and FRM 120. (1,2)

FRM 184. Integrated Forest Resource Management (3). The biophysical and socio-economic aspects of FRM; forest land use management; forest management planning and plans. 5 hrs (2 class, 3 lab). PR. FRM 61, NRC 140, and SFI 142. (1,2)

FRM 190. Special Problems (1-3). May be taken twice provided that total number of units to be credited to the student's program will not exceed 4 units. PR. COI. (1,2)

FRM 191. Special Topics (1-3). May be taken twice provided that total number of units to be credited to the student's program will not exceed 4 units. (1,2)

Natural Science

NASC 10 (MST). Forests as Source of Life (3). The roles and importance of forests in sustaining life, environment, and society. 3 hrs (class). (1,2, M)

Natural Resources Conservation

NRC 130. Nature-based Leisure and Outdoor Recreation (3). Principles, guidelines and conservation norms for different leisure

activities outdoors and in wilderness areas. 3 hrs (3 class). (1)

NRC 131. Fundamentals of Ecotourism (3). Principles, concepts and approaches in ecotourism. 3 hrs (3 class). (2)

NRC 132. Conservation and Management of Protected Areas (3). Concepts, principles and practices in conserving and managing protected areas. 5 hrs (2 class, 3 lab). PR. COI. (2)

NRC 140. Introduction to Geographic Information Systems (3). Principles and concepts of geographic information systems; GIS operation. 5hrs (2 class, 3 lab) (1,2)

NRC 141. Introduction to Remote Sensing (3). Principles, concepts and types of remote sensing. 5 hrs (2 class, 3 lab). (1)

NRC 142. Aerial Photogrammetry and Image Interpretation (3). Principles and techniques of acquiring, interpreting and using aerial photos and other images in mapping for natural resources management. (2 class, 3 lab). PR. FRM 61. (1)

NRC 143. Environmental Impact Assessment of Natural Resources Management Projects (3). Concepts of environmental impact assessment (EIA). Application of EIA in natural resource management projects with emphasis in forestry and upland development projects. 5 hrs (2 class, 3 lab). PR SFI 142 and FRM 184 or COI. (2)

NRC 160. Introduction to Models in Ecosystem and Natural Resources Management (3). Basic application of ecosystems and natural resources models. 3 hrs (class). PR. NRC 140 or COI (students should have basic knowledge and skills on Geographic Information Systems). (2)

NRC 170. Watershed Management (3). Regulation, use, conservation practices and treatment of the aggregate resources of a drainage basin for the production of water and the control of erosion, stream flow, and floods. 5 hrs (2 class, 3 lab). PR. SFI 100 or COI. (1,2)

Silviculture and Forest Influences

SFI 10. Elementary Forest Soil Conservation (3). Introduction to properties of soils and techniques in forest soil conservation. 5 hrs (2 class, 3 lab). (1)

SFI 30. Forest Nurseries (3). Establishment and management of forest nurseries. 7 hrs (1 class, 6 field). (1,2)

SFI 31. Elementary Silviculture (4). Regeneration and treatment of Philippine forests. 8 hrs (2 class, 6 field). PR. FBS 1. (1,2)

SFI 100. Geology and Forest Soils (3). Physical geology; formation and development of land forms; physical, chemical, and biological characteristics of forest soils. 5 hrs (2 class, 3 lab). (1,2)

SFI 101. Forest Soils (3). Soil classification, organic matter, organisms, physical and chemical properties, and relation to forest management. 5 hrs (2 class, 3 lab). PR. SFI 100 or COI. (1)

SFI 102. Forest Soil and Water Conservation (3). Principles, theories and research methodologies in forest soil and water conservation. 5 hrs (2 class, 3 lab). PR. SFI 100 or COI. (2)

SFI 103. Fundamentals of Agroforestry (3). Principles and practices of agroforestry; managing agroforestry projects. 5 hrs (2 class, 3 lab). PR. COI. (1,2)

SFI 104. Agroforestry Systems of the Philippines (3). Description and analysis of agroforestry system in the Philippines. 5 hrs (2 class, 3 lab). PR. SFI 103 or COI. (1)

SFI 105. Silvics (3). Ecological foundation of silviculture; analysis of the interrelationships of trees, stand, and forests and environment. 5 hrs (2 class, 3 lab). PR FBS 36 (1)

SFI 106. Introduction to Forest Influences (3). Introductory analysis of the modifying effects of forests on the microclimate, soil and the biological aspects of the environment and the basic principles underlying their measurement. 5 hrs (2 class, 3 lab). (1)

SFI 107. Fundamentals of Urban Forestry (3). Structure, composition, distribution and classification, planning, management of urban forests. 5 hrs (2 class, 3 lab). PR. SFI 149 or COI. (1)

SFI 140. Tropical Silviculture (3). Silvicultural systems and their applications in natural tropical forests with emphasis on the restoration and rehabilitation of degraded Philippine forests. 5 hrs (2 class, 3 lab). PR. FBS 36 and SFI 100. (1,2)

SFI 142. Plantation Forestry (3). Artificial forest regeneration systems with emphasis on Philippine conditions. 5 hrs (2 class, 3 lab). PR. SFI 140. (1,2)

SFI 144. Silviculture of Non-Timber Plant Species (3). Classification, propagation and cultivation of economically important non-timber producing plant species. 5 hrs (2 class, 3 lab). (2)

SFI 145. Silvicultural Approaches to Forest Protection (3). Causes and silvicultural control of forest destructive agents. 3 hrs (class). PR. SFI 142 or COI. (1)

SFI 146. Forest Tree Improvement (3). Application of genetics to forestry; selection, hybridization, progeny testing and seed orchard establishment. 5 hrs (2 class, 3 lab). PR. FBS 172 or COI. (1)

SFI 147. Agroforestry System Design and Development (3). Concepts and application of diagnosing and designing appropriate agroforestry system and technologies. 5 hrs (2 class, 3 lab). PR. SFI 103 or COI. (2)

SFI 148. Forestation Techniques for Marginal and Degraded Areas (3). Concepts, principles and applications of forestation strategies or techniques for marginal and degraded upland areas. 5 hrs (2 class, 3 lab). PR. SFI 100 or COI. (2)

SFI 149. Arboriculture and Landscape Gardening (3). Propagation and culture of important fruit and ornamental perennial plants; landscape gardening and ground improvement. 5 hrs (2 class, 3 lab). PR. COI. (1)

SFI 150. Silviculture of Mangrove Forests (3). Silvicultural approaches in the establishment, care and rehabilitation of mangrove forests. 3 hrs (class). PR. SFI 140 (Tropical Silviculture) or

COI (for undergraduate/graduate students who have background in Ecology or Silviculture). (2)

SFI 152. Forest Tree Seeds (3). Production, anatomy, and composition of tree seeds, and their collection, extraction, testing, treatment, storage, germination, and certification. 5 hrs (2 class, 3 lab). PR. COI. (2)

SFI 172. Forest Fire Management (3). Basic principles and practices in forest fire management; fire behavior, fire danger rating and forest fire prevention and control. 5 hrs (2 class, 3 lab). PR. FBS 36 or COI. (2)

Forestry

FOR 1. Introduction to Forests and Forestry (3). Forests and forestry in relation to the environment and society; introduction to the science and technology of forestry. 3 hrs (class. (1,2)

FOR 31. Elementary Forest Protection (3). Harmful effects of fire, insects and diseases on forests; preventive and remedial control measures. 5 hrs (2 class, 3 lab). PR. FBS 1 and FBS 9. (1,2)

FOR 110. Introduction to Protected Area Management (3). Principles and practices in the management of protected areas. 5 hrs (2 class, 3 lab). PR. FRM 100 and FBS 21. (2)

FOR 195. Research Methods in Forestry and Natural Resources (3). Methods and approaches in conducting researches in forestry and natural resources including proposal preparation and communicating results. 5 hrs (2 class, 3 lab). (1,2)

FOR 198. Internship (3). PR. COI. (M)

FOR 199. Undergraduate Seminar (1). (1,2)

FOR 200. Undergraduate Thesis (6). PR. COI. (1,2, M)

DEPARTMENT OF FOREST BIOLOGICAL SCIENCES

Forest Biological Sciences

FBS 1. Forest Botany (4). Survey of the plant kingdom, with emphasis on the morphology, anatomy, taxonomy, and physiology of forest species. 6 hrs (3 class, 3 lab). (1,2)

FBS 9. Forest Zoology (3). Survey on the animal kingdom, with emphasis on forest fauna. 5 hrs (2 class, 3 lab). (1,2)

FBS 10. Biology of Tropical Forest Plants (4). Structure, growth, and ecology of woody plants, bamboos and palms. 6 hrs (3 class, 3 lab). (1,2)

FBS 21. Taxonomy of Forest Plants (4). Identification, classification, nomenclature, phenology, geographical distribution and economic importance of woody and non-woody plants found in the Philippine forest. 8 hrs (2 class, 6 lab/field). PR. FBS 10. (1,2)

FBS 31. Plant Physiology (3). Nutrition, metabolism, growth and reproduction of plants. 5 hrs (2 class, 3 lab). (1,2)

FBS 36. Fundamentals of Forest Ecology (3). Biological interactions of forest components, energy flow and trophic levels, principles of limiting factors and succession, forest dynamics and vegetational development, with emphasis on tropical rainforest; the ecological impact of man. 5 hrs (2 class, 3 lab). PR. FBS 21 and FBS 31. (1,2)

FBS 41. Forest Pathology (3). The common and important diseases of forest plants and forest products, recognition of symptoms, causes, and control methods. 5 hrs (2 class, 3 lab). (2)

FBS 42. Forest Products Pathology (3). Types of wood defects caused by fungus and their control. Special emphasis on wood durability, fungicides, lumber discoloration, heart-rots and decay in forest products. 5 hrs (2 class, 3 lab). (1)

FBS 45. Forest Insect Pests and Diseases (4). Nature, development, and control of insect pests and diseases of trees and agroforestry crops. 6 hrs (3 class, 3 lab). PR. FBS 36. (1,2)

FBS 101. Forest Biodiversity (3). Survey of genetic resources and types of ecosystems in the tropical forest, with emphasis on Philippine forests. 5 hrs (2 class, 3 lab). PR. FBS 36 (1,2)

FBS 126. Forest Entomology (3). Biology and ecology of insects associated with forest trees and forest products; laboratory rearing methods and field work. 5 hrs (2 class, 3 lab). (2)

FBS 127. Insect Ecology (3). Concepts on insect abundance, distribution, dispersal, natural control and related problems. 5 hrs (2 class, 3 lab). PR. FBS 26 or equivalent and ZOO 150. (1)

FBS 130. Forest Tree Physiology (3). The physiological processes of trees and the relation of these processes to the environment. 5 hrs (2 class, 3 lab). PR. FBS 31. (2)

FBS 136. Forest Ecology (3). Interrelationships of forest plants and environmental factors; structure and dynamics of vegetational types; plants succession; indicator plants and ecological methods. 5 hrs (2 class, 3 lab). PR. FBS 36. (1,2)

FBS 140. Forest Mycology (3). A comprehensive survey of fungi affecting forest trees, including the morphology, taxonomy and physiology of fungi. 5 hrs (2 class, 3 lab). (1)

FBS 146. Forest Microbiology (3). Morphology, physiology, ecology, classification, and important activities of microorganisms affecting forest and forest products. 5 hrs (2 class, 3 lab). (2)

FBS 151. Microtechnique of Woody Plants (3). Preparation of tissue of woody plants for microscopic studies. 7 hrs (1 class, 6 lab). PR. FPPS 11 (1)

FBS 161. Plant Anatomy (3). Organization and development of the primary and secondary plant body of higher plants. 5 hrs (2 class, 3 lab). (1,2)

FBS 167. Plant Taxonomy (3). Fundamentals of classification and nomenclature. 5 hrs (2 class, 3 lab). PR. FBS 21. (1)

FBS 172. Forest Genetics (3). Theories and practical applications of genetics to forestry, including tree selection, hybridization, progeny testing and seed orchard establishment. 5 hrs (2 class, 3 lab). (1,2)

FBS 181. Research Techniques in Forest Biology (3). Laboratory and field techniques in reproductive biology, propagation, microbial fertilizers and biological control; data collection, processing and analysis. 7 hrs (1 class, 6 lab). PR. COI. (2)

FBS 190. Special Problems (1-3). May be taken twice provided that total number of units to be credited to the student's program will not exceed 4 units. PR. COI. (1,2, M)

FBS 191. Special Topics (1-3). May be taken twice provided that total number of units to be credited to the student's program will not exceed 4 units. (1,2, M)

Forestry

FOR 1. Introduction to Forests and Forestry (3). Forests and forestry in relation to the environment and society; introduction to the science and technology of forestry. 3 hrs (class. (1,2)

FOR 31. Elementary Forest Protection (3). Harmful effects of fire, insects and diseases on forests; preventive and remedial control measures. 5 hrs (2 class, 3 lab). PR. FBS 1 and FBS 9. (1,2)

FOR 110. Introduction to Protected Area Management (3). Principles and practices in the management of protected areas. 5 hrs (2 class, 3 lab). PR. FBS 21 and FRM 100. (2)

FOR 195. Research Methods in Forestry and Natural Resources (3). Methods and approaches in conducting researches in forestry and natural resources including proposal preparation and communicating results. 5 hrs (2 class, 3 lab). (1,2)

FOR 198. Internship (3). PR. COI. (M)

FOR 199. Undergraduate Seminar (1). (1,2)

FOR 200. Undergraduate Thesis (6). PR. COI. (1,2, M)

Natural Resources Conservation

NRC 133. Nature Interpretation (3). Interpretive techniques for natural resources conservation. 5 hrs (2 class, 3 lab). (1)

Wildlife

WLDL 105. Principles of Wildlife Management (3). Interrelationships of wildlife biology, habitat ecology, and population dynamics as they affect management problems. 3 hrs (class). PR. WLDL 101 or COI. (1)

WLDL 195. Techniques of Wildlife Management (3). Field and laboratory method used in wildlife management and research; including identification of signs, population census, food habits, trapping, transplantation, collection and preservation of specimens. 7 hrs (1 class, 6 lab). PR. WLDL 105. (2)

DEPARTMENT OF FOREST PRODUCTS AND PAPER SCIENCE

Forest Products and Paper Science

FPPS 11. Wood Structure and Identification (3). Gross and microscopic structure of wood; wood identification, natural defects and variations in structure. 7 hrs (1 class, 6 lab). (1,2)

FPPS 42. Forest Products Utilization 1 (3). Log and lumber grading; lumber manufacture; utilization of non-timber forest products; seasoning and preservation of wood and non-timber products. 5 hrs (2 class, 3 lab). PR. FPPS 11. (1,2)

FPPS 43. Forest Products Utilization 2 (3). Veneer and plywood; pulp and paper; wood composition boards; and wood derivatives and other chemicals from wood and forest plants. 5 hrs (2 class, 3 lab). PR. FPPS 11. (1,2)

FPPS 111. Wood and Fiber Anatomy (3). Microscopic identification, variability and anatomical characteristics of wood and paper-making fibers. Wood and non-wood structure in relation to defects, properties and uses. 7 hrs (1 class, 6 lab). (1,2)

FPPS 112. Bark Structure and Properties (3). Structure and development, properties and uses of the barks of woody plants. 5 hrs (2 class, 3 lab). PR. COI. (1)

FPPS 119 (or FRM 119). Marketing of Forest Products (3). Forest products marketing, the structure of forest products market, output and pricing policies and strategic trends. 5 hrs (2 class, 3 lab). PR. ECON 11. (1)

FPPS 121. Wood Physics 1 (3). Physical structure and properties of wood in relation to moisture heat, sound, and electricity. 5 hrs (2 class, 3 lab). (1)

FPPS 124. Timber Mechanics (3). Elements of strength of materials; mechanical properties of wood. 5 hrs (2 class, 3 lab). PR. MATH 28 and ENSC 11a. (2)

FPPS 125. Wooden Structures (3). Analysis and design of trusses, bridges and frames; bending, compression and tension members with emphasis on wood materials; timber fastenings. 5 hrs (2 class, 3 lab). PR. FPPS 124. (1)

FPPS 127. Properties and Utilization of Forest Products (4). Physical, mechanical and chemical properties of wood products; manufacturing processes and sustainable utilization technologies for wood products. 6 hrs (3 class, 3 lab). PR. FPPS 11. (1,2)

FPPS 128. Non-Timber Forest Products (3). Properties, processing and utilization of non-timber forest products. 5 hrs (2 class, 3 lab). PR. FBS 21 and FPPS 127 or COI (1,2)

FPPS 131. Wood Chemistry 1 (3). Chemistry of wood; pulping and paper-making principles; cellulose-derived products. 5 hrs (2 class, 3 lab). PR. CHEM 40. (1,2)

FPPS 132. Pulp and Paper Technology (3). Chemical and technological aspects of the manufacture of mechanical and

chemical pulps, paper and paper products. 3 hrs (class). PR. COI. (1)

FPPS 132.1 Pulp and Paper Laboratory (2). Laboratory experiments on the pulping wood; fiber technology, physical and chemical characteristics of pulp and paper. 6 hrs (lab) PR. FPPS 132 or COI. (1)

FPPS 134. Wood Finishing (3). Modern industrial methods and techniques in finishing wood products. 5 hrs (2 class, 3 lab). PR. COI. (1)

FPPS 136. Chemical Properties and Processing of Forest Products (3). Chemical and technological aspect of the manufacture of pulp, paper, paperboard and fiber products and other cellulose-derived products; chemical processing of extractives and other forest products. 5 hrs (2 class, 3 lab). PR. CHEM 40. (1)

FPPS 139. Fundamentals of Wet-End Chemistry in Paper Making (3). The paper making fiber and its behavior during paper making; theories and principles of paper chemistry; additives used in paper making. 5 hrs (2 class, 3 lab). PR. FPPS 132. (1)

FPPS 140. Environmental Pollution in Forest Industries (3). Causes and control of pollution associated with the primary wood processing industries. 3 hrs (class). PR. COI. (2)

FPPS 141. Lumber Manufacture and Grading (3). Sawmills, sawmilling practices and techniques; log and lumber grading. 5 hrs (2 class, 3 lab). PR. FPPS 11. (1)

FPPS 144. Machining of Forest Products (3). Analysis of wood-cutting processes, operation adjustment, and maintenance of machineries for wood working processing of bamboos, rattan and other related materials. 5 hrs (2 class, 3 lab). PR. COI. (2)

FPPS 147. Furniture and Handicraft Production (3). Designs and processes in the production of furniture and handicraft using forest products. 5 hrs (2 class, 3 lab).PR. FPPS 127 or COI. (1,2)

FPPS 151. Seasoning of Wood and Related Products (3). Theory and practice of kiln drying and other methods of seasoning wood and related products. 5 hrs (2 class, 3 lab). (2)

FPPS 161. Preservation of Wood and Related Products (3). Common factors causing the destruction and decay of wood and related products; methods or preservation and control; fireproofing, and the economic aspects of preservation of wood and related products. 5 hrs (2 class, 3 lab). PR. COI. (2)

FPPS 171. Adhesives and Gluing (3). Theory of adhesion and cohesion. Glues and synthetic resin adhesives. Principles in cold pressing, hot pressing, radio frequency heating, lamination and modified woods. Gluing defects and their causes. 5 hrs (2 class, 3 lab). PR. CHEM 40. (1)

FPPS 172. Glued Wood Products Technology (3). Manufacture of veneer, plywood, laminated wood and related products, principles of glued wood construction, properties, characteristics, and uses of glued products. 5 hrs (2 class, 3 lab). PR. COI. (2)

FPPS 181. Quality Control (3). Principles of statistical quality control and organization of quality control programs in the manufacture of wood products. 5 hrs (2 class, 3 lab). (1)

FPPS 182. Production Planning and Control (3). Planning of production requirements, routing, scheduling, dispatching and inspection coordination; control of materials, methods, machines, tooling and operation times. 5 hrs (2 class, 3 lab). PR. COI. (2)

FPPS 183. Engineering Economic Analysis (3). Economics of engineering decisions. Depreciation and cost estimating, analysis of existing and proposed plans, including materials, products design, and machine selection and replacement. 5 hrs (2 class, 3 comp). PR. COI. (1,2)

FPPS 190. Special Problems (1-3). Open only to students who are candidates for graduation. 6 hrs (lab). May be taken twice provided that total number of units to be credited to the student's program will not exceed 4 units. PR. COI. (1,2)

FPPS 191. Special Topics (1-3). May be taken twice provided that total number of units to be credited to the student's program will not exceed 4 units. (1,2)

Forestry

FOR 1. Introduction to Forests and Forestry (3). Forests and forestry in relation to the environment and society; introduction to the science and technology of forestry. 3 hrs (class. (1,2)

FOR 195. Research Methods in Forestry and Natural Resources (3). Methods and approaches in conducting researches in forestry and natural resources including proposal preparation and communicating results. 5 hrs (2 class, 3 lab). (1,2)

FOR 198. Internship (3). PR. COI. (M)

FOR 199. Undergraduate Seminar (1). (1,2)

FOR 200. Undergraduate Thesis (6). PR. COI. (1,2, M)

Natural Resources Conservation

NRC 150. Forest-Based Rural Industries (3). Nature, type, characteristics of forest resource-based rural industries; role in promoting social forestry; strategies to promote their development. 3 hrs (class) PR. FRM 117 or COI. (2)

Pulp and Paper Technology

PPT 170. Instrumentation and Process Control for the Pulp and Paper Industry (3). Principles and methods of control system analysis and design as applied to the pulp and paper industry. 3 hrs (class). PR. EE 1, ENSC 21 and FPPS 132. (2)

PPT 188. Environmental Technology for the Pulp and Paper Industry (3). Causes and control of pollution associated with the pulp and paper industry and methods for effluent treatment. 3 hrs (class). PR. FPPS 132 or COI. (1)

PPT 193. Pulp and Paper Plant Design (3). Computations of material balances, energy balances, power requirement, equipment balancing, cost and profitability estimation. 5 hrs (2 class, 3 lab). PR.

ChE 32 and ChE 192. (2)

PPT 198. Internship (3). PR. COI. (1,2,M)

PPT 199. Undergraduate Seminar (1). PR. Senior standing. (2)

PPT 200. Undergraduate Thesis (6). PR. COI. (1,2,M)

PPT 200b. Innovationeering (6). PR. COI. (1,2,M)

PPT 200c. Engineering Industry Research (6). PR. COI. (1,2,M)

DEPARTMENT OF SOCIAL FORESTRY AND FOREST GOVERNANCE

Social Forestry and Forest Governance

SFFG 20. Communication Skills for Forestry Technicians (3). Introduction to the basic skills and tools in communication to promote participatory forestry development. 3 hrs (class). (1)

SFFG 80. Forest Community Development (2). Theories, concepts, strategies and tools for the development of forest communities. 2 hrs (class). PR. SFFG 20. (2)

SFFG 80.1. Forest Community Development Laboratory (3). Application of theories, concepts, strategies and tools for the development of forest communities. 9 hrs (field). PR. SFFG 80. (M)

SFFG 101. Principles and Concepts of Social Forestry (3). Rationale for and approaches in Social Forestry and its application for local community development. 3 hrs (class). PR. FOR 1 or COI. (1,2)

SFFG 111. Forest Conservation (3). Approaches to forest conservation; socio-cultural, political, and economic factors affecting the conservation of forest resources. 3 hrs (class). (1,2)

SFFG 112. Program Planning (3). Formulation of programs of public forestry education for the use of extension agents and adult education workers. 3 hrs (class). PR. COI. (1)

SFFG 113. Forestry Extension (3). Theories and practices in extension education as applied to forestry: analysis of forestry extension programs in the Philippines. 3 hrs (class). PR. COI. (1,2)

SFFG 120. Environmental and Natural Resource Worldviews (3). Introduction to the philosophical dimensions of human-habitat relationships; Western, Oriental, and indigenous Filipino worldviews about the environment and forests; and political-economic dimensions of environmentalism within the realities of Philippine society. 3 hrs (class). PR. SFFG 101 or COI. (1)

SFFG 123. Forest Policy and Institutions (3). Study of policies and institutions involved in forest management and development in the Philippines. 3 hrs (class). PR. COI. (1,2)

SFFG 125. Political Economy and Administration of Forestry Development (3). Concepts, theories, processes, and ethics; analysis of policies and institutions involved in the interactions between the state and forestry development. 3 hrs (2 class, 3 lab). PR. SFFG 101 or COI. (1,2)

SFFG 133. Socio-Economics of Agroforestry (3). Socio-economic principles underlying the management of agro-forestry establishments. 5 hrs (2 class, 3 lab). PR. SFFG 101 and ECON 11. (1)

SFFG 141. Formal Organizations in Social Forestry (3). Formal forestry organizations implementing social forestry programs in the Philippines and in other tropical countries; approaches to organizational design and change, its application to social forestry. 3 hrs (class). PR. COI. (1)

SFFG 149. Gender Analysis and Planning (3). Gender analysis and planning methods; implications for national development with emphasis on agriculture, forestry and natural resources. 3 hrs (class). PR. SFFG 101 or COI. (2)

SFFG 150. Production and Conservation Technologies in Social Forestry (3). Concept; identification, characterization, applicability, analysis and practical evaluation of appropriate production and conservation technologies in social forestry. 3 hrs (class). PR. SFFG 101 or COI. (2)

SFFG 152. Sociology of Natural Resources (3). Analysis of the relationship between social structure and action/behavior and state of natural resources using sociological perspectives and concepts. 3 hrs (class). PR. COI. (1,2)

SFFG 155. Social Equity Issues in Social Forestry (3). Social equity issues in forestry with emphasis on social structure, land tenure, and gender. 3 hrs (class). PR. SFFG 152 or COI. (2)

SFFG 163. Anthropological Concepts for Social Forestry (3). Application of anthropological concepts to an understanding of ethnic groups in relation to forestry. 3 hrs (class). PR. SFFG 101 or COI. (2)

SFFG 180. Organizing Forest Dependent Communities (3). Introduction and application of theories, concepts, strategies, and tools for effective forest conservation and development of forest communities. 7 hours (1 class, 6 lab). (1,2)

SFFG 182. Rural Institutions for Forests and Natural Resources Development (3). Concepts and processes of institution building in forest communities. 3 hrs (class). PR. SFFG 101 or COI. (2)

SFFG 190. Special Problems (1-3). May be taken twice provided that total number of units to be credited to the student's program will not exceed 4 units. 3 hrs (class). PR. ENG 10 or COI. (1,2, S)

SFFG 191. Special Topics (1-3). May be taken twice provided that total number of units to be credited to the student's program will not exceed 4 units. (1,2)

SFFG 197. Anthropological Research Methods in Forestry and other Natural Resources Development (3). Anthropological research methods and techniques relevant to the concerns of forestry and other natural resources development, with special emphasis on the study of culture-environment interactions. 5 hrs (2 class, 3 lab). PR. SFFG 163 or COI. (2)

Forestry

FOR 1. Introduction to Forests and Forestry (3). Forests and forestry in relation to the environment and society; introduction to the science and technology of forestry. 3 hrs (class. (1,2)

FOR 110. Introduction to Protected Area Management (3). Principles and practices in the management of protected areas. 5 hrs(2 class, 3 lab). PR. FRM 100 and FBS 21. (2)

FOR 195. Research Methods in Forestry and Natural Resources (3). Methods and approaches in conducting researches in forestry and natural resources including proposal preparation and communicating results. 5 hrs (2 class, 3 lab). (1,2)

FOR 198. Internship (3). PR. COI. (M)

FOR 199. Undergraduate Seminar (1). (1,2)

FOR 200. Undergraduate Thesis (6). PR. COI. (1,2, M)

Natural Resources Conservation

NRC 150. Forest-Based Rural Industries (3). Nature, type, characteristics of forest resource-based rural industries; role in promoting social forestry; strategies to promote their development. 3 hrs (class). PR. FRM 117 or COI. (2)