

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ABT 140	Biotechnology in Crop Protection	Principles and applications of biotechnology in the management of insect pests, plant diseases and weeds.	3	AGRI 42. Pest Management and BIO 30. Genetics or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	AGRI 41	Principles of Crop Protection	Identification, biology and ecology of different pests and their natural enemies.	3	No prerequisite	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	AGRI 42	Pest Management	Approaches and Practices in Pest Management.	3	AGRI 41. Principles of Crop Protection	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 101	General Entomology	Introduction to insect adaptations; structural, functional and developmental systems; taxonomy and ecology,	3	No prerequisite	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 110	Insect Morphology	Phylogenetic study of the external and internal structures of insects and other arthropods	3	ENT 101. General Entomology or COI	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 120	Insect Physiology	Comparative physiology of insects; functional mechanisms and physiological bases of behavior	3	ENT 101. General Entomology or COI and CHEM 40. Basic Organic Chemistry	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 125	Insecticide Toxicology	Chemical and physical properties, formulations, biological effects and behavior of insecticides	3	ENT 101. General Entomology or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 137 (or BIO 137)	Insect Genetics	Genetic concepts and mechanisms in insects, and their application in taxonomy, pest management and genetic improvement of beneficial species	3	ENT 101. General Entomology and BIO 30. Genetics or COI	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 140	Insect Taxonomy	Classification, biology and evolutionary relationships among the higher insect taxa; taxonomic methods; curating insect collections	3	ENT 110. Insect Morphology or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 146	Acarology	Taxonomy and evolutionary relationships of the Acari; their habitats, trophic functions, life cycles, behavior and distribution	3	ENT 101. General Entomology or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 151	Insect Ecology	Dynamics of insect population, specifically their abundance, regulation, distribution and mensuration; community theories pertaining to natural control of pest species	3	ENT 140. Insect Taxonomy or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 170	Crop Protection Entomology	Bionomics and control of the major agricultural insect and mite pests of crop plants	3	AGRI 42. Pest Management or COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 172	Biological Control of Insect Pests	Principles and methods of biological control of insect pests	3	AGRI 42. Pest Management or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 174	Postharvest and Storage Pests	Bioecology, identification and control of the major and postharvest/storage pests of grains, vegetables, fruits, ornamental and medicinal crops	3	AGRI 42. Pest Management or AGRI 32. Fundamentals of Crops Science II or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 176	Medical and Veterinary Entomology	Medical and Veterinary Entomology (3). Bionomics, identification and control of the major arthropods affecting man and domestic animals.	3	ENT 101. General Entomology or COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 195	Entomological Techniques	Principles of insect micrology and general insect rearing methods	3	ENT 101. General Entomology or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 209	History of Entomology	Historical perspective in the development of world entomology.	3	ENT 101. General Entomology or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 220	Advanced Insect Physiology	Biochemical bases of life processes in insects.	3	ENT 120. Insect Physiology, CHEM 160. Introductory Biochemistry or COI	2nd semester

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College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 225	Advanced Insecticide Toxicology	Physiochemical concepts of the action or toxic agents in biochemical systems; mechanism of action or anticholinesterase inhibitors; insecticide resistance and synergism; selective toxicity	3	ENT 125. Insecticide Toxicology, CHEM 160. Introductory Biochemistry or COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 240	Advanced Insect Taxonomy	Recent concepts in systematics; original research on taxonomic group of student's interest	3	ENT 140. Insect Taxonomy or COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 246	Taxonomy of Immature Insects	Identification, classification, and behaviour of immature forms of insects, with emphasis on the endopterygote orders	3	ENT 140. Insect Taxonomy or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 251	Advanced Insect Ecology	Contemporary ecological concepts and methods as they relate to insect populations	3	ENT 151. Insect Ecology or COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 271	Insect Transmission of Plant Pathogens	Insect vectors of plant pathogens, techniques of plant pathogen transmission, interrelationships of plants, insects and pathogens; physiology of insects in relation to transmission of plant pathogens.	3	ENT 101. General Entomology and PPTH 101. Principles of Plant Pathology	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 272	Biology of Entomophagous Insects	Life history, habits, host relationship, and other biological peculiarities of selected groups of entomophagous insects	3	ENT 140. Insect Taxonomy or COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 273	Insect Molecular Biology	Molecular aspects of insect biology and the use of biotechnology in entomological research and integrated pest management	3	ENT 120. Insect Physiology and BIO 101. Introductory Molecular Biology or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 275	Insect Pathology	Insect pathology and microbiology, including biological control relationship between microorganisms and insects	3	ENT 101. General Entomology and MCB 1. General Microbiology or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 279	Insect Resistance in Plants	Taxonomy and biology of mites associated with crop plants, stored products, leaf litter and soil; control of injurious species; laboratory rearing techniques.	3	ENT 120. Insect Physiology and BOT 20. Elementary Plant Physiology or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	ENT 295	Pesticide Residues	Pest control through resistant plants, methods of selection, analysis of the components of resistance interactions between resistant plants and insects	3	ENT 125. Insect Toxicology or COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 101	Principles of Plant Pathology	History, nature and causes of plant diseases; development, analysis, forecasting, assessment and control of disease in plant populations.	3	AGRI 41. Principles of Crop Protection or MCB 11. Biology and Applications of Microorganisms	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 102	Control of Plant Diseases	Theories and practices in plant disease control.	3	PPTH 101. Principles of Plant Pathology or AGRI 42. Pest Management	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 103	Introductory Phytobacteriology	Nature and biology of bacterial pathogens of plants; their classification, life cycles in relation to disease development, host physiological responses to infection, ecology and control.	3	AGRI 41. Principles of Crop Protection or MCB 11. Biology and Applications of Microorganisms	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 104	General Mycology	Morphology, life cycles and taxonomy of fungi.	3	No prerequisite	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 106	Principles of Phytonematology	Introduction to methodology, morphology, biology, ecology, identification, pathogenesis and control of plant parasitic nematodes.	3	AGRI 41. Principles of Crop Protection	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 112	Biological Control of Plant Pathogens	Nature, mechanisms and interaction involved in the biological control of plant pathogens.	3	PPTH 101. Principles of Plant Pathology	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 114	Introduction to Fungal Plant Pathogens	Identification and biology of plant pathogenic fungi, disease cycles, and control.	3	AGRI 41. Principles of Crop Protection or COI	1st and 2nd semester

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College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 115	Introductory Plant Virology	Nature of plant viruses and symptoms of diseases produced; principles and techniques of transmission; purification, serology and electron microscopy.	3	AGRI 41. Principles of Crop Protection or MCB 11. Biology and Applications of Microorganisms	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 121	Postharvest Pathology	The nature, pathogenesis and control of postharvest diseases of crops.	3	PPTH 101. Principles of Plant Pathology	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 131	Research in Plant Pathology	Research methods in plant diseases.	3	PPTH 101. Principles of Plant Pathology	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 141	Principles of Plant Disease Epidemiology	Elements of plant disease, epidemic systems, effects of environment, pathogen dispersal and disease spread, basic epidemic models, genetic basis of epidemics.	3	PPTH 101. Principles of Plant Pathology or COI	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 201	Pathogenesis	Pathogenesis as it applies to bacterial and fungal diseases of plants.	3	COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 202	Advanced Course in Plant Disease	Exclusion and eradication of plant diseases; protection and immunization of plants; recent advances in plant disease control.	3	PPTH 102. Control of Plant Diseases or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 204	Advanced Mycology I	Mycomycetes and phycomycetes. A comprehensive survey; field collections, identification; preservation; readings and special topics.	3	PPTH 104. General Mycology or COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 206	Advanced Phytonematology	Advances in phytonematological research with emphasis on nematode density/plant yield relationships, host-parasite relations, population dynamics, cytology, physiology, and recent developments in nematode control.	3	PPTH 106. Principles of Phytonematology or COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 212	Disease Resistance in Plants	Manifestations and genetics of disease resistance in plants, nature and causes of variation in plant pathogens, breeding for disease resistance, and utilization of resistant genes.	3	PPTH 101. Principles of Plant Pathology or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 214	Advanced Mycology II	Ascomycetes, Basidiomycetes, and Fungi Imperfecti. Comprehensive survey; field collection; identification; preservation; and mycological literature	3	PPTH 104. General Mycology or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 215	Advanced Plant Virology	Classification infection, reproduction, movement, and control of plant viruses.	3	PPTH 115. Introductory Plant Virology or COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 216	Taxonomy of Plant Parasitic Nematodes	Systematics, identification, classification, and nomenclature of plant parasitic nematodes.	3	PPTH 106. Principles of Phytonematology or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 224	Advanced Taxonomy of Fungi	Identification of fungi at species level with emphasis on the plant pathogenic ones.	3	PPTH 104. General Mycology or COI	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 241	Advanced Plant Disease Epidemiology	Quantitative aspects of plant disease epidemiology, modeling, and systems simulation, coupling models, quantifying yield loss and multiple disease effects.	3	PPTH 141. Principles of Plant Disease Epidemiology or COI	1st semester

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College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	PPTH 251 (or MBB 251)	Molecular Plant-Pathogen Interactions	Molecular mechanisms of plant-pathogen interactions and application of molecular diagnostics and markers in plant pathology	3	PPTH 101. Principles of Plant Pathology and BIO 101. Introductory Molecular Biology	2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	WSC 101	Fundamentals of Weed Science	Nature and characteristics of weeds, principles of weed science, and their application to weed management.	3	AGRI 41. Principles of Crop Protection or COI	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	WSC 111	Biology of Weeds	Establishment, reproduction, and dispersal of weeds, relationship with other plants and changes in weed population.	3	BOT 20. Elementary Plant Physiology or COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	WSC 121	Weed Ecology	Interaction of weeds and the environment, applications to weed management within the agroecosystems.	3	COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	WSC 141	Weeds and Their Management	Weed identification, methods of weed control, and introduction to herbicides and factors influencing their use.	3	COI	1st and 2nd semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	WSC 142	Herbicide and Their Behavior in Plants and the Environment	Structure, classification and mode of action of herbicides; absorption, translocation, degradation and fate in plants and the environment	3	CHEM 40. Basic Organic Chemistry and BOT 20. Elementary Plant Physiology or COI	1st semester
College of Agriculture and Food Science	Institute of Weed Science, Entomology and Plant Pathology	WSC 145	Biological Control of Weeds	Nature and mechanisms of biological control agents (BCAs) and their role in integrated weed management	3	WSC 101. Fundamentals of Weed Science or COI	2nd semester
College of Agriculture and Food Science	Agricultural Systems Institute	SOIL 101	Agricultural Geology	Common soil-forming rocks and minerals, geologic processes and agencies and landforms in relation to agriculture.	3	AGRI 51. Principles of Soil Science	1st Semester
College of Agriculture and Food Science	Agricultural Systems Institute	SOIL 110	Soil Survey and Classification	Survey and classification of soils based on their morphology, genesis, and properties; application in agriculture, resource use and development.	3	SOIL 101. Agricultural Geology or COI	2nd Semester
College of Agriculture and Food Science	Agricultural Systems Institute	SOIL 140	Soil Chemistry	Nature and composition of soils; physico-chemical properties and reactions; chemical processes including ionic equilibria.	3	AGRI 51. Principles of Soil Science	2nd Semester
College of Agriculture and Food Science	Agricultural Systems Institute	SOIL 142	Fertilizers and their Reaction with the Soil -	Manufacture, processing and properties of fertilizers; their reaction with and the residual effect on the soil.	3	AGRI 51. Principles of Soil Science	2nd Semester
College of Agriculture and Food Science	Agricultural Systems Institute	SOIL 150	Soil Fertility	Soil nutrient elements and their availability in relation to soil properties; evaluation of soil fertility status; use of fertilizers and other soil amendments.	3	AGRI 51. Principles of Soil Science	1st Semester
College of Agriculture and Food Science	Agricultural Systems Institute	SOIL 161	Spatial Analysis and Soil Mapping	Spatial Analysis and Soil Mapping – Geographical analysis of aerial photos, satellite images, and spatial information as applied to land use, soil, and resource management and mapping.	3	AGRI 51. Principles of Soil Science	1st Semester
College of Agriculture and Food Science	Agricultural Systems Institute	SOIL 210	Morphology, Genesis and Geography of Soils	Morphology, Genesis and Geography of Soils - Properties, development and distribution of major soil groups and their relation to agriculture.	3	SOIL 110. Soil Survey and Classification	1st Semester
College of Agriculture and Food Science	Agricultural Systems Institute	SOIL 221	Advanced Soil Microbiology	Advanced Soil Microbiology - Soil microorganisms; microbiological processes involving organic matter and nitrogen transformation; nature of the soil organic fraction.	3	SOIL 120. Soil Microbiology	1st Semester
College of Agriculture and Food Science	Agricultural Systems Institute	SOIL 240	Advanced Soil Chemistry	Advanced Soil Chemistry - Important chemical phenomena in soils; physicochemical study of soils; certain fundamental properties of clays.	3	SOIL 140. Soil Chemistry	1st Semester

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College of Agriculture and Food Science	Agricultural Systems Institute	SOIL 250	Advanced Soil Fertility	Advanced Soil Fertility - Soil conditions in relation to plant growth, including soil transformation processes of both organic and inorganic constituents; concepts of nutrient availability.	3	SOIL 150. Soil Fertility	1st Semester
College of Agriculture and Food Science	Agricultural Systems Institute	SOIL 260	Environment and Land Use	Analysis of environmental factors in landuse investigations; recognition of competitive uses and land-use optimization on regional and local levels.	3	COI	2nd Semester
College of Agriculture and Food Science	Agricultural Systems Institute	AGRI 61	Agricultural Extension and Communication	AGRI 61 is designed to provide basic understanding of extension and advisory services in agriculture and rural development and the critical role of communication as an instrument to effect changes in the behavior of target clients of extension towards adoption and innovation	3	COI	1st, 2nd Semester
College of Agriculture and Food Science	Agricultural Systems Institute	AERS 141	Community Survey and Program Planning	A survey of economic and social conditions in rural communities, formulation of a program for the use of agricultural teachers, extension, adult and education workers	3	COI	1st Semester
College of Agriculture and Food Science	Agricultural Systems Institute	AERS 142	Concepts and Processes in Agriculture, Forestry and Natural Resources Knowledge Systems	Concepts, processes and outcomes in the generation, exchange and utilization of knowledge in agriculture and natural resources	3	AGRI 61. Agricultural Extension and Communication	1st Semester
College of Agriculture and Food Science	Agricultural Systems Institute	AERS 154	Community Organizing	Theory and practice, issues and problems and implications in organizing people for community action	3	COI	2nd Semester
College of Agriculture and Food Science	Agricultural Systems Institute	AERS 16	Rural Sociology	Analysis of rural communities and rural institutions as they respond to and are affected by technological, social, economic, and environmental policies and factors from both within and outside the rural sector	3	COI	1st, 2nd Semester
College of Agriculture and Food Science	Agricultural Systems Institute	AGRI 195	Research Methods in Agriculture and Food Science	Research methodologies in agriculture and food science, conceptualization of research problem and preparation of research proposal, techniques in setting-up of experiments, collection of data and analysis, interpretation and reporting of research results	3	COI	1st, 2nd Semester
College of Agriculture and Food Science	Agricultural Systems Institute	AERS 261	Social and Cultural Change	Theories and models of social and cultural change, with emphasis on technology and social change, particularly problems related to the acceptance and diffusion of innovation in agriculture and other areas	3	COI	1st, 2nd Semester
College of Agriculture and Food Science	Agricultural Systems Institute	AERS 262	Urban Sociology	Sociological principles applied to the modern city; structure, growth, social and personal life in an urban setting	3	COI	2nd Semester
College of Agriculture and Food Science	Agricultural Systems Institute	AERS 265	Sociology of Development	Application of sociological theories and concepts to the problems of development at the international, national, and local levels, with emphasis on operationally significant concepts derived from current research and development experience	3	COI	1st, Semester
College of Agriculture and Food Science	Agricultural Systems Institute	AERS 267	Perspectives in Community Analysis	Theoretical foundations of the concept of community and their application in current community studies	3	COI	1st, Semester
College of Agriculture and Food Science	Agricultural Systems Institute	AERS 281	Theory Construction	Postulates in science, structure, functions and formats of theory; concept formation and definitions; origination of hypotheses; and introduction to the epistemological foundation of sociological theories	3	COI	1st, Semester
College of Agriculture and Food Science	Agricultural Systems Institute	AERS 282	Social Research Design	Methods of social research with emphasis on the major steps in the design and conduct of social research from problem definition to analysis, interpretation and write-up of research report	3	COI	1st, 2nd Semester

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College of Agriculture and Food Science	Agricultural Systems Institute	ASYS 101	Introduction to Sustainable Agricultural Systems	Issues, properties, components and models of sustainable agricultural systems.	3	None	1st
College of Agriculture and Food Science	Agricultural Systems Institute	ASYS 110	Organic Agriculture	Principles, policies and practices in organic agriculture.	3	AGRI 22. Introduction to Livestock and Poultry Production & AGRI 32. Fundamentals of Crops Science II	1st
College of Agriculture and Food Science	Agricultural Systems Institute	ASYS 120	Crop-Animal Systems	Principles and practices of crop-animal systems.	3	AGRI 22. Introduction to Livestock and Poultry Production & AGRI 32. Fundamentals of Crops Science II	2nd
College of Agriculture and Food Science	Agricultural Systems Institute	ASYS 145	Participatory Methodologies in Agricultural Systems Research and Extension	Concepts, elements and impacts of participatory approaches in agricultural systems research and extension.	3	AGRI 61. Fundamentals of Agricultural Extension and Communication , AGRI 111. Introduction to Farming Systems	2nd
College of Agriculture and Food Science	Agricultural Systems Institute	ASYS 146	Agricultural Systems Analysis and Modelling	Systems analysis and modeling and their applications in agriculture.	3	AGRI 22. Introduction to Livestock and Poultry Production & AGRI 32. Fundamentals of Crops Science II	2nd
College of Agriculture and Food Science	Agricultural Systems Institute	AGRI 161	Introduction to Innovation and Entrepreneurship in Agriculture	Introduction to the concepts and practices of innovation and entrepreneurship in agriculture.	3	COI, Junior standing	2nd
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 11	Fundamentals of Food Science and Technology	Introduction to food science and technology; basic principles of food science	3	None	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 101	Food Chemistry I	Chemical composition of foods and its effect on texture, flavor, color and nutritive value	3	CHEM 40. Basic Organic Chemistry and CHEM 40.1. Basic Organic Chemistry Laboratory	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 102	Food Analysis	Application of chemical, physical, biological and sensory analysis of foods and food products, with reference to the laboratory operations of a food manufacturing plant	4	FST 101. Food Chemistry I, CHEM 32. Quantitative Organic Analysis and CHEM 32.1. Quantitative Organic Analysis Laboratory	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 111	Food Chemistry II	Physico-chemical aspects of the processes and interactions that occur during the manufacture, handling, and storage of foods	3	FST 101. Food Chemistry, MATH 27 Analytic Geometry and Calculus I, and PHYS 51. Elements of Physics	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 115	Food Biotechnology	Principles and applications of food biotechnology	3	MCB 11. Biology and Applications of Microorganisms and CHEM 160. Introductory Biochemistry	1
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 122	Fundamentals of Food Fermentation	Types of Fermentation; pathways and processing of fermented food products	3	MCB 11. Biology and Applications of Microorganisms and CHEM 160. Introductory Biochemistry	1
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 130	Food Engineering I	Principles of mass and heat transfer applied to food processing; physical and properties of food materials	3	MATH 27. Analytic Geometry and Calculus I, and PHYS 51. Elements of Physics	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 131	Food Engineering II	Thermal processing, dehydration, chilling, freezing, evaporation, size reduction and packaging, and handling of food materials	3	FST 130 . Food Engineering I	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 132	Food Engineering III	Principles of steam generation, extraction, food extrusion, process control, food processing, plant, waste and by-products management	3	FST 130 . Food Engineering I	2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 138	Food Packaging and Labelling	Food packaging: systems and Interactions, properties of packaging materials, labeling issues and trends	3	FST 141. Food Processing II or COI	2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 140	Food Processing I	FST 140. Food Processing I (3). Principles of food processing; food fermentation, thermal processing, dehydration and low temperature preservation	3	MCB 180. Introductory Food Microbiology, and FST 130. Food Engineering I	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 141	Food Processing II	Principles of food processing; water activity, concentration processes, use of additives, food packaging and food laws	3	MCB 180. Introductory Food Microbiology, and FST 130. Food Engineering I	1,2

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College of Agriculture and Food Science	Institute of Food Science and Technology	FST 145	Fruits and Vegetables Processing	Principles of fruit and vegetable processing, canning, drying, dehydration, freezing, sugar concentration	3	FST 101. Food Chemistry I	1
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 147	Principles of Food Product and Process Development	Systematic way of product and process development from product idea generation to screening, to product formulation, and viability testing	3	FST 140. Food Processing I and FST 141. Food Processing II or COI.	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 151	Sensory Evaluation of Food Products	Fundamental aspects of subjective and objectives evaluation of food quality; certain basic influences in food acceptance patterns	3	STAT 101. Statistical Methods	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 165	Food Quality Assurance	Principles and methods of food quality assurance	3	FST 140. Food Processing I and FST 141. Food Processing II	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 166	Food Hygiene and Sanitation	Operation involving food production should be hygienic and sanitary. This course aims to discuss and elaborate the measures put in place in order to ensure hygienic and sanitary production of food and food products. The students are expected to learn the importance of hygiene and sanitation in the food industry. They are also expected to understand the basic considerations in hygienic design. Moreover, the students should be able to apply the ways on how to minimize hazards to public health and recognize the role of education and training on proper implementation of food hygiene and sanitation. At the end of the course, the students should propose improvements on existing food safety regulations	3	MCB 11. Biology and Applications of Microorganisms	2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 167	Principles of Food Safety	Essentials of food safety from farm to fork continuum; issues and concerns of safety in the food supply chain; hazards and contaminants in food and food products and the food safety measures in different stages of a food product flow	3	MCB 11. Biology and Applications of Microorganisms	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 170	Food Processing Management	Organization, production management, resource allocation, process quality control and information System	3	FST 140. Food Processing I or FST 141. Food Processing II	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 175	Food Laws and Regulations	Philippine and International food laws and regulations related to food quality and safety	3	None	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 202	Food Analysis	Physical and chemical methods in the analysis of foods	3	CHEM 32. Quantitative Organic Analysis and CHEM 32.1. Quantitative Organic Analysis Laboratory or COI	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 210	Food Biochemistry	Biochemical and physicochemical changes in foods such as meat, fish, fruits, vegetables, cereals, and root crops	3	CHEM 160. Introductory Biochemistry or COI	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 219	Postharvest Biochemistry of Fruits and Vegetables	Biosynthetic and degradative changes occurring in fruits and vegetables after harvest.	3	COI	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 220	Microbiological Aspects of Processing	Introduction to the microbiological problems in food preservation	3	COI	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 221	Advanced Food Microbiology	Important groups of food microorganisms, and their isolation and characterization in relation to food processing	3	MCB 180. Introductory Food Microbiology, or COI	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 235	Thermal Processing	Determination of thermal death times of spoilage microorganisms; heat penetration studies; computation of processing periods	3	COI	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 236	Dehydration and Freezing	Effects of newer processing techniques on cellular structure, biochemical composition and quality of food	3	COI	1,2
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 240	Tropical Food Processing	Theoretical and experimental consideration in the processing of selected tropical foods	3	FST 210. Food Biochemistry and FST 220. Microbiological Aspects of Processing or COI	1,2

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Agriculture and Food Science	Institute of Food Science and Technology	FST 241	Tropical Fruits and Vegetable Processing	Principles underlying newer techniques of processing tropical fruits and vegetable	3	FST 210. Food Biochemistry, and FST 220. Microbiological Aspects of Processing or COI	1,2
College of Agriculture and Food Science	Institute of Crop Science	AGRI 111	Introduction to Farming Systems	Principles and determinants of farming systems; procedures for designing and evaluating location-specific farming systems options.	3	AGRI 22 Introduction to and AGRI 32 or COI	1,2
College of Agriculture and Food Science	Institute of Crop Science	AGRI 121	Introduction to Ecological Agriculture	Principles and practices of ecological agriculture	3	AGRI 32. Fundamentals of Crop Science II or COI	1,2
College of Agriculture and Food Science	Institute of Crop Science	CRSC 105	Principles of Plant Breeding	Development, evaluation and maintenance of improved crop plants	3	BIO 30. Genetics	1,2
College of Agriculture and Food Science	Institute of Crop Science	AGR 110	Grain Crops Production	Culture and management of grain crops with emphasis on rice, corn, wheat, sorghum, soybean and mungbean	3	AGRI 31. Fundamentals of Crop Science I	1,2
College of Agriculture and Food Science	Institute of Crop Science	AGR 114	Annual Industrial Crops Production	Culture and management of selected industrial field crops with emphasis on sugar cane, cotton, ramie, jute, kenaf, sunflower, sesame and tobacco	3	AGRI 31. Fundamentals of Crop Science I	2
College of Agriculture and Food Science	Institute of Crop Science	AGR 116	Multiple Cropping	Concepts, production technologies and research methodology in multiple cropping	3	AGRI 31. Fundamentals of Crop Science I and AGRI 32. Fundamentals of Crop Science II	2
College of Agriculture and Food Science	Institute of Crop Science	AGRI 118	Pasture and Feed Crops	Culture and management of crops intended for feed and pasture and forage crops	3	AGRI 31. Fundamentals of Crop Science I	1
College of Agriculture and Food Science	Institute of Crop Science	AGRI 141	Field Crop Physiology	Physiological concepts and processes and their relationship with crop yield with emphasis on major field crop	3	AGRI 32. Fundamentals of Crop Science II or BOT 20. Elementary Plant Physiology	1,2
College of Agriculture and Food Science	Institute of Crop Science	CRSC 101	Tropical Annual Crops Production and Management	Principles and practices in the production and management of tropical annual crops	3	AGRI 32. Fundamentals of Crop Science II or COI	1,2
College of Agriculture and Food Science	Institute of Crop Science	CRSC 102	Tropical Perennial Crops Production and Management	Principles underlying practices in the production and management of tropical perennial crops	3	AGRI 32. Fundamentals of Crop Science II or COI	1,2
College of Agriculture and Food Science	Institute of Crop Science	AGR 150	Methods in Plant Breeding I	Methods and techniques in the improvement of crop plants	3	CRSC 105. Principles of Plant Breeding	1,2
College of Agriculture and Food Science	Institute of Crop Science	AGR 153	Methods in Plant Breeding II	Mutation breeding, wide hybridization, and application of advances in biotechnology in crop improvement	3	AGR 150. Methods in Plant Breeding I	1
College of Agriculture and Food Science	Institute of Crop Science	AGR 160	Plant Genetics Resources Conservation and Management	Concepts and methods of plant genetic resources collection, conservation, evaluation, documentation and use	3	CRSC 105. Principles of Plant Breeding or COI	1
College of Agriculture and Food Science	Institute of Crop Science	AGR 170	Fundamentals of Seed Technology	Concepts and methodologies in seed production, processing, storage, distribution and quality control	3	AGRI 31. Fundamentals of Crop Science I and AGRI 32. Fundamentals of Crop Science II, AGRI 42. Pest Management and BOT 20. Elementary Plant Physiology or COI	1,2
College of Agriculture and Food Science	Institute of Crop Science	AGR 192	Methods of Crop Research	Experimental methods for developing and evaluating crop production technology	3	AGRI 31. Fundamentals of Crop Science I or COI	1,2
College of Agriculture and Food Science	Institute of Crop Science	ABT 101	Fundamentals of Agricultural Biotechnology	Principles and applications of agricultural biotechnology	3	BIO 30. Genetics and CHEM 40. Basic Organic Chemistry	1,2
College of Agriculture and Food Science	Institute of Crop Science	ABT 103	Experimental Techniques in Agricultural Biotechnology I	Laboratory practices, tools and procedures in plant tissue culture, animal reproduction, food and crop protection biotechnology	3	ABT 101 Fundamentals of Agricultural Biotechnology or COI	1,2
College of Agriculture and Food Science	Institute of Crop Science	ABT 104	Experimental Techniques in Agricultural Biotechnology II	Laboratory tools and procedures in bioinformatics, protein isolation and purification, molecular marker technology, and recombinant DNA technology	3	ABT 101 Fundamentals of Agricultural Biotechnology or COI	1,2
College of Agriculture and Food Science	Institute of Crop Science	ABT 106	Molecular Markers	Principles and applications of molecular marker technologies in agriculture, medicine, industry and environment	3	ABT 101 Fundamentals of Agricultural Biotechnology or COI	1,2
College of Agriculture and Food Science	Institute of Crop Science	ABT 107	Recombinant DNA Technology	Principles and applications of recombinant DNA Technology	3	ABT 101 Fundamentals of Agricultural Biotechnology or COI	1,2

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College of Agriculture and Food Science	Institute of Crop Science	ABT 108	Issues and Regulation of Agricultural Biotechnology	Technological and social issues and science-based assessment and regulation of agricultural biotechnology	3	ABT 101 Fundamentals of Agricultural Biotechnology or COI	1,2
College of Agriculture and Food Science	Institute of Crop Science	HORT 112	Production and Handling of Tropical Vegetable Seeds	Production and handling of vegetable seeds; environmental and genetic factors affecting seed production	3	CRSC 101. Tropical Annual Crops Production and Management	2
College of Agriculture and Food Science	Institute of Crop Science	HORT 132	Plant Growth	The nature and processes of growth in plants, including the role played in the process by phytohormones	3	BOT 20. Elementary Plant Physiology	1,2
College of Agriculture and Food Science	Institute of Crop Science	HORT 116	Therapeutic Horticulture	Utilization of Horticulture for Human Health and Well-being	3	AGRI 31. Fundamentals of Crop Science I or COI	2
College of Agriculture and Food Science	Institute of Crop Science	HORT 124	Landscape Horticulture	Theories and practices in landscaping, site planning, design analysis, construction, maintenance and nursery management	3	AGRI 32. Fundamentals of Crop Science II or COI	2
College of Agriculture and Food Science	Institute of Crop Science	PGR 261	Assessment of Geneetic Diversity in Plants	Biochemical, molecular, and cytogenic methods of plant genetic resources characterization and evaluation; utilization and classification of plant genetic resources	3	AGR 160. Plant Genetics Resources Conservation and Management or COI	1
College of Agriculture and Food Science	Institute of Crop Science	PGR 262	Plant Genetic Resources Conservation Methods and Management	Strategies in plant genetic resources conservation and genebank management	3	AGR 160. Plant Genetics Resources Conservation and Management or COI	2
College of Agriculture and Food Science	Institute of Crop Science	PGR 263	PGR Documentation and Information Management	Management of passport, characterization, evaluation and inventory information in genebanks	3	AGR 160. Plant Genetics Resources Conservation and Management or COI	1
College of Agriculture and Food Science	Institute of Crop Science	AGR 255	Population Genetics	Genetics of populations undergoing random mating and inbreeding; effects of selection, mutation, migration, and other forces on the genetic composition of natural and artificial biological populations	3	Math 26. Analytic Geometry and Calculus I and BIO 130b. Advanced Genetics II	1
College of Agriculture and Food Science	Institute of Crop Science	AGR 256	Quantitative Genetics	Genetics of quantitative characters in random and non-random mating populations; application of quantitative genetic theories in breeding work	3	AGR 255. Population Genetics	2
College of Agriculture and Food Science	Institute of Crop Science	AGR 250	Advanced Plant Breeding I	Types, uses and induction of genetic variation; systems of pollen control; selection concepts and general breeding procedures for crops in each mode of pollination; approaches in breeding for specific characters	3	AGR 150. Methods in Plant Breeding I	2
College of Agriculture and Food Science	Institute of Crop Science	AGR 258	Molecular Plant Breeding	Molecular markers, recombinant DNA technology, and cell and tissue Culture technology in crop improvement	3	AGR 150. Methods in Plant Breeding I and BIO 101. Introductory Molecular Biology or COI	1
College of Agriculture and Food Science	Institute of Crop Science	AGR 270	Seed Science and Technology for Seed Program Development	Advanced concepts in the science and technology of seed production, postproduction, genetic conservation, testing and quality control; policies and management of seed-and related programs	3	AGR 170. Fundamentals of Seed Technology or COI	1
College of Agriculture and Food Science	Institute of Crop Science	CRSC 245	Stress Physiology	Response of plants to environmental Stresses; morpho-physiological, biochemical and genetic variations as basis for adaptation to stress	3	BOT 20. Elementary Plant Physiology	1,2
College of Agriculture and Food Science	Institute of Crop Science	HORT 230	Applied Fruit Crops	Environmental factors, cultural treatments and growth regulators that modify basic processes controlling flowering and fruiting of fruit crops	3	HORT 110. Major Tropical Fruit and HORT 132. Plant Growth or COI	2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 101	Anatomy and Physiology of Fam Animals	Comparative anatomy and physiology of livestock and poultry	3	AGRI 22. Introduction to Livestock and Poultry Production or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 102	Principles of Animal Nutrition	Composition, functions, and metabolism of various nutrients; nutritive requirements for maintenance, growth, reproduction, lactation, and other body functions of farm animals.	3	AGRI 21. Introduction to Animal Science or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 103	Principles of Animal Breeding	Genetics and statistical bases of animal improvement; topics in reproduction, including artificial insemination	3	AGRI 22. Introduction to Livestock and Poultry Production and BIO 30. Genetics	1,2

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College of Agriculture and Food Science	Institute of Animal Science	ANSC 104	Livestock Sanitation and Disease Control	Principles and practices in the prevention and control of common diseases in livestock	3	ANSC 101. Anatomy and Physiology of Farm Animals or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 105	Poultry Sanitation and Disease Control	Prevention and control of common diseases of poultry	3	ANSC 101. Anatomy and Physiology of Farm Animals or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 106	Slaughter and Meat Evaluation	Antemortem and post-mortem inspection of slaughter animals, slaughtering, carcass evaluation and meat hygiene	3	AGRI 22. Introduction to Livestock and Poultry Production or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 111	Swine Production	Breeding, feeding, and management of swine; economics of swine production	3	AGRI 22. Introduction to Livestock and Poultry Production or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 116	Poultry Production	Principal factors in commercial poultry production	3	AGRI 22. Introduction to Livestock and Poultry Production or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 121	Beef Production	Breeding, feeding and management of beef cattle and carabaos in the range and in confinement; economics of beef production.	3	AGRI 22. Introduction to Livestock and Poultry Production or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 122	Dairy Production	Breeding, feeding, and management of dairy animals; milking methods and the production of clean milk.	3	AGRI 22. Introduction to Livestock and Poultry Production or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 131	Meat Processing	Meat selection, identification of standard cuts, meat curing and other meat preservation methods.	3	AGRI 22. Introduction to Livestock and Poultry Production or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 132	Comminuted Meat Products	Structure, chemical composition and processing, characteristics of meat; and processing of comminuted products	3	AGRI 21. Introduction to Animal Science or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 135	Introduction to Dairy Technology	Fundamentals of milk and milk products processing	3	CHEM 40. Basic Organic Chemistry or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 136	Milk Hygiene	Hygiene in milk production, processing, and distribution	3	ANSC 135. Introduction to Dairy Technology	1
College of Agriculture and Food Science	Institute of Animal Science	ANSC 137	Cheese Technology	Principles and techniques in the manufacture of natural and processed cheese	3	ANSC 135. Introduction to Dairy Technology or COI	1
College of Agriculture and Food Science	Institute of Animal Science	ANSC 142	Nutritional Diseases of Farm Animals	Recognition and management of disease and disorders attributed to nutrient deficiencies and toxicities affecting farm animals	3	ANSC 102. Principles of Animal Nutrition or COI	2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 143	Livestock and Poultry Feeding	Composition and use of feeds for farm animals; formulation of rations and feeding practices	3	AGRI 21. Introduction to Animal Science or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 144	Feed Formulation for Farm Animals	Feed formulation for swine, poultry and ruminant using traditional and computer-aided methods	3	ANSC 143. Livestock and Poultry Feeding	1
College of Agriculture and Food Science	Institute of Animal Science	ANSC 145	Animal Feed Processing	Processing of animal feeds, its effects on animal nutrition, health, and production performance	3	ANSC 102. Principles of Animal Nutrition	2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 161	Methods in Animal Breeding	Measurement and inheritance of economically important traits of farm animals; systems of breeding and selection; inbreeding and hybridization in farm animals.	3	ANSC 103. Principles of Animal Breeding or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 172	The Fundamentals of Animal Climatology	Mechanisms of thermo-regulation and animal adaptations; thermal stress; the problems associated with the improvement of livestock production in tropical climate.	3	ANSC 101. Anatomy and Physiology of Farm Animals or COI	1,2
College of Agriculture and Food Science	Institute of Animal Science	ANSC 173	Reproduction in Farm Animals	Anatomy and physiology of reproduction and techniques for improving reproductive efficiency in farm animals	3	ANSC 101. Anatomy and Physiology of Farm Animals or COI	1
College of Agriculture and Food Science	Institute of Animal Science	ABT 120	Animal Biotechnology	Fundamentals of animal biotechnology as applied to livestock and poultry production	3	ABT 101. Fundamentals of Agricultural Biotechnology or COI	1,2
College of Arts and Sciences	Institute of Biological Sciences	BIO 11.1	Investigative Biology Laboratory	Integrating concepts in Biology through investigatory approaches	2	None	1,2
College of Arts and Sciences	Institute of Biological Sciences	BIO 30	Genetics	Mechanisms of heredity and variation, cytogenetics, mutation, nature of genes, population genetics, and quantitative genetics; biometrical procedures	3	None	1,2
College of Arts and Sciences	Institute of Biological Sciences	BIO 101	Introductory Molecular Biology	Structure, properties, functions and interactions of biomolecules in basic cellular processes, with emphasis on the processes involving the genetic material	3	BIO 30 and CHEM 160 or CHEM 161	1,2

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College of Arts and Sciences	Institute of Biological Sciences	BIO 120	Cell Biology	Nature and function of ultrastructure components and possible relationships to such processes as chemical energy transformations, transport, excitation, movement, and growth	3	BIO 30 and CHEM 160	1,2
College of Arts and Sciences	Institute of Biological Sciences	BIO 130a	Intermediate Genetics I	The nature and behavior of the genetic material as expressed in the development of the individual	3	BIO 30	1,2
College of Arts and Sciences	Institute of Biological Sciences	BIO 130b	Intermediate Genetics II	Intermediate Genetics II (3). The nature and behavior of the genetic material as expressed in the population	3	BIO 30	2
College of Arts and Sciences	Institute of Biological Sciences	BIO 138	Molecular Genetics	The nature, functions and interactions of molecules in heredity; the molecular basis of certain biological phenomena in relation to the genetic material	3	BIO 101	1
College of Arts and Sciences	Institute of Biological Sciences	BIO 140	Evolutionary Biology	The basic concepts on the theory of evolution, with emphasis on the processes and mechanisms as revealed in genetics, systematics, ecology, ethology, and historical geology	3	BIO 30	1,2
College of Arts and Sciences	Institute of Biological Sciences	BOT 14	University Botany	Analysis of processes and mechanisms shaping plant life; and economic importance of plants	3	None	1,2
College of Arts and Sciences	Institute of Biological Sciences	BOT 20	Fundamentals of Plant Physiology	Photosynthesis, respiration, nutrition, water relations, transport of materials, and growth of plants	3	None	1,2
College of Arts and Sciences	Institute of Biological Sciences	BOT 101	Phycology	Classification, ecology, morphology, physiology, and economic importance of algae	3	None	2
College of Arts and Sciences	Institute of Biological Sciences	BOT 110	Morphology and Anatomy of Plants	Structure, function, development, adaptation, and phylogenetic relationships of vascular plants	3	None	1
College of Arts and Sciences	Institute of Biological Sciences	BOT/HORT 131	Inorganic Plant Nutrition	Principles of mineral nutrition of higher plants	3	BOT 20	1,2
College of Arts and Sciences	Institute of Biological Sciences	BOT/HORT 132	Plant Growth	The nature and processes of growth in plants, including the role played in the process by phytohormones	3	BOT 20	1,2
College of Arts and Sciences	Institute of Biological Sciences	BOT 140	Systematics of the Spermatophytes	The identification, nomenclature, and classification of the principal families of seedplants, with emphasis on their geographic distribution and economic importance	3	COI	1,2
College of Arts and Sciences	Institute of Biological Sciences	BOT 142	Economic Botany	Origin, history, botanical relationships, and uses of plants of the Philippines, with emphasis on wild species of economic value	3	BOT 14 or COI	1,2
College of Arts and Sciences	Institute of Biological Sciences	MCB 11	Biology and Applications of Microorganisms	Biology of major groups of microorganisms, with emphasis on prokaryotes, and an introduction to applied microbiology	3	None	1,2
College of Arts and Sciences	Institute of Biological Sciences	MCB 101	Microbial Identification Techniques	Principles and techniques for the morphological, cultural, and physiological characterization of selected groups of microorganisms	3	MCB 11	1,2
College of Arts and Sciences	Institute of Biological Sciences	MCB 102	General Virology	The physical, chemical, and biological properties of plant, animal, and bacterial viruses	3	MCB 11	1,2
College of Arts and Sciences	Institute of Biological Sciences	MCB 103	Introductory Medical Microbiology	The role and control of medically important microorganisms in human disease development	3	MCB 11	1,2
College of Arts and Sciences	Institute of Biological Sciences	MCB 120	Microbial Physiology	Physiological processes in microorganisms including a study of structure, energy production, macromolecular biosynthesis, nutrition, and growth	3	MCB 11 and CHEM 160	1,2
College of Arts and Sciences	Institute of Biological Sciences	MCB 130	Microbial Genetics	The principles of heredity in microbial systems and their applications in microbiology and molecular biology	4	MCB 101 and BIO 101 or COI	1,2
College of Arts and Sciences	Institute of Biological Sciences	MCB 150	Microbial Ecology	An introduction to the basic principles of microbial ecology; interrelationships of bacteria, fungi, algae, and protozoa in natural systems	3	MCB 11	1,2
College of Arts and Sciences	Institute of Biological Sciences	MCB 180	Introductory Food Microbiology	An introduction to the microbiological aspects of food processing, preservation, spoilage and quality control; food-borne microorganisms of public health importance	3	MCB 11	1,2
College of Arts and Sciences	Institute of Biological Sciences	MCB 182	Industrial Microbiology	Microorganisms, principles, and processes involved in industrial fermentation	3	MCB 11 and CHEM 160	1,2

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College of Arts and Sciences	Institute of Biological Sciences	MCB 182.1	Industrial Microbiology Laboratory	Techniques in industrial fermentation		MCB 101 and MCB 182 (can be taken concurrently with MCB 182)	1
College of Arts and Sciences	Institute of Biological Sciences	ZOO 173	Introduction to Parasitology	Fundamental principles of parasitology, with reference to man and other animals	3	none	1,2
College of Arts and Sciences	Institute of Biological Sciences	ZOO 120	Animal Physiology	Mechanisms involved in the functional processes of animals; sources of energy; its distribution and utilization; environmental relations; nervous integration and animal activity; reproduction and development	5	ZOO 113 and CHEM 160	1,2
College of Arts and Sciences	Institute of Biological Sciences	ZOO 242	Advanced Invertebrate Zoology	Recent advances in the biology of invertebrates with emphasis on the free-living forms	3	ZOO 142	2
College of Arts and Sciences	Institute of Biological Sciences	ZOO 253	Ecology of Parasites	Basic concepts and recent advances in the ecology of parasites affecting man and other vertebrates	3	COI	1
College of Arts and Sciences	Institute of Biological Sciences	ZOO 276	Environmental Parasitology	Parasites as indicators of ecosystem health and their transmission dynamics in ecosystems, animals, and humans	3	COI	1
College of Arts and Sciences	Institute of Biological Sciences	WLDL 257	Wildlife Laws and Policies	Laws and policies affecting the implementation of national, regional, and global wildlife conservation programs and practices	3	None	1
College of Arts and Sciences	Institute of Biological Sciences	WLDL 259	Wildlife Conservation	Strategies and practices in vertebrate conservation with focus on Philippine wildlife	3	BIO 159 or COI	2
College of Arts and Sciences	Institute of Biological Sciences	SCI 11	Living Systems: Concepts and Dynamics	Principles, interactions, and contemporary issues concerning living systems	3	None	1,2
College of Arts and Sciences	Institute of Statistics	STAT 101	Statistical Methods	Statistical analysis of data using parametric and nonparametric methods.	3	None	1,2
College of Arts and Sciences	Institute of Statistics	STAT 135	Logic and Matrix Algebra in Statistics	Basic concepts and methods in math logic and matrix algebra useful in statistics	3	None	1
College of Arts and Sciences	Institute of Statistics	STAT 144	Introductory Statistical Theory I	Probability models; operations on probability; random variables and random vectors; mathematical expectations; sampling from a probability distribution; introduction to statistical inference.	3	MATH 28	1,2
College of Arts and Sciences	Institute of Statistics	STAT 145	Introductory Statistical Theory II	Discrete and continuous probability models; generating functions; functions of random variables and random vectors; sampling from a normal population; large-sample theory.	3	STAT 144	1,2
College of Arts and Sciences	Institute of Statistics	STAT 146	Introductory Statistical Theory III	Estimation; testing of hypothesis and common parametric tests.	3	STAT 145	1,2
College of Arts and Sciences	Institute of Statistics	STAT 147	Introduction to the Theory of Nonparametric Statistics	Development of point and interval estimates and formulation of test of hypothesis based on distribution- free statistics.	3	STAT 145	1,2
College of Arts and Sciences	Institute of Statistics	STAT 148	Introductory Bayesian Statistics	Theory of Bayesian methods and their applications.	3	STAT 145	1,2
College of Arts and Sciences	Institute of Statistics	STAT 151	Applied Regression and Correlation	Linear regression models; correlation analysis; methods of model selection.	3	STAT 101 and STAT 135 or COI	2
College of Arts and Sciences	Institute of Statistics	STAT 156	Introductory Time Series Analysis	Approaches to time analysis; autocovariance and autocorrelation functions; linear stationary and non-stationary processes; forecasting, modeling and diagnostic checking; seasonal time series.	3	STAT 135 or COI	2
College of Arts and Sciences	Institute of Statistics	STAT 157	Financial Risk Analysis	Time series analysis in finance.	3	STAT 156	1,2
College of Arts and Sciences	Institute of Statistics	STAT 162	Experimental Designs	Principles and applications of experimental design.	3	None	1,2
College of Arts and Sciences	Institute of Statistics	STAT 163	Survey Designs	Introduction to sampling methods; simple random stratified, systematic unequal probability and multi-stage sampling, sample size determination, methods of estimation.	3	STAT 144	2

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College of Arts and Sciences	Institute of Statistics	STAT 164	Statistics for the Biological Sciences	Research design and analysis of data in biological research.	3	None	1,2
College of Arts and Sciences	Institute of Statistics	STAT 165	Categorical Data Analysis	Inferences on proportions, measures of associations and causal relationships among categorical variables including multinomial responses and repeated measures and categorical responses data.	3	STAT 101	1
College of Arts and Sciences	Institute of Statistics	STAT 166	Statistics for the Social Sciences	Principles of survey research design and analysis of data in social research.	3	None	1,2
College of Arts and Sciences	Institute of Statistics	STAT 167	Statistical Quality Control	Type of variables, frequency distribution, descriptive measures of a distribution, probability distribution, control charts, process capability, introduction to designed experiments for process improvement, acceptance sampling.	3	None	2
College of Arts and Sciences	Institute of Statistics	STAT 168	Response Surface Methodology	Experimental designs and analysis for estimating response surfaces.	3	None	1,2
College of Arts and Sciences	Institute of Statistics	STAT 173	Survey Operations	Planning, execution and analysis of surveys.	3	STAT 163	1
College of Arts and Sciences	Institute of Statistics	STAT 174	Introductory Biostatistics	Statistical methods and models in analyzing data from the health sciences.	3	None	1,2
College of Arts and Sciences	Institute of Statistics	STAT 175	Analysis of Multivariate Data	Multivariate regression; multivariate analysis of variance; discriminant analysis; canonical variate analysis; factor analysis; cluster analysis; causal models and path analysis; log linear analysis.	3	STAT 101 or COI	1
College of Arts and Sciences	Institute of Statistics	STAT 181	Statistical Computing	Computer algorithms for approximating probabilities; random number generation; sampling and randomization; resampling techniques; simulation techniques.	3	COI	1
College of Arts and Sciences	Institute of Statistics	STAT 182	Statistical Packages	Statistical packages in data processing and analysis.	3	STAT 101 or COI	2
College of Arts and Sciences	Institute of Statistics	STAT 183	Introductory Data Analytics	Statistical methods in handling real massive datasets and their applications.	3	STAT 151, STAT 175, and CMSC 21	1,2
College of Arts and Sciences	Institute of Statistics	STAT 235	Mathematics in Statistics	Matrices; transformations; infinite series; inequalities; generating functions; special functions.	3	MATH 28 or MATH 38	1
College of Arts and Sciences	Institute of Statistics	STAT 241	Statistical Theory I	Probability, random variables, probability distributions; expectations, moments, and characteristic functions; distributions of functions of random variables; sampling distributions.	3	STAT 142 or COI	1,2
College of Arts and Sciences	Institute of Statistics	STAT 242	Statistical Theory II	Parametric point and interval estimation; theory of hypothesis testing; introduction to linear models.	3	STAT 241	1,2
College of Arts and Sciences	Institute of Statistics	STAT 250	Multivariate Statistical Methods	Multivariate normal populations; tests of hypotheses on means, multivariate analysis of variance; classification by linear discriminant function; inferences from covariance matrices; principal components; factor analysis.	3	STAT 162 and MATH 120 or COI	1,2
College of Arts and Sciences	Institute of Statistics	STAT 251	Linear Models I	Multidimensional normal distribution; distributions of quadratic forms; full rank models; estimation and tests of hypotheses.	3	STAT 142 and STAT 235 or COI	1
College of Arts and Sciences	Institute of Statistics	STAT 252	Linear Models II	Linear models not of full rank; experimental design models and components-of-variance models; distributional properties of point estimators; tests of hypotheses.	3	STAT 251	1,2
College of Arts and Sciences	Institute of Statistics	STAT 263	Sampling and Sample Surveys	Simple random, stratified, systematic, multistage, and multiphase sampling; ratio and regression estimation; sampling with varying probabilities.	3	STAT 141 or COI	1,2
College of Arts and Sciences	Institute of Statistics	STAT 264	Statistics for Epidemiology	Statistical methods in the collection, organization, and analysis of epidemiologic data and subsequent interpretation.	3	STAT 1 or COI	1,2

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College of Arts and Sciences	Institute of Statistics	STAT 266	Time Series Analysis I	Stationary stochastic processes; covariance and autocorrelation functions; autoregressive and moving average processes.	3	COI	1,2
College of Arts and Sciences	Institute of Statistics	STAT 341	Theory of Probability	Measure-theoretic probability; characteristic functions; generalized and compound distributions; limit theorems; stochastic processes.	3	STAT 242 or COI	1,2
College of Arts and Sciences	Institute of Statistics	STAT 342	Statistical Inference	Statistical inference and statistical decision theory; sufficiency; most powerful tests; unbiasedness; invariance.	3	STAT 341 or COI	1,2
College of Arts and Sciences	Institute of Statistics	STAT 363	Sampling Theory of Surveys	Stratified multistage sampling; sampling on successive occasions; problems and approaches in the development of multistage surveys.	3	STAT 263 or COI	1,2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 20	The Landscape of Mathematics	Fundamental concepts and theorems of mathematics.	3	None	1
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 36	Mathematical Analysis I	Theory and applications of limits, continuity, and derivatives of functions of a single variable	5	None	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 37	Mathematical Analysis II	Theory and applications of integrals of functions of a single variable and infinite series	3	MATH 36	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 38	Mathematical Analysis III	Theory and applications of derivatives and integrals of functions of several variables	5	MATH 37	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 101	Logic and Set Theory	Elements of mathematical logic and the algebra of propositions; arguments, set operations, functions and relations; algebra of sets; cardinal and ordinal numbers; ordered sets; axiom of choice and other topics in set theory	3	MATH 27 OR MATH 37, and AMAT 19 or MATH 20	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 103	Elementary Theory of Numbers	Divisibility of integers; primes; congruences; quadratic reciprocity; some functions in number theory and diophantine equations	3	MATH 101	2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 111	Modern Algebra I	Fundamental concepts of groups, rings, fields and their substructures; permutation representations; isomorphism theorems	3	MATH 101	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 120	Linear Algebra	Properties of modules and vector spaces under linear transformations and their matrices	3	MATH 111	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 133	Euclidian and Non-Euclidean Geometry	Axiomatic development, concepts, theorems and analytic models of Euclidean and non-Euclidean geometry and their transformations	3	MATH 111	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 135	Projective Geometry	Basic concepts, principles and theorems of projective geometry and its transformations and collineations, using synthetic and analytic approaches	3	MATH 133 or COI	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 138	Introductory Topology	Basic topological concepts, theory, and methods	3	MATH 38 and MATH 101	2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 141	Introductory Combinatorics	Elementary configurations; enumeration of configurations and investigation of unknown configurations	3	MATH 38 and either MATH 101 or CMSC 56 and CMSC 57	2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 151	Ordinary Differential Equations	Theory methods and applications of ordinary differential equations	3	MATH 28 or MATH 38	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 155	Advanced Calculus I	Concepts in the theory of the reals and analysis of functions of one variable	3	MATH 38 and MATH 101, or COI	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 165	Complex Analysis I	Fundamental concepts in the analysis of functions of complex variables	3	MATH 38 and MATH 101, or COI	1
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 174	Numerical Analysis I	Theory, analysis and implementation of algorithms in polynomial approximation, numerical differentiation, and integration	3	AMAT 152	1

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 175	Numerical Analysis II	Theory, analysis, and implementation of algorithms for solving non-linear equations, linear systems, and ordinary differential equations.	3	MATH 174	2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 181	Introduction to Probability Theory	Elements of combinatorial analysis and introductory probability theory	3	MATH 101 and MATH 38 or MATH 28	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 192	Foundations of Mathematics	Axiomatic methods and theories; symbolic logic calculi; school mathematics reform theses; constructivistics, formalistics, and related mathematics; various schools of mathematical thought and operationality of their theses	3	COI	2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	MATH 195	Research Methods in Mathematics	Principles governing mathematical research and documentation.	3	MATH 38 and MATH 101	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	AMAT 19	Finite Mathematics	An introduction to the concepts of logic, probability, mathematical programming, theory of games and graph	3	None	1
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	AMAT 105	Matrices and Applications	Properties, operations and applications of matrices	3	MATH 28 or MATH 38	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	AMAT 110	Mathematical Modeling	Principles, methods and applications of mathematical modeling	3	MATH 27 OR MATH 37	2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	AMAT 112	Introduction to Mathematical Optimization	A survey of major techniques in the mathematical modeling of optimization problems	3	MATH 28 or MATH 38 and AMAT 110	1
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	AMAT 152	Fundamentals of Mathematical Computing	Theory and applications of mathematical computing	3	MATH 28 or MATH 38	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	AMAT 170	Theory of Interest	Principles, methods, and applications of the theory of interest	3	MATH 27 or MATH 37	1
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 101	Newtonian Mechanics	Kinematics, Newton's laws of motion, gravitation, fluid mechanics	4	None	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 102	Electromagnetism	Electromagnetic phenomena and Maxwell's equations	4	PHYS 101	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 103	Mechanical Waves, Optics, and Thermodynamics	Nature and propagation of mechanical waves, light, and heat	4	PHYS 102	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 104	Modern Physics	Principles of special relativity, quantum and nuclear physics	4	PHYS 103	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 111	Mathematical Methods of Physics I	Vectors, matrices and linear algebra, groups, and the infinite series in physics	4	MATH 27 or MATH 37	2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 112	Mathematical Methods of Physics II	Complex variables, differential equations, Gamma function, Fourier series, and integral transforms.	4	PHYS 111	1
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 113	Mathematical Methods of Physics III	Sturm-Liouville theory, special functions, integral equations, and probability and distributions in Physics	4	PHYS 112	2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 115	Computational Physics	Numerical approaches to modeling the dynamics of physical systems	4	APHY 10.1	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 121	Theoretical Mechanics I	Motion of a particle in one, two, and three dimensions; motion of a system of particles; rotation of rigid bodies about an axis	3	PHYS 83 and PHYS 111	2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 122	Theoretical Mechanics II	Lagrangian and Hamiltonian dynamics of extended bodies	3	PHYS 121	2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 131	Electromagnetic Theory I	Vector analysis; electrostatic fields in vacuo and in dielectrics; solution to Laplace's and Poisson's equations; magnetic fields of constant and variable currents; magnetic materials.	3	PHYS 102 and PHYS 111	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 132	Electromagnetic Theory II	Time- dependent electromagnetic fields	3	PHYS 113 and PHYS 131	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 141	Quantum Physics I	Basic concepts and formalisms of quantum mechanics; one dimensional potentials, the harmonic oscillator, spin and two level systems, and the hydrogen atom	3	PHYS 104 and PHYS 113	1, 2

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 142	Quantum Physics II	Formulations, approximation schemes, and application of quantum mechanics	3	PHYS 141	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 151	Statistical Physics I	Thermodynamic ensembles and the statistical description of systems of particles	3	PHYS 112 and PHYS 121	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 165	Optical Physics	Nature, propagation, and detection of light	3	PHYS 131	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 192.1	Experimental Physics I	Laboratory practices, experimental techniques and analyses in physics	2	PHYS 72 and PHYS 72.1 or PHYS 104	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	PHYS 195	Research Methods in Physics	Conduct and presentation of pure and applied physics research, review process and ethics in scientific research and communication	3	PHYS 102	1, 2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	APHY 10	Programming in Physics	Essential programming concepts and tools for physicists	1	None	2
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	APHY 101	Physics in Scientific Instruments	Physical laws of measurement; operation and use of electronic instruments	3	PHYS 72 and PHYS 72.1, or PHYS 102	1
College of Arts and Sciences	Institute of Mathematical Sciences and Physics	APHY 102	Physics of Electronic Devices	Principles of operation and use of electronic devices	3	PHYS 72 and PHYS 72.1, or PHYS 102	1
College of Development Communication	College of Development Communication	DEVC 10	Introduction to Development Communication	Introduction to concepts, theories, principles, and practice of communication in development.	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 11	Introduction to Media Writing for Development	Principles and practice of preparing development-oriented written materials for the print, broadcast, audio-visual, and emerging media.	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 20	Fundamentals of Development Journalism	Principles of gathering and writing of developmental news and information, with emphasis on news recognition and accuracy.	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 30	Fundamentals of Community Broadcasting	Concepts of community broadcasting; nature of the broadcast media; basic principles of writing, planning, and production	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 40	Fundamentals of Educational Communication and Technology	Theories, principles, and concepts of educational communication and technology; practice in planning and designing of media-based learning systems	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 50	Introduction to Science Communication	Nature, structure, and tools of science communication.	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 70	Interpersonal Communication in Development	Theories, principles, concepts, and processes of person-to-person communication and their application to development work.	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 80	Communication and Society	The role of communication in society with special reference to the Asian situation; rights and responsibilities of the communication media.	3	Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 101	Introduction to Communication Theory	Communication theories, their foundations and application to development communication studies.	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 103	Visual and Audiovisual Media Production	Concepts, principles, and techniques in visual and audiovisual media production; with emphasis on design and development of visual materials, photography, and videography.	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 180	Communication Campaigns and Programs	Planning and evaluation of educational and promotional campaigns and programs.	3	Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 202	Communication Theory in Development Communication	Communication theories and their applications to development communication study and practice	3	Not Required	1st Semester, 2nd Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Development Communication	College of Development Communication	DEVC 205	Communication and Development	Perspectives, theories, principles, and strategies of communication and development	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 208	Communication Approaches for Development Programs	Application of communication strategies, concepts, principles, and practices in promoting social ideas towards behavior change and mobilizing people for developmental programs	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 212	Environmental Communication	Application of environmental communication principles, strategies, and techniques to address risks, controversies, and crises associated with the environment	3	Not Required	2nd Semester
College of Development Communication	College of Development Communication	DEVC 215	Communication and Culture	Nature and interrelationships of communication and culture, and their applications to development communication	3	Not Required	1st Semester
College of Development Communication	College of Development Communication	DEVC 230	Educational Communication Systems	Learning theories and approaches in educational communication systems and their application to learning	3	Not Required	1st Semester
College of Development Communication	College of Development Communication	DEVC 231	Educational Communication Systems Management	Theories, principles, approaches, and tools in managing an educational communication unit	3	Not Required	2nd Semester
College of Development Communication	College of Development Communication	DEVC 234	Information and Communication Technologies for Development	Theoretical perspectives, systems and structures, uses, and ethics in using information and communication technologies as tools in development	3	Not Required	2nd Semester
College of Development Communication	College of Development Communication	DEVC 310	Theorizing Development Communication	History, philosophical assumptions, communication theory traditions and praxis, and critique towards theorizing in development communication	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 311	Organizational Communication and Leadership	Theories, perspectives, processes, and applications of organizational communication and leadership in development practice	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 320	Communication Systems Policies and Planning	Concepts, theories, and approaches in communication systems policy formulation and planning in support of a development program	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 363	Public Communication of Science	Concepts, models, approaches, and issues in public communication of science in the context of development	3	Not Required	1st Semester, 2nd Semester
College of Development Communication	College of Development Communication	DEVC 393	Qualitative Approaches to Communication	Perspectives, approaches, concepts, and methods in qualitative communication research	3	Not Required	1st Semester, 2nd Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	ABME 10	Foundations of Entrepreneurship	Concepts, values and skills critical to entrepreneurship.	3	None	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	ABME 11	Introduction to Agribusiness Management and Entrepreneurship	Agribusiness as a concept, a sector and a field of study.	1	None	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 101	Concepts and Dynamics of Management	Principles and techniques of business organizations and management.	3	COI (Consent of Instructor)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 111	Principles of Accounting	Introduction to accounting as a tool and basis for business decisions.	3	COI (Consent of Instructor)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	ABME 103	Agribusiness Systems and Modalities	Integrative arrangements and modalities that relate to operations, problems, opportunities and decisions of agribusiness firms and major commodity systems.	3	MGT 101 (Concepts and Dynamics of Management) & ABME 11 (Introduction to Agribusiness Management and Entrepreneurship)	First & Second Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	ABME 172	Product Ideation and Creation	Principles, tools and techniques in product development. Ideation and Creation	3	ABME 10 (Foundations of Entrepreneurship)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	ABME 190	Special Problems	Special Problems	3	COI (Consent of Instructor)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	ABME 198	Internship	Internship	3	COI (Consent of Instructor)	Midyear
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 109	Managerial Economics	Application of economic tools of analysis to the management of business enterprises.	3	ECON 11 (General Economics) & MGT 101 (Concepts and Dynamics of Management)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 113	Managerial Accounting	Accounting concepts and principles for management planning, control and decision making.	3	MGT 111 (Principles of Accounting)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 121	Quantitative Business Analysis	Application of mathematical tools and principles in business analysis.	3	MGT 101 (Concepts and Dynamics of Management) or COI (Consent of Instructor)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 131	Introduction to Human Relations and Behavior in Organization	Introduction to the concepts and principles underlying individual and group behavior in organizations	3	MGT 101 (Concepts and Dynamics of Management) or COI (Consent of Instructor)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 141	Fundamentals of Operations Management	Introduction to the management function with emphasis on planning, assembling and controlling of resources in production-oriented and service enterprises.	3	MGT 121 (Quantitative Business Analysis)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 151	Introduction to Marketing Management	Analysis of marketing opportunities and problems in various types of business endeavors with applications to agribusiness enterprises, marketing planning, strategy formulation, implementation and control.	3	MGT 101 (Concepts and Dynamics of Management)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 155	International Marketing	Introduction to patterns, frameworks, structures processes, and strategic management in international markets.	3	MGT 151 (Introduction to Marketing Management)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 161	Business Law	Basic concepts of governmental promotions and regulations of business through law and how they affect business decisions.	3	MGT 101 (Concepts and Dynamics of Management)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 181	Fundamentals of Strategic Business Management	Strategy formulation, implementation and evaluation/control from a general management's point of view with emphasis on environmental and corporate competence analysis and organizational moves and changes.	3	MGT 115 (Introduction to Financial Management) or ABME 115 (Entrepreneurial Finance), & ABME 103 (Agribusiness Systems and Modalities)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 115	Introduction to Financial Management	Introduction to the field of business finance with focus on principles and techniques for financial planning and decision-making.	3	MGT 111 (Principles of Accounting)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 133	Human Resource Management	Principles, key functions and practices in human resource management and its strategic significance in managing organizations.	3	MGT 101 (Concepts and Dynamics of Management)	Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	ABME 195	Agribusiness Research Methodologies	Basic research formats and methodologies employed in agribusiness.	3	STAT 101 (Statistical Methods) & ABME 103 (Agribusiness Systems and Modalities)	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	ABME 115	Entrepreneurial Finance	Financial and investment analysis for start-ups and growing enterprises in order to make informed investment and financing decisions.	3	MGT 111 (Principles of Accounting)	First Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	ABME 174	Business Planning	Business plan preparation and business model formulation for agri-based products.	3	ABME 115 (Entrepreneurial Finance) & ABME 172 (Product Ideation and Creation)	Second Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	ABME 176	Starting and Managing Agribusiness Enterprises	Principles and practice of establishing and managing agribusiness enterprises.	3	ABME 174 (Business Planning)	First Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 201	Organization and Management	Organization and management theories, concepts and processes; organization changes and managerial systems.	3	None	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 207	Managerial Problem Solving and Decision-Making	Quantitative and non-quantitative concepts, tools, and dynamics in problem solving and decision-making processes at the national, firm, and individual levels.	3	COI (Consent of Instructor)	First Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 209	Economic Analysis	Economic theory and policy with reference to the Philippine development program.	3	None	Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 213	Management Accounting and Control I	Financial accounting policy in private and public organizations within the framework of accounting conventions.	3	None	First Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 215	Financial Management	Short and long-range financial planning. Management of working capital and long-term financial position of a business organization	3	None	Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 221	Quantitative Methods in Administration	Various techniques of determining optimization involving univariate and multivariate functions. Includes differential and integral calculus, linear systems, and matrices and an introduction to linear programming.	3	COI (Consent of Instructor)	First Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 231	Human Behavior in Organization	Individual and group behavior as these are influenced by cultural and technological factors: organizational change.	3	None	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	MGT 251	Marketing Management	The nature and dynamics of demand, the major marketing problems confronting the management in adapting to demand conditions; the development of pricing strategies for new and existing products. The types of distribution patterns and promotional programs employed to obtain sales and profits under a variety of operating conditions; the management of existing product lines, the development, testing, and introduction of new products; and the dynamics of export markets	3	None	Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	ENTR 201	Theory and Practice of Entrepreneurship	Theories, principles, perspectives, practices, and trends in entrepreneurship.	3	None	First & Second Semester
College of Economics and Management	Department of Agribusiness Management and Entrepreneurship	ENTR 271	Technology Commercialization and Technopreneurship	Technology commercialization; technology-based enterprise identification and business plan development.	3	ENTR 201 (Theory and Practice of Entrepreneurship) or COI (Consent of Instructor)	First & Second Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 10	Introduction to Agricultural and Applied Economics	Overview of the various fields of agricultural and applied economics as a discipline	1	None	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 103	Statistical Analysis of Agricultural and Applied Economics Data	Statistical methods in the analysis of agricultural and applied economic data	3	STAT 101 (Statistical Methods) and ECON 11 (General Economics), or COI (Consent of Instructor)	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 104	Farm Business Accounting	Principles of accounting with emphasis on farm business applications	3	ECON 11 (General Economics)	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 110	Agricultural Production Economics	Application of economic concepts and principles in resource allocation and technological change in agricultural production	3	ECON 102 (intermediate Microeconomic Theory) or COI (Consent of Instructor)	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 111	Farm Management	Principles and analytical tools in the organization and operation of the farm	3	ECON 11 (General Economics) or COI (Consent of Instructor)	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 120	Agricultural Marketing I	Principles of agricultural marketing and types and functions of marketing organizations for agricultural inputs and products	3	ECON 11 (General Economics) or COI (Consent of Instructor)	First and Second Semesters

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 123	Agricultural and International Trade	Patterns of world trade in agricultural product, national and international trade policies related to agricultural development	3	ECON 101 (Intermediate Macroeconomic Theory) and ECON 102 (Intermediate Microeconomic Theory), or COI (Consent of Instructor)	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 130	Agricultural Finance	History, development, and mechanism of agricultural financing in the Philippines; organization and operation of financing institutions serving agriculture; credit appraisal and evaluation	3	ECON 11 (General Economics)	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 142	Natural Resource Economics I	Fundamentals of natural resource economics; implications for sustainable development	3	ECON 102 (Intermediate Microeconomic Theory) or COI (Consent of Instructor)	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 150	Economics of Agricultural Development	Economic theories and processes of agricultural development	3	ECON 101 (Intermediate Macroeconomic Theory) and ECON 102 (Intermediate Microeconomic Theory), or COI (Consent of Instructor)	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 151	Agricultural Policy	National farm organizations; economic analysis of the different aspects of agricultural policies and programs	3	ECON 101 (Intermediate Macroeconomic Theory) and ECON 102 (Intermediate Microeconomic Theory), or COI (Consent of Instructor)	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 161	Food and Nutrition Economics	Fundamental economic concepts in addressing food and nutrition security issues	3	ECON 11 (General Economics) or COI (Consent of Instructor)	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 171	Introduction to Feasibility Studies of Agri-Based Enterprises and Agro-Industrial Projects	Preparation of feasibility studies involving agricultural projects	3	AAE 111 (Farm Management) or COI (Consent of Instructor)	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AAE 195	Introduction to Research Methods in Agricultural and Applied Economics	Methods and techniques in conducting research in agricultural economics and related fields	3	AAE 103 (Statistical Analysis of Agricultural and Applied Economics Data) or COI (Consent of Instructor)	First and Second Semesters
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 210	Advanced Agricultural Production Economics	Selected economic theories and their application to problems in agricultural production and their distribution	3	COI (consent of instructor)	1st Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 211	Advanced Farm Management	Production problems of small and large farms; farm business analysis; production decision criteria; and labor management	3	AAE 111 (Farm Management) & ECON 102 (Intermediate Microeconomic Theory) OR COI (consent of instructor)	2nd Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 220	Economics of Agricultural Marketing	Economic theory applied to marketing; analysis of marketing functions, cost and prices of agricultural inputs and products; industry structure, marketing policies	3	AAE 120 (Agricultural Marketing I) or COI (consent of instructor)	1st Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 222	Agricultural Prices	Price determination in product and factor markets; supply and demand; price variation and instability; dynamic analysis; price policy	3	ECON 102 (Intermediate Microeconomic Theory) or COI (consent of instructor)	2nd Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 230	Advanced Agricultural Finance	Conceptual bases of agricultural finance; risks and uncertainties in farm-related financial intermediaries; issues in financing agricultural development	3	COI (consent of instructor)	2nd Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 240	Natural Resource Economics	Application of economic theory to developmental and intertemporal issues in the optimal management of agricultural land and other resource-evaluation of economic institutions affecting use of such resources	3	ECON 101 (Intermediate Macroeconomic Theory) or COI (consent of instructor)	1st Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 241	Economic Analysis and Planning of Agricultural	Economic analysis of agricultural projects from national and individual viewpoints; identification of projects; preparation and evaluation of project plans	3	ECON 101 (Intermediate Macroeconomic Theory) & ECON 102 (Intermediate Microeconomic Theory) or COI (consent of instructor)	2nd Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 248	Economic Analysis and Design of Policies for	Economic principles, methods and tools in the analyses and design of natural resource and environmental policies	3	AECO 240 (Natural Resource Economics) or COI (consent of instructor)	1st & 2nd Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 250	Agriculture and Economic Development	Factors that accelerate or inhibit the growth of agriculture; survey of existing growth theories and establishment of their relevance to Philippine experience	3	ECON 101 (Intermediate Macroeconomic Theory) & ECON 102 (Intermediate Microeconomic Theory) or COI (consent of instructor)	2nd Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 251	Agricultural Programs for Economic	Past and present action programs of government agencies and farmer's organizations; coordination of programs of viable private operating units and public agencies	3	ECON 101 (Intermediate Macroeconomic Theory) & ECON 102 (Intermediate Microeconomic Theory) or COI (consent of instructor)	1st Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 253	Applied Regional Economics	Application of economic theories and analytical tools to regional planning, development, and program implementation	3	ECON 101 (Intermediate Macroeconomic Theory) & STAT 1 (Elementary Statistics) or COI (consent of instructor)	2nd Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 260	Research in Agricultural Economics	Methods and techniques of economic research, emphasis on current agricultural economic problems	3	ECON 101 (Intermediate Macroeconomic Theory) & ECON 102 (Intermediate Microeconomic Theory) or COI (consent of instructor)	1st Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 261	Food and Nutrition Economics	World food problems and the economic consequences of malnutrition; review of food and nutrition policies and programs	3	COI (consent of instructor)	1st Semester
College of Economics and Management	Department of Agricultural and Applied Economics	AECO 320	Organization and Performance of Agricultural	Agricultural markets: structure, conduct and performance; policy and welfare analysis; research and development	3	AECO 220 (Economics of Agricultural Marketing) & ECON 202 (Microeconomic Theory 1) or COI (consent of instructor)	2nd Semester
College of Economics and Management	Department of Economics	ECON 101	General Economics	Analysis of macroeconomic principles relating to aggregate income and employment; products and money market.	3	ECON 11 (General Economics)	First & Second Semester
College of Economics and Management	Department of Economics	ECON 102	Intermediate Macroeconomic Theory	Analysis of microeconomics principles relating to behavior of the consumer, firm and industry and allocation of resources.	3	ECON 11 (General Economics) and Math 25 (Fundamental Calculus)	First & Second Semester
College of Economics and Management	Department of Economics	ECON 106	Consumption Economics	The economic relationship between consumption and production as it affects the consumption behavior of individuals and households	3	ECON 102 (Intermediate Microeconomic Theory) & ECON 137 (Introduction to Quantitative Economics)	First Semester
College of Economics and Management	Department of Economics	ECON 151	Public Economics	Government revenue, expenditures and debt	3	ECON 101 (Intermediate Macroeconomic Theory) & ECON 104 (Introduction to Factor Market Analysis, General Equilibrium, and Welfare Economics)	Second Semester
College of Economics and Management	Department of Economics	ECON 166	Energy Economics	Introductory economic analysis of energy sources and uses; measurement of energy demand and supply; evaluation of energy sector policies and issues	3	ECON 102 (Intermediate Microeconomic Theory)	First Semester
College of Economics and Management	Institute of Cooperatives and Bio-Enterprise Development	COST 110	Fundamentals of Cooperatives	Theory, principles, and practices of cooperation; operation and management; types and levels of organization; and issues and problems on cooperatives	3	Not Required	First and Second Semester
College of Economics and Management	Institute of Cooperatives and Bio-Enterprise Development	COST 120	International Cooperative Development	Survey of the international cooperatives within the politico-economic systems; related international institutions supporting cooperatives.	3	COST 110 (Fundamentals of Cooperative) or COI (Consent of Instructor)	Second Semester
College of Economics and Management	Institute of Cooperatives and Bio-Enterprise Development	COST 201	Theory and Comparative Development of Cooperatives	Concepts, philosophy, history, and nature of cooperatives; comparative study of cooperatives and development in different societies.	3	Not Required	First Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 10	Introduction to Chemical Engineering Profession	Scope and emerging trends in various areas of chemical engineering profession.	1	None	1st Semester, 2nd Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 30	Fundamentals of Chemical Engineering	Principles of material and energy balances and their application to various chemical process industries.	4	CHEM 18. University Chemistry	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 32	Industrial Stoichiometry	Application of physico-chemical principles in the analysis and solution of industrial processes involving chemical reactions.	3	ChE 30. Fundamentals of Chemical Engineering	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 142	Chemical Engineering Thermodynamics I	The first law of thermodynamics, ideal gas concepts, pressure-volume-temperature relationships of fluids, heat effects; second law of thermodynamics, other thermodynamic properties of fluids.	3	ChE 30. Fundamentals of Chemical Engineering and CHEM 111. Physical Chemistry I	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 143	Chemical Engineering Thermodynamics II	Thermodynamic flow processes, power cycles, refrigeration, phase equilibria, chemical reaction equilibria.	3	ChE 142. Chemical Engineering Thermodynamics I	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 145	Chemical Reaction Engineering	Fundamental principles of reaction engineering and their applications.	3	ChE 30. Fundamentals of Chemical Engineering, CHEM 112. Physical Chemistry 2 and ENSC 21. Mathematical Methods in Engineering	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 147	Application of Fluid Dynamics in Chemical Engineering	Concepts and principles of fluid dynamics and their applications.	3	ChE 30. Fundamentals of Chemical Engineering and ENSC 12. Dynamics of Rigid Bodies	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 149	Transport Phenomena	Physical rate processes with particular emphasis on the formulation and solution of typical boundary value problems associated with heat, mass and momentum transport; equations of change, molecular and turbulent transport.	3	ChE 30. Fundamentals of Chemical Engineering and ENSC 21. Mathematical Methods in Engineering	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 152	Separation Processes	Unified treatment of separation processes with primary emphasis on the concept of equilibrium stage, formulation, numerical and graphical solution technique; application of principles to separation processes - distillation, liquid extraction and leaching.	3	ChE 30. Fundamentals of Chemical Engineering	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 153	Transfer Operations I	Applications of the principles of rate processes, unified treatment of mass, heat and simultaneous heat and mass transfer operations.	3	ChE 149. Transport Phenomena	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 154	Transfer Operations II	Applications of the principles of transfer and separation processes in cooling tower and packed column design, unified treatment of size reduction, screening and solids handling.	3	ChE 149. Transport Phenomena and ChE 152. Separation Processes and concurrent with ChE 153. Transfer Operations I	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 170	Instrumentation and Process Dynamics and Control	Fundamentals of automatic control, instrumentation, analyses of process dynamics and control system.	3	ChE 30 Fundamentals of Chemical Engineering, EE 1. Basic Electrical Engineering and ENSC 21. Mathematical Methods in Engineering	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 172	Introduction to Biochemical Engineering	Chemical engineering principles as applied to enzyme and whole cell mediated bioprocesses.	3	ChE 149. Transport Phenomena, ChE 152. Separation Processes, CHEM 160. Introductory Biochemistry and MCB 11. Biology and Applications of Microorganisms	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 180	Agro-industrial Waste Management	Changing practice in agro-industrial production; environmental impact analysis; waste characteristics; waste treatment and disposal fundamentals; waste recycling management.	3	COI	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 185	Chemical Engineering Laws, Ethics, Specifications and Contracts	Laws and code of ethics for chemical engineers; specifications and contracts; occupational health and safety.	2	ChE 10. Introduction to Chemical Engineering Profession	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 191	Special Topics	---	3	COI	1st Semester, 2nd Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 192	Chemical Process Equipment Design	Mechanical design of chemical process equipment.	3	ChE 145. Chemical Reaction Engineering, ChE 153. Transfer Operations I, ChE 154. Transfer Operations II and ENSC 13. Strength of Materials	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 193	Plant Design	Application of fundamental chemical engineering calculations and technopreneurship considerations on design of processing plant.	3	ChE 32. Industrial Stoichiometry and ChE 192. Chemical Process Equipment Design	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering/Department of Forest Products and Paper Science (CFNR)	PPT 170	Instrumentation and Process Control for the Pulp and Paper Industry	Principles and methods of control system analysis and design as applied to the pulp and paper industry.	3	EE 1. Basic Electrical Engineering, FPPS 132. Pulp and Paper Technology and ENSC 21. Mathematical Methods in Engineering	2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering/Department of Forest Products and Paper Science (CFNR)	PPT 188	Environmental Technology for the Pulp and Paper Industry	Causes and control of pollution associated with the pulp and paper industry and methods for effluent treatment.	3	FPPS 132. Pulp and Paper Technology or COI	1st Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering/Department of Forest Products and Paper Science (CFNR)	PPT 193	Pulp and Paper Plant Design	Computations of material balances, energy balances, power requirement, equipment balancing, cost and profitability estimation	3	ChE 32. Industrial Stoichiometry and ChE 192. Chemical Process Equipment Design	2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	SUTC 148	Sugar Analysis and Factory Operations Control	Technical analysis of sugar house products; chemical and industrial stoichiometry with specific application to operations control and sugar accounting and distribution.	3	CHEM 18.1 University Chemistry Laboratory	Midyear
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	SUTC 170	Instrumentation and Process Control Application to Sugar Industries	Principles and methods of instrumentation and control system analysis as applied to sugar industries.	3	SUTC 154. Field and Factory Operations and Processes, EE 1. Basic Electrical Engineering and ENSC 21. Mathematical Methods in Engineering	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	SUTC 181	Waste Management in the Sugar Industry	Types, sources, quantities of waste in sugar industry; effects of waste in receiving environment; waste handling practices; cleaner products/pollution prevention, emission control.	3	COI	Midyear
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	SUTC 185	Sugar Laws and Economics	Laws affecting the sugar industry and the profession of sugar technology; production costs; consumption trends; international outlook.	2	COI	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	SUTC 193	Sugar Process Engineering and Plant Design	Material, steam and equipment balancing; design and specifications.	3	SUTC 154. Field and Factory Operations and Processes	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 204	Mathematical Methods for Chemical Engineering Analysis	Numerical and analytical methods of solutions to systems of linear equations, ordinary and partial differential equations; and their applications in chemical engineering analyses.	3	ENSC 26. Computer Applications in Engineering and ENSC 21. Mathematical Methods in Engineering	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 240	Advanced Control Theory and Applications	Theories for analysis and design of advanced control systems.	3	EE 130. Fundamentals of Instrumentation or COI	2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 242	Advanced Chemical Engineering Thermodynamics	Estimation of the thermophysical properties of substances and modeling of phase equilibrium.	3	ChE 143. Chemical Engineering Thermodynamics II and ENSC 21. Mathematical Methods in Engineering or COI	2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 243	Advanced Transport Phenomena	Heat, mass and momentum transport analysis in chemical and biochemical engineering systems	3	ChE 149. Transport Phenomena or COI	1st Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 245	Advanced Chemical Reaction Engineering	Kinetics of heterogeneous catalytic and non-catalytic reactions; analysis and design of multiphase, non-ideal and non-isothermal reactors.	3	ChE 145. Chemical Reaction Engineering and ENSC 21. Mathematical Methods in Engineering or COI	1st Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 272	Advances in Biochemical Engineering	Engineering developments in bioprocesses, non-conventional biological systems; recent developments in biochemical engineering.	3	CHEM 177. Biochemical Technology I or COI	1st Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 282	Physical and Chemical Wastewater Treatment Design	Applications of the physical and chemical principles in the design of wastewater treatment facilities.	3	ChE 180. Agro-industrial Waste Management or COI	1st Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 283	Biological Wastewater Treatment Design	Wastewater treatment design of bioreaction systems for suspended and immobilized aerobic and anaerobic digestion processes.	3	ChE 180. Agro-industrial Waste Management and MCB 1 or COI	1st Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 284	Solid Waste Management	Technical aspects of solid waste minimization, treatment and disposal.	3	ChE 180. Agro-industrial Waste Management or COI	2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 286	Air Quality and Pollution Control Engineering	Air quality; elements, sources, and effects of air pollution; measurement, monitoring, and engineering control.	3	ChE 180. Agro-industrial Waste Management or COI	1st Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 288	Hazardous Waste Management	Minimization, treatment, and disposal of hazardous wastes; integrated management of hazardous wastes.	3	ChE 180. Agro-industrial Waste Management or CE 52 or CHEM 180 or COI	2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Chemical Engineering	ChE 291	Special Topics	---	3	COI	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 10	Introduction to Civil Engineering	Nature, scope, and practice of Civil Engineering.	1	None	1st Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 120	Higher Surveying	Topographic surveys; triangulation; solar & stellar observations; gravity, trigonometric & barometric levelling; hydrographic surveys; route surveys for highway & railways.	3	ABE 48. Fundamentals of Surveying	2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 121	Transportation Engineering I	Analysis of traffic flow & highway capacity; planning & geometric design of highways; traffic control & survey.	3	CE 120. Higher Surveying	1st Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 122	Transportation Engineering II	Fundamentals of design, construction & maintenance of highway & airport pavements.	3	CE 121. Transportation Engineering I	2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 131	Structural Analysis I	Survey of structural systems; analysis of loads & influence lines; design of roof & bridge trusses.	3	ENSC 13. Strength of Materials	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 132	Structural Analysis II	Deflection of trusses; analyses of statically determinate & indeterminate beams, & frames for different materials.	3	CE 131. Structural Analysis I	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 133	Design of Timber Members	Design of timber structures; joints, splices, roof & floor frames; bridge trusses.	3	CE 131. Structural Analysis I	1st Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 134	Design of Reinforced Concrete Members	Analysis & design of reinforced concrete beams, columns and slabs, & pre-stressed concrete beams.	4	CE 132. Structural Analysis II	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 135	Design of Steel Members	Analysis & design of structural members using steel for buildings, bridges & other infrastructures.	3	CE 132. Structural Analysis II	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 137	Structural Dynamics and Earthquake Engineering	Dynamic analysis of single & multiple degree of freedom systems, seismic response, & seismic design of structures.	3	CE 132. Structural Analysis II and ENSC 21. Mathematical Methods in Engineering	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 141	Hydraulic Engineering	Principles & application of hydraulic engineering.	3	ENSC 16.1. Fluid Mechanics Laboratory	1st Semester, 2nd Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 151	Sanitary Engineering I	Sewerage & water supply system: principles, design & maintenance.	3	CHEM 18. University Chemistry, CHEM 18.1 and ENSC 16	1st Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 152	Sanitary Engineering II	Principles of wastewater treatment processes; design of treatment facilities.	3	CE 151. Sanitary Engineering I	2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 161	Construction Materials and Testing	Engineering properties & testing of construction materials.	3	ENSC 13. Strength of Materials	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 163	CE Laws, Contracts, and Ethics	Elements of contracts, bid proposals & specifications for civil engineering projects; civil engineers' code of ethics.	3	COI	2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 164	Construction Project, Planning, and Management	Construction planning, job scheduling, selection of construction equipment, & cost estimation.	4	CE 134. Design of Reinforced Concrete Members and CE 163. CE Laws, Contracts, and Ethics	1st Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 170	Geotechnical Engineering	Assessment of soil as an engineering material in civil engineering projects.	3	ENSC 13. Strength of Materials and ENSC 16. Fluid Mechanics	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 171	Foundation Engineering	Mechanics of soils & rocks; phase relationships; consolidation behavior; site investigation & soil classification; foundation analysis & design; slope stability & soil improvement.	3	CE 134. Design of Reinforced Concrete Members and CE 170. Geotechnical Engineering	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 197	Civil Engineering Project Integration	Analysis & design of a civil engineering project; preparation of technical drawings & cost estimate.	3	CE 164. Construction Project, Planning, and Management and CE 171. Foundation Engineering	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 198	Internship	No Course Description provided in catalog	3	COI	1st Semester, 2nd Semester, Midyear
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 199	Undergraduate Seminar	No Course Description provided in catalog	1	Senior Standing	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 200	Undergraduate Thesis	No Course Description provided in catalog	6	COI	1st Semester, 2nd Semester, Midyear
College of Engineering and Agro-Industrial Technology	Department of Civil Engineering	CE 200b	Innovationeering	No Course Description provided in catalog	6	COI	1st Semester, 2nd Semester, Midyear
College of Engineering and Agro-Industrial Technology	Department of Industrial Engineering	IE 136	Industrial Safety and Health	Accident prevention and reduction of health hazards in the work environment; control of noise, vibration and heat stress.	3	Not Required	2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Industrial Engineering	IE 164	Information Systems 1	Analysis and design of information systems.	3	Not Required	2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	ABE 57	Field Hydrology	Hydrology processes and their interaction with the earth and atmosphere; stream flow hydrographs; hydrologic routing; probability in hydrology and water quality; mathematical models	3	COI	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	ABE 62	Environmental Control Engineering	Analysis and design of environmental control in agricultural structures with emphasis on tropical conditions; principles of controlled environment agriculture	3	ABE 52. Agricultural Structures I	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	ABE 63	Agricultural and Biosystems Power Engineering	Sources of energy and power in the farm; energy conversion and conservation; power units	4	ENSC 14a. Engineering Thermodynamics and Heat Transfer or ENSC 15. Fundamentals of Heat Transfer	1st Semester, 2nd Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	ABE 67	Irrigation and Drainage Engineering I	Basic soil-plant-water relationships; flow measurements; selection and efficiency of pumps; planning and design of irrigation and drainage systems	3	ABE 48. Fundamentals of Surveying and ABE 57. Field Hydrology	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	ABE 74	Machinery for Bioproduction Systems, Management and Technopreneurship	Development, management and commercialization of bioproduction systems machinery	4	ABE 53. Machine Design for Bioproduction Systems and FPPS 183. Engineering Economy	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	ABE 77	Soil and Water Conservation Engineering	Design, construction and maintenance of water conservation works, drainage and erosion control facilities	3	ABE 48. Fundamentals of Surveying and ABE 57. Field Hydrology	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	ABE 88	Aquaculture Engineering I	Principles of planning aquaculture systems; layout of farm facilities.	3	ABE 57. Field Hydrology	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	AFBE 196	Postharvest Engineering for Perishable Crops	Engineering aspects of postharvest handling systems and packaging operations for perishable crops	3	HORT 109. Postharvest Handling and Storage of Perishable Crops and ABE 66. Agricultural Processing I	2nd semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	ABSE 141	Plant Climate	Heat exchange near the ground; relation to topography and plant cover to the microclimate; modification of microclimate by agricultural operation	3	COI	1st Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	ABSE 162	Agricultural Waste Management	Principles of agricultural waste management; collection, storage, transport, treatment and utilization of agricultural waste	3	ABE 62. Environmental Control Engineering	2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	ABSE 181	Spatial Analysis in Hydrometeorology	Spatial distribution of climatic elements and soil moisture; digital terrain analysis; spatial interpolation	3	ABE 57. Field Hydrology	1st Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	AMPE 134	Design of Wind and Microhydro Systems	Wind and micro-hydro energy resource calculations; design of energy conversion systems	3	ENSC 16. Fluid Mechanics	2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	AMPE 153	Machine Design for Bioproduction Systems II	Design of machine elements and systems; limit dimensioning; materials and processes; dynamic loading; creative design	3	ABE 53. Machine Design for Bioproduction Systems	2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	AMPE 173	Agricultural Mechanization	Principles and practices in agricultural mechanization; mechanization management	3	ABE 74. Machinery for Bioproduction Systems, Management and Technopreneurship	1st Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	AMPE 183	Mechatronics for Agriculture and Biosystems	Fundamentals of instrumentation and control engineering applied in agriculture and biosystems.	3	PHYS 51. Elements of Physics and PHYS 51.1. Elements of Physics Laboratory	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	LWRE 178	Principles of Tropical Quality Management	Water quality problems and parameters; monitoring, control and management systems	3	ABE 57. Field Hydrology	2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	LWRE187	Water Control Structure	Hydraulics of water control and measurement structures; criteria for selection and design of hydraulic structures; design structures; construction methods	3	LWRE 177. Open Channel Hydraulics	2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	LWRE 188	Aquaculture Engineering II	Design, construction, operation and maintenance of aquaculture facilities	3	ABE 88. Aquaculture Engineering I and ABE 67. Irrigation and Drainage Engineering I	2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	AENG 243	Soil and Water Conservation	Agricultural hydrology; flood control and structures; diversion and waterways; relationship between water management and soil-water conservation; land clearing, development and formation	3	COI	2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	AENG 244	Groundwater Hydrology	Ground water as a source of water supply; occurrence and distribution; flow hydraulics; aquifer and well characteristics; well drilling	3	ABE 57. Field Hydrology and MATH 26. Analytic Geometry and Calculus I/MATH 36. Mathematical Analysis I	2nd semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	AENG 247	Water Quality Control Engineering	Water and wastewater characteristics; design and operation of water and wastewater treatment systems ; water reclamation and re-use	3	ABE 177 /LWRE 178. Principles of Tropical Water Quality Management or ChE 180 or COI	2nd Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	AENG 249	Statistical Hydrology	Frequency analysis; hydrologic models; single and multi-site generation of synthetic sequences; data augmentation; flood estimation; application studies	3	ABE 57. Field Hydrology or COI	2nd Semester
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	AENG 291	Special Topics	Technology Entrepreneurship for Engineers	3	COI	Midyear
College of Engineering and Agro-Industrial Technology	Institute of Agricultural Biosystems Engineering	AGME 250	Micrometeorology	Radiation energy and water balance over land surfaces; radiation, temperature, humidity and wind profiles in the atmospheric boundary layer; micrometeorological instrumentation; and microclimate modification	3	PHYS 13 or its equivalent	1st Semester
College of Engineering and Agro-Industrial Technology	Department of Engineering Science	ENSC 11	Statics of Rigid Bodies	Fundamental principles of equilibrium of rigid bodies; analysis of structures; first and second moments of mass, volume, area and length; shear and bending moment diagrams.	3	MATH 27. Analytic Geometry II/MATH 37. Mathematical Analysis II and Physics 3/81	1st Semester, 2nd Semester, Midyear
College of Engineering and Agro-Industrial Technology	Department of Engineering Science	ENSC 12	Dynamics of Rigid Bodies	Kinematics and kinetics of rigid bodies in rectilinear and plane motion; force, mass and acceleration relationships; concepts of work, energy, impulse, and momentum; mechanical vibrations.	3	ENSC 11. Statics of Rigid Bodies	1st Semester, 2nd Semester, Midyear
College of Engineering and Agro-Industrial Technology	Department of Engineering Science	ENSC 13	Strength of Materials	Elementary stress and strain analysis; analysis and design of structural elements based on equilibrium and material properties.	3	ENSC 11. Statics of Rigid Bodies	1st Semester, 2nd Semester, Midyear
College of Engineering and Agro-Industrial Technology	Department of Engineering Science	ENSC 14	Basic Thermodynamics	Fundamental concepts and laws of thermodynamics; thermodynamic properties of substances and thermodynamic processes and cycles	3	MATH 28. Analytic Geometry and Calculus III and PHYS 72. University Physics II	1st Semester, 2nd Semester, Midyear
College of Engineering and Agro-Industrial Technology	Department of Engineering Science	ENSC 14a	Engineering Thermodynamics and Heat Transfer	Fundamental concepts and laws of thermodynamics; thermodynamic properties of substances; thermodynamic processes and cycles; principles of heat transfer.	5	MATH 28. Analytic Geometry and Calculus III/MATH 38. Mathematical Analysis III and PHYS 72. University Physics II	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Engineering Science	ENSC 15	Fundamentals of Heat Transfer	Principles of conduction, convection and radiation of heat	3	ENSC 14. Basic Thermodynamics	1st Semester, 2nd Semester, Midyear
College of Engineering and Agro-Industrial Technology	Department of Engineering Science	ENSC 16	Fluid Mechanics	Properties of fluids; fluid statics, kinematics and dynamics; flow in pressure conduits and open channels; fluid measurements and turbo-machinery.	3	ENSC 12. Dynamics of Rigid Bodies	1st Semester, 2nd Semester, Midyear
College of Engineering and Agro-Industrial Technology	Department of Engineering Science	ENSC 18	Materials of Engineering	Properties, structure and composition of materials; behavior of materials under service conditions; testing, inspection, specification and selection of materials	3	ENSC 13. Strength of Materials and Chem 15	1st Semester, 2nd Semester
College of Engineering and Agro-Industrial Technology	Department of Engineering Science	ENSC 21	Mathematical Methods in Engineering	Analytical and numerical methods in solving differential equation concepts and methods in programming, applications to engineering problems.	3	MATH 28. Analytic Geometry and Calculus III or MATH 38. Mathematical Analysis III	1st Semester, 2nd Semester, Midyear
College of Engineering and Agro-Industrial Technology	Department of Engineering Science	ENSC 26	Computer Applications in Engineering	Concepts and methods in programming, applications to engineering problems	3	MATH 28. Analytic Geometry and Calculus III/MATH 38. Mathematical Analysis III; Sophomore with at least one major course	1st Semester, 2nd Semester
College of Forestry and Natural Resources	Department of Forest Biological Sciences	FBS 10	Biology of Tropical forest Plants	Structure, growth, and ecology of woody plants, bamboos and palms	4	Not Required	1st, 2nd semester
College of Forestry and Natural Resources	Department of Forest Biological Sciences	FBS 126	Introduction to Forest Entomology	Biology and ecology of insects associated with forest trees and forest products; laboratory rearing methods and field work	3	Not Required	1st semester
College of Forestry and Natural Resources	Department of Forest Biological Sciences	FBS 31	Plant Physiology	Nutrition, metabolism, growth and reproduction of plants	3	Not Required	1st, 2nd semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Forestry and Natural Resources	Department of Forest Biological Sciences	FBS 41	Forest Pathology	The common and important diseases of forest plants and forest products, recognition of symptoms, causes, and control methods	3	Not Required	2nd semester
College of Forestry and Natural Resources	Department of Forest Biological Sciences	FBS 42	Forest Products Pathology	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	3	Not Required	1st semester
College of Forestry and Natural Resources	Department of Forest Biological Sciences	FBS 140	Forest Mycology	A comprehensive survey of fungi affecting forest trees, including the morphology, taxonomy and physiology of fungi	3	Not Required	1st, 2nd semester
College of Forestry and Natural Resources	Department of Forest Biological Sciences	FBS 172	Forest Genetics	Theories and practical applications of genetics to forestry, including tree selection, hybridization, progeny testing and seed orchard establishment	3	Not Required	1st, 2nd semester
College of Forestry and Natural Resources	Department of Forest Biological Sciences	FBS 136	Forest Ecology	Interrelationships of forest plants and environmental factors; structure and dynamics of vegetational types; plants succession; indicator plants and ecological methods	3	FBS 36	1st, 2nd semester
College of Forestry and Natural Resources	Department of Forest Biological Sciences	FBS 161	Plant Anatomy	Organization and development of the primary and secondary plant body of higher plants	3	Not Required	1st, 2nd semester
College of Forestry and Natural Resources	Department of Forest Biological Sciences	FBS 181	Research Techniques in Forest Biology	Laboratory and field techniques in reproductive biology, propagation, microbial fertilizers and biological control; data collection, processing and analysis	3	Not Required	2nd semester
College of Forestry and Natural Resources	Department of Forest Biological Sciences	NRC 133	Nature Interpretation	Interpretive techniques for natural resources conservation	3	Not Required	1st, 2nd semester
College of Forestry and Natural Resources	Department of Forest Biological Sciences	WLDL 105	Principles of Wildlife Management	Interrelationships of wildlife biology, habitat ecology, and population dynamics as they affect management problems	3	Required (WLDL 101 or COI)	1st semester
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 11	Wood Structure and Identification	Gross and microscopic structure of wood; wood identification, natural defects and variations in structure	3	None	1,2
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 111	Wood and Fiber Anatomy	Microscopic identification, variability and anatomical characteristics of wood and paper-making fibers. Wood and non-wood structure in relation to defects, properties and uses	3	None	1,2
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 112	Bark Structure and Properties	Structure and development, properties and uses of the barks of woody plants	3	COI	1
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 121	Wood Physics 1	Physical structure and properties of wood in relation to moisture heat, sound, and electricity	3	None	1
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 132	Pulp and Paper Technology	Chemical and technological aspects of the manufacture of mechanical and chemical pulps, paper and paper products	3	COI	1
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 140	Environmental Pollution in Forest Industries	Causes and control of pollution associated with the primary wood processing industries	3	COI	2
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 151	Seasoning of Wood and Related Products	Theory and practice of kiln drying and other methods of seasoning wood and related products	3	None	2
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 161	Preservation of Wood and Related Products	Common factors causing the destruction and decay of wood and related products; methods of preservation and control; fire proofing, and the economic aspects of preservation of wood and related products	3	COI	2
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 172	Glued Wood Products Technology	Manufacture of veneer, plywood, laminated wood and related products, principles of glued wood construction, properties, characteristics, and uses of glued products	3	COI	2
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 181	Quality Control	Principles of statistical quality control and organization of quality control programs in the manufacture of wood products	3	None	1

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 182	Production Planning and Control	Planning of production requirements, routing, scheduling, dispatching and inspection coordination; control of materials, methods, machines, tooling and operation times	3	COI	2
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 183	Engineering Economic Analysis	Economics of engineering decisions. Depreciation and cost estimating, analysis of existing and proposed plans, including materials, products design, and machine selection and replacement	3	COI	1,2
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 191	Special Topics	Value Chain Approach in Environment and Natural Resources	3	None	1,2
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 191	Special Topics	Renewable Energy from Forest Biomass	3	None	1,2
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	FPPS 235	Forest Products Biotechnology	Application of biotechnology to improve the quality and utilization of wood; bio-processing operations in forest-based and related industries.	3	FPPS 131 or COI	2
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	WST 202	Wood Quality Evaluation	Patterns of variation of wood quality indicators; sampling strategies and biomathematical methods of wood quality assessment	3	COI	1
College of Forestry and Natural Resources	Department of Forest Products and Paper Science	WST 291	Special Topics	Advances in the Properties and Utilization of Bamboo as a Material	3	COI	1,2
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	FOR 1	Introduction to Forests and Forestry	Forests and forestry in relation to the environment and society; introduction to the science and technology of forestry	3	Not Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	FRM 100	Introduction to Forest Resources Management	General forest management; its relation to the forest products industries	3	Not Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	FRM 102	Fundamentals of Environmental Forest Management	Structure and dynamics of forest ecosystems, principles, decision-making tools and strategies in environmental forest management	3	Required	2nd Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	FRM 145	Tropical Forests and Climate Change	Climate change assessment methods, mitigation and adaptation in tropical forests	3	Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	FRM 201	Planning and Evaluation of Forestry Research	Research program, project, and study planning; analysis and interpretation; critical reviews	3	Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	FRM 204	Geospatial Methods in Natural Resources Management	Application of geographic information systems (GIS) technology in natural resources management; GIS operations and spatial analysis	3	Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	NRC 130	Nature-based Leisure and Outdoor Recreation	Principles, guidelines and conservation norms for different leisure activities outdoors and in wilderness areas	3	Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	NRC 131	Fundamentals of Ecotourism	Principles, concepts and approaches in ecotourism	3	Required	2nd Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	NRC 132	Conservation and Management of Protected Areas	Concepts, principles and practices in conserving and managing protected areas	3	Required	2nd Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	NRC 133	Nature Interpretation	Interpretive techniques for natural resources conservation	3	Not Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	NRC 140	Introduction to Geographic Information Systems	Principles and concepts of geographic information systems; GIS operation	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	NRC 141	Introduction to Remote Sensing	Principles, concepts and types of remote sensing	3	Not Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	NRC 170	Watershed Management	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.	3	Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	NRC 231	Protected Areas Management	Issues, practices and strategies in managing national parks and other protected areas	3	Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	NRC 232	Ecotourism	Planning and implementation of ecotourism programs and projects	3	Required	1st Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	SFI 100	Geology and Forest Soils	Physical geology; formation and development of land forms; physical, chemical, and biological characteristics of forest soils	3	Not Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	SFI 101	Forest Soils	Soil classification, organic matter, organisms, physical and chemical properties, and relation to forest management.	3	Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	SFI 102	Forest Soil and Water Conservation	Principles, theories and research methodologies in forest soil and water conservation.	3	Required	2nd Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	SFI 103	Fundamentals of Agroforestry	Principles and practices of agroforestry; managing agroforestry projects	3	Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	SFI 107	Fundamentals of Urban Forestry	Structure, composition, distribution and classification, planning, management of urban forests	3	Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	SFI 149	Arboriculture and Landscape Gardening	Propagation and culture of important fruit and ornamental perennial plants; landscape gardening and ground improvement	3	Required	1st Semester
College of Forestry and Natural Resources	Institute of Renewable Natural Resources	SFI 150	Silviculture of Mangrove Forests	Silvicultural approaches in the establishment, care and rehabilitation of mangrove forests	3	Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 101	Principles and Concepts of Social Forestry	Rationale for and approaches in Social Forestry and its application for local community development	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 111	Forest Conservation	Approaches to forest conservation; socio-cultural economic factors affecting it	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 123	Forest Policy and Institutions	Study of policies and institutions involved in forest management and development in the Philippines	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 113	Forestry Extension	Theories and practices in extension education as applied to forestry; analysis of forestry extension programs in the Philippines	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 125	Political Economy and Administration of Forestry Development	Philosophy, concepts, theories, processes, and ethics; policies and institutions involved in the interactions between the state and forestry development	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 152	Sociology of Natural Resources	Relationship between social structure and natural resources; application of sociological theories and findings to problems of natural resource development	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 120	Environmental and Natural Resource Worldviews	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	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 133	Socio-Economics of Agroforestry	Socio-economic principles underlying the management of agro-forestry establishments.	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 141	Formal Organizations in Social Forestry	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	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 149	Gender Analysis and Planning	Gender analysis and planning methods; implications for national development with emphasis on agriculture, forestry and natural resources	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 150	Production and Conservation Technologies in Forestry	Concept; identification, characterization, applicability, analysis and practical evaluation of appropriate production and conservation technologies in social forestry	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	NRC 150	Forest-Based Rural Industries	Nature, type, characteristics of forest resource-based rural industries; role in promoting social forestry; strategies to promote their development	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 155	Social Equity Issues in Social Forestry	Social equity issues in forestry with emphasis on social structure, land tenure, and gender	3	Not Required	2nd Semester

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College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 182	Rural Institutions for Forestry and Natural Resource Development	Concepts and processes of institution building in forest communities with emphasis on the dynamic role of institutions in participatory forest and natural resources management	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 163	Anthropological Concepts in Social Forestry	Application of anthropological concepts to an understanding of ethnic groups in relation to forestry	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 197	Anthropological Research Methods in Forestry	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	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 191	Special Topics	Social Forestry in Forest Restoration and Rehabilitation	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 191	Special Topics	Climate Change Adaptation and Community Resilience	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 191	Special Topics	Participatory Tools and Approaches for Forestry Extension	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 191	Special Topics	Governing the Forest Commons	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 201	Comparative Social Forestry	Perspectives in Social Forestry; analysis of social forestry programs	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 212	Program Development and Evaluation in Social Forestry	Theories, principles and processes of program development and evaluation; their application to social forestry	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 221	Environmental and Natural Resource Policy Formulation	Theories, concepts and issues in environmental and natural resource policy formulation; case studies with special reference to developing countries	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 224	Alternative Theories and Methods of Policy Analysis in Natural Resources	Survey, critique and applications of alternative theories and methods in the analysis of natural resource policies	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 229	Public Administration of Forest Resources	Execution of forest resources programs, especially administered by the forestry agencies in the Philippines	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 233	Agroforestry Management Practice	Microanalysis and application of management principles on agroforestry farms	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 263	Cultures and Societies in Tropical Forest Ecosystems	Community and forest interactions in the tropics, with special reference to Southeast Asia	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 280	Swidden Farming Systems	Social, economic and cultural factors underlying the practice of swidden farming; technologies, practices, and policies involved in its management	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 287	Conflict Management in Forestry	Analysis and management of conflicts to promote forest resources development and conservation	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 291	Special Topics	Participatory Natural Resource Governance	3	Not Required	1st Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 291	Special Topics	People, Mangroves and Climate Change	3	Not Required	2nd Semester
College of Forestry and Natural Resources	Department of Social Forestry and Forest Governance	SFFG 291	Special Topics	Grounded Theory Methodology	3	Not Required	2nd Semester
College of Human Ecology	Department of Human and Family Development Studies	HFDS 101	Family and the Environment	The family in relation to individual members, society and institutions; includes structural patterns, relations and formations	3	Not Required	1st Semester
College of Human Ecology	Department of Human and Family Development Studies	HUME 107	Principles of Human Development	Theories, principles and processes involved in human development across the lifespan.	3	Not Required	1st Semester
College of Human Ecology	Department of Human and Family Development Studies	HFDS 105	Family Dynamics	Analysis of factors contributing to effective individual and family relationships within a dynamic environment.	3	Not Required	2nd Semester
College of Human Ecology	Department of Human and Family Development Studies	HFDS 115	Family and Community Resource Management	Theories and practice of decision-making and management of resources at the family and community level.	3	Not Required	2nd Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Human Ecology	Department of Human and Family Development Studies	HFDS 124	Housing	Perspective in housing, geographic, socio-cultural and structural factors considered; emphasis on contemporary housing needs of families and groups.	3	Not Required	2nd Semester
College of Human Ecology	Department of Human and Family Development Studies	HFDS 130	Human Physiology	Functions and structures of the human body for growth and development.	3	Not Required	1st Semester
College of Human Ecology	Department of Human and Family Development Studies	HFDS 135	Child Development	Theories in child development; developmental patterns of the different domains of a child in relation to various factors; issues in the childhood stage.	3	Not Required	1st Semester
College of Human Ecology	Department of Human and Family Development Studies	HFDS 140	Adolescent Development	Theories of adolescence; Developmental characteristics of and issues in adolescence.	3	Not Required	2nd Semester
College of Human Ecology	Department of Human and Family Development Studies	HFDS 145	Adult Development	Theories and principles of early and middle adulthood; developmental characteristics of adulthood related to various factors; current issues and trends.	3	Not Required	2nd Semester
College of Human Ecology	Department of Human and Family Development Studies	HFDS 150	Elderly Development	Biological, psychosocial, and cognitive dimensions of elderly development and aging using the active aging and human ecology framework.	3	Not Required	1st Semester
College of Human Ecology	Department of Social Development Services	SDS 101	Introduction to Social Development	History, perspectives, trends, approaches, and contemporary issues and problems of social development.	3	Not Required	1st and 2nd semester
College of Human Ecology	Department of Social Development Services	SDS 173	Consumer Education	Problems, issues and challenges on safety, labeling and advertising of goods and services as these relate to the consumer in the market; the effects of social and economic policies on consumer behavior and human welfare.	3	Not Required	1st and 2nd semester
College of Human Ecology	Department of Social Development Services	HUME 112	Sustainability Science	Concepts, theories and practices in sustainability science.	3	Not Required	1st and 2nd semester
College of Human Ecology	Department of Social Development Services	HUME 113	Community Study in Human Welfare	Analysis of communities as to social and physical structure, functions, resources technology and levels of living; implications on community and human welfare.	3	Not Required	1st and 2nd semester
College of Human Ecology	Department of Social Development Services	SDS 163.	Social Vulnerabilities and Capacities	Principles and methods in the assessment of the vulnerabilities and capacities of social-ecological systems in the context of a changing environment.	3	Required (HUME 113 or COI)	1st Semester
College of Human Ecology	Department of Social Development Services	HUME 115	Social Policies	Social and resources policies based on analysis of problems and approaches; introduction to benefits/costs in human, social and economic terms.	3	Required (COI)	1st and 2nd semester
College of Human Ecology	Department of Social Development Services	HUME 123	Climate Change Adaptation and Disaster Risk Reduction in Human Ecosystems	Concepts, frameworks, models, tools and methodologies of climate change adaptation and disaster risk reduction and their applications to human ecosystems.	3	Required (HUME 100 or COI)	1st and 2nd semester
College of Human Ecology	Department of Social Development Services	SDS 168	Social Impact Assessment	Principles and methods in the assessment of the social impacts of planned interventions on human ecological systems.	3	Required (SDS 101 or SOC 10)	1st Semester
College of Human Ecology	Department of Social Development Services	SDS 172	Techniques in Community Organizing	Techniques and practices in organizing human-centered development groups.	3	Required (SDS 101 or AERS 154)	1st Semester
College of Human Ecology	Department of Community and Environmental Resource Planning	HUME 105	Humans and Their Environment	Human-Environment interaction through time and space; contemporary ecological problems encompassing physical, biological, social and ethical dimensions; implications to human well-being and behavior.	3	Required (HUME 100 or COI)	2nd Semester
College of Human Ecology	Department of Community and Environmental Resource Planning	HUME 111	Human Ecological Perspective in Development	Relating human ecological perspective and concepts in the multi-dimensions of development	3	Required (HUME 105 or COI)	1st Semester
College of Human Ecology	Department of Community and Environmental Resource Planning	HUME 114	Material and Energy Flows	Matter and energy forms and transformation; thermodynamic principles; material cycles and energy flows; man's role in every production and recycling of energy and material resources; energy technologies and energy assessment.	3	Not Required	2nd Semester

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College of Human Ecology	Department of Community and Environmental Resource Planning	HUME 124	Environmental Health	Nature of environmental hazards including pollution and human waste; effects on human functioning and means of minimizing such effects.	3	Required (HUME 105 or COI)	2nd Semester
College of Human Ecology	Department of Community and Environmental Resource Planning	CERP 101	Fundamentals of Human Settlements	An introductory course on types, elements, and functions of human settlements, dimension and planning	3	Required (COI)	1st Semester
College of Human Ecology	Department of Community and Environmental Resource Planning	CERP 122	Conservation of Natural Resources	Principles and Practices in the Use and Conservation of Natural Resources	3	Required (BIO 150 or COI)	1st Semester
College of Human Ecology	Department of Community and Environmental Resource Planning	CERP 140	Fundamentals of Environmental Economics	Fundamentals of Environmental Economics focuses on the economic concepts and techniques and its application to environmental studies.	3	Required (HUME 111 or COI)	1st Semester
College of Human Ecology	Department of Community and Environmental Resource Planning	CERP 161	Planning Theory and Practice I	Planning Theories, Process and Dimensions and its Contextual Applications	3	Required (HUME 111 or COI)	2nd Semester
College of Human Ecology	Department of Community and Environmental Resource Planning	CERP 164	Spatial Analysis for Human Settlements Planning	Methods and approaches in spatial analysis for planning of human settlements	3	Required (CERP 163 and HUME 125 or COI)	1st Semester
College of Human Ecology	Department of Community and Environmental Resource Planning	CERP 170	Environmental Project Planning and Administration	Elements and approaches in formulating and administering environmental projects	3	Required (CERP 140 and HUME 115 or COI)	1st Semester
College of Human Ecology	Institute of Human Nutrition and Food	HNF 251	Ecology of Food and Nutrition	Ecological, socio-cultural and demographic factors affecting	3	Not required	1st & 2nd Semester
College of Human Ecology	Institute of Human Nutrition and Food	HNF 121	Advanced Human Nutrition	Physiological and Chemical Bases of Human Nutritional Needs	3	Not required	1st Semster
College of Public Affairs and Development	Institute for Governance and Rural Development	DM 201	Development Perspective	Systems theory and concepts and their application to the analysis of the national development process; comparison of development patterns; and Philippine historical realities of management principles in the analysis of development organization	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DM 204	Management Dimensions of Development Organizations	History, environment, and dynamics of development organizations; application of management principles in the analysis of development organization.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DM 210	Research Management	Principles, practices, and dynamics of research management.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	PAf 203	Data Analysis and Modeling for Public Affairs	: Analytical tools, decision models, sources, uses and interpretation of social and economic data in public affairs	4	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DM 220	Public Policy and Program Administration for Development:	Policy formulation, analysis, and implementation; program administration and project management for development.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DM 221	Fiscal Administration in Development:	Theories and methods of fiscal administration and their application in the financial planning and analysis of development programs.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DM 223	Project Development and Management	Design, implementation, and evaluation of development projects.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DM 224	Public Affairs Management:	Political and administrative structures and processes in national development with emphasis on rural development	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DM 230	Planned Change in Development Organization:	Concepts, models, and strategies of planned transformation.	3	COI	1st and 2nd Semester

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College of Public Affairs and Development	Institute for Governance and Rural Development	DM 241	Managerial Leadership	Leadership theories, roles, styles, and skills in various management levels.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DMG 224	Governance Framework for Disaster Risk Reduction and Climate Change Adaptation	Governance theories, concepts and issues, and their application in disaster risk reduction and climate change adaptation policy, plans and projects.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DMG 225	Governance of Food Systems	Theories, perspectives and approaches to governance of food systems for food and nutrition security.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DMG 230	Microfinance, Microinsurance and Development	Concepts, models, and management of microfinance and microinsurance institutions and their role in development.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DMG 231	Governance of Microfinance Institutions	Concepts, approaches, and tools in the governance of microfinance institutions.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DMG 232	Governance of Microinsurance Institutions	Concepts, approaches, and tools in the governance of microinsurance institutions.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DMG 244	Local Governance Entrepreneurship	Concepts, principles, practices and tools in local government entrepreneurship.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DMG 245	Local Development Planning	Theories, processes and tools for local development planning.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DMG 246	Public Integrity and Social Accountability	Anti-corruption, public integrity mechanisms and social accountability strategies.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	LGD 210	Governance and Development	Concepts, models, principles, tools, indicators, practices, issues, trends, and prospects in governance and development	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	LGD 211	Delivery Systems for Public Services	Theory and practice of public service delivery with focus on local government units.	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	LGD 213	Local Fiscal Management	Concepts, principles, processes and practices in local fiscal management, local revenue generation, allocation, utilization and accountability.	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	LGD 215	Human Resource Management in Local Government	Principles, practices, trends, and issues in human resource management in local government units	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	LGD 216	Organizational Development in Local Government	Theories, concepts, and processes in organizational development and improvement of local government units.	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 213	Instructional Systems Design and Management	Principles, approaches, and processes in designing and managing instructional systems.	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 217	Educational Planning	Concepts, procedures and tools in developing plans at various levels and types of educational systems.	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 210	Managing Education for Community Welfare	Management principles and tools for productivity and quality improvement in education within the community.	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 215	Leadership for Educational and Community Productivity	Leadership behavior, theories, qualities, approaches, skills and techniques	3	COI	2nd Semester

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College of Public Affairs and Development	Institute for Governance and Rural Development	SPPS 201	Strategic Planning: Theory and Methods	Theoretical perspectives and techniques in strategic planning.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	SPPS 202	Methods of Policy Analysis	Policy analytic process and quantitative and qualitative methods of analysis	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 250	Community Development	Philosophy, principles, and problems of community development in the Philippines	3	COI	1st Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 251	Comparative Community Development	Analysis of the characteristics of national community development programs in selected countries, with emphasis on their comparative merits and demerits and on the extraction of elements that may have universal application.	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 252	Planning and Administration of Community Development	Features of community development programs in the Philippines, their organization, administrative planning, interrelationship with local government units, financing, personnel administration, field execution, and evaluation.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 240	Extension Science	The theory and practice of extension.	3	COI	1st Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 242	Adult Education in Agriculture	A course to acquaint prospective teachers, agricultural leaders, and community workers regarding ways of developing programs for young and adult farmers, and effective methods of teaching adults	3	COI	1st Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 244	Comparative Analysis of Extension Approaches	Analysis of different extension approaches and their application under varied socioeconomic and physical milieux.	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 246	Evaluation in Rural Development	The nature, principles, and role of evaluation in vocational agriculture education; extension education, and community development; selection, construction, and use of evaluation devices.	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 248	Participatory Extension	Concepts and practice in community-based participatory extension and action research planning and development.	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 301	Philosophical Ideas in Development	Philosophical traditions in development and conceptual frameworks for analyzing contemporary development programs.	3	COI	1st Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 365	Rural Institutions	Identification, description, and analysis of changes taking place in rural institutions, which relate to the economic, social, political, and cultural life of the rural population	3	COI	1st and 2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DVST 301	Development Theories and Frameworks	Theories, paradigm shifts and frameworks from colonial era to contemporary times.	3	COI	1st Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DVST 302	Development Practice:	Multidisciplinary frameworks in the analysis of development practice.	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	DVST 303	Mixed Methods Research for Development Studies	Concepts, processes and applications of mixed methods research to development studies.	3	COI	1st Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 302	Curriculum Development and Evaluation	Theories, models, and approaches in curriculum development and evaluation	3	COI	1st and 2nd Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 303	Economics of Education	Applications of economics in the analysis of problems and issues in financing education, both formal and non-formal, particularly in developing countries	3	COI	2nd Semester
College of Public Affairs and Development	Institute for Governance and Rural Development	CED 304	International Comparative Education	Trends, issues, and practices in international comparative education	3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 201	Ecosystem Structure and Dynamics	Ecosystem structure, function, energetics, nutrient cycles, population dynamics, ecosystem models.	3	BOT 150 or BIO 150 or COI.	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 202	Landscape Ecology	Principles, theories, research methods and application of landscape ecology in environmental and natural resource management	3	ENS 201, BIO 150 or COI.	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 203	Advanced Aquatic Ecology	Recent studies in aquatic environment-organism interactions; adaptive mechanisms; species displacement and extinction; modern approaches in the evaluation of production rates.	3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 204	Issues in Aquatic Resources Management	Problem and issues in the use of aquatic resources with emphasis on the Philippines situation	3		1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 211	System Analysis and Quantitative Methods in Natural Resources Management	This course is designed primarily to orient students to the fundamental concepts of systems analysis and systems modelling, both on the quantitative and qualitative aspects. It will emphasize mainly the practical applications of systems analysis and quantitative methods in studying natural resource systems.	3	MGT 211 or COI.	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 220	Institution and the Environment	Social science approaches to the study of man-environment interactions; analysis of the interrelationships between culture, population, and the natural environment, and human responses to changing habitats	3		1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 221	Environmental and Natural Resource Policy Formulation	Theories, concepts, and issues in environmental and natural resource policy formulation, case studies with special reference to developing countries	3		1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 230	Industrial Ecology	Ecological principles and their applications in the organization and management of industrial systems.	3	ENS 201 or COI.	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 235	Theories and Methodologies of Environmental Life Cycle Assessment	Framework and applications of life cycle assessment to evaluate environmental, social and economic	3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 242	Economic Valuation of Environmental and Natural Resource System	Approaches and techniques for economic measurements and valuation of natural resources and environmental impacts of development.	3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 255/PSY 255	Environmental Psychology	Analysis of the confluence of psychological processes and environmental context from a transactional perspective.	3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 265/SOC 265	Gender and Environments	Theories, research, and issues relevant to the analysis of gender relations in the home and work environments.	3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 270	Dynamics of Population, Resources and Environment	Interactions of human populations with resources and environment in different ecosystems; local, national, and global in scope	3	HUME 2 or COI.	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 275	Contemporary Issues in Environment and Development	Environmental issues, concerns and opportunities; environment-economy interactions; environmental administration; sustainable development policies and issues; resource-use conflict and resolution.	3	COI	1st and 2nd Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
School of Environmental Science and Management	School of Environmental Science and Management	ENS 290	Special Problems	May be taken twice provided that total number of units to be credited to the student's program will not exceed 4 units.	1-3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 291	Special Topic: Environmental Research Methods	The purpose of the course is to provide the students the knowledge and skills of a wide array of disciplined-based research methods in natural and social sciences and how these methods be integrated in interdisciplinary research for environmental problem analysis.	1-3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 291	Special Topic: Environmental Diplomacy	Analysis of global and regional treaties and related agreements and its role in the management of international and local environmental conflicts	1-3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 291	Special Topic: Environmental Geology	This course is designed to provide students with a broad spectrum of environmental and geosciences subjects to facilitate greater awareness of the interactions among the different components of the Earth. Discussions include the relationships among the lithosphere, hydrosphere, and atmosphere.	1-3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 291	Special Topic: Environment, Human Health and the Industries	Introduction to principles and practices in environment and human health safety in the engineering design, construction and operation of complex industrial systems	1-3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 291	Special Topic: Environmental Hydrology	This course is designed for environmental science majors. It focuses on explaining the theories on water systems management and hydrology by integrating these into a holistic perspective of the environment. Also, it describes the structure and functions of, as well as the processes in various tools in hydrological modelling of the natural environment and the impacts of anthropogenic activities.	1-3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 291	Special Topic: Ecotoxicology	This course is designed to provide an overview of ecotoxicology that ranges from molecular to global issues, including an examination of the major classes of pollutants of concern today, including their sources, their fate in the environment, their disposition in organisms, and their mechanisms of toxicity.	1-3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 291	Special Topic: Ecosystem-based DRR	May be taken twice provided that total number of units to be credited to the student's program will not exceed 4 units.	1-3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 291	Special Topic: Environmental Conflict Resolution and Negotiation	A course that deals with the nature of environmental resources, the conflicts arising from multiple use of resources and how different resource users deal with conflicts on use, evolving resource use management towards sustainability	1-3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 291	Special Topic: Atmospheric Pollution and Management	A course designed to investigate the relationship among the Earth's atmosphere, meteorology, energy consumption and generated pollutants.	1-3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 291	Special Topic: Advances in inland aquatic research	May be taken twice provided that total number of units to be credited to the student's program will not exceed 4 units.	1-3	COI	1st and 2nd Semester
School of Environmental Science and Management	School of Environmental Science and Management	ENS 296	Environmental Impact Assessment: Perspectives from the Natural and Social Sciences	Framework and methodology for environmental impact assessment of the biophysical and socioeconomic systems; ecological, social and ethical bases of EIA; risk assessment and management; mitigation of negative impacts and enhancement of positive impacts; case studies.	4 (3 units lecture/1 unit lab)		Mid Year, 1st and 2nd Semester

College	Dept	Course Code and Number	Course Title	Course Description	Course Credits	Prerequisite/Co-requisite	Term Offered
School of Environmental Science and Management	School of Environmental Science and Management	ENS 299	Graduate Seminar	May be taken twice.	1		1st and 2nd Semester