รายวิชาที่เกี่ยวข้องกับการพัฒนาอย่างยั่งยืน

Course name	Note
Architecture and Environment	Influence of the natural environment on architectural design and human comfort zone; implications for design of buildings to effectively control environment, conserve energy and harvest energy from natural sources.
Individual study in landscape architecture	Role, importance, and purpose of urban planning; planning process and methods; implementation of plans; study of land use, traffic, transportation, infrastructure, and environment in order to understand how the urban system works. Includes study visits.
Environmental ecology	Nature and scope of ecology. Physical environment. Ecology of individuals. Population ecology. Ecological interactions. Communities and major ecosystems. Regional ecology and biomes. Current ecological issues. Global Climate Change. Applications of ecology to environmental problems and development projects.
Solid waste treatment technology	Solid waste properties. Reuse strategies. Material recovery facility. Recycling. Composting. Anaerobic digestion. Landfill mining. Refuse derived fuel. Pyrolysis and Gasification of solid waste. Field trips included
Water pollution and controls	Sources, causes and impacts of water pollution. Principles and concepts for prevention and control of water pollution. Water quality monitoring. Water quality modeling and prediction for water pollution control. Examples of cleaner technology and wastewater utilization applications for wastewater reduce. Basic design and system selection. Operation control and maintenance of collection and wastewater treatment systems. Physical, chemical and biological treatments and disposal of wastewater. Sludge treatment and disposal. Ethics and laws related to water pollution control.
Cleaner technology and environmental management	Material and energy balance. Concepts of cleaner technology. Applications and auditing of cleaner technology. Current standards of environmental management system. Environmental laws and regulations. Case studies. Field trips included.
Health risk and impact assessment	Laws related to health risk. Relationship with environmental impact assessment process. Epidemiology. Development projects in risk groups. Forms of toxic substances from developed projects. Health risk and impact assessment and management. Related models.
Environment and environmental management	Environmental components. Problematic environmental issues. Water, air and soil pollution. Natural resources and sustainable development. Roles of public participation. Environmental standards, laws and regulations. Factors involved in decision making. National environmental policy and plan. Environmental related agencies. Environmental management in various projects. Environmental ethics.
Air pollution and control	Air pollution management and control laws. Principles and methods of air pollution prevention, clean technology for air pollution reduction and their applications in industries. Air pollution sampling and measurement. Design and

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	maintenance of ventilation and air pollution treatment systems. Applications of mathematical models for air pollution management and control. Case studies.
Organic waste recycling	Characteristics of organic waste. Composting. Biogas production. Algal and fish production. Aquatic weeds and their utilization. Control considerations in organic waste utilization.
Geo-informatics for environmental management	Principles of geo-informatics. Storage, management and retrieval of geospatial data using geo-informatics. Spatial and geo-statistical analysis of geospatial data. Applications of geo-informatics technology in environmental and natural resource management and monitoring. Case Studies.
Selected topics in environmental science management	Topics of interest in environmental science management.
Natural environmental and art work conservation	Basic knowledge of environment and natural resources; environmental problems; impact of physical, chemical and biological threats on art works; ecosystem services and eco-tourism; basic principle of natural and cultural environmental conservation; application of scientific knowledge to conservation of natural environment and art works; world heritage.
Environment, pollution and energy	Ecosystem; water pollution; air pollution; soil pollution; solid waste; energy and its impact on global climate.
Innovation for energy and environment	Importance of energy and environment, impact of energy usage on the environment, global warming, energy saving, examples of alternative energy innovation, environmental quality standards.
Waste and environmental management in livestock farm	Waste, air and water pollution in livestock farm. Effects from waste and pollution on livestock animal and environment. Regulations and laws on environmental protection. Waste management technology using physical, biological and chemical processes. Waste utilization in agriculture for energy production. Field trips required.
Modern times fisheries	Importance and current situations of fisheries and aquaculture production; aquatic species of economic importance; coastal and offshore fisheries; laws and regulations related to fisheries and aquaculture; illegal, unreported and unregulated fishing (IUU); international fisheries laws; blue economy; optimal environmental conditions for aquaculture; farm standards; fishing gears; climate change and fisheries.
Aquatic resource conservation and management	Degradation of aquatic resources and environment. Marine and coastal pollutions. Status of fishery resources. Aquatic animals listed as endangered species. Fishing and fishing gears. Wetland. Conservation and management of inland and coastal resources. Environmental impact assessment in fisheries. Institutions and organizations in conservation of resources and environment. Laws and regulations pertaining to fisheries and aquatic resources
Sustainable farm business management	Concepts in sustainable farm management; application of principles in economic and management for farm business; analysis and plan of farm business; evaluation of success in farm operations; financial management of farm business;

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	farm business management under risk and uncertainty; social and environmental responsibility of businesses.
Bioscience for agricultural and environmental sustainability	Sufficiency economy philosophy, and local wisdom in sustainable farming models, good agricultural practices, organic farming, green production, smart farming, zero waste agricultural practices, integrated agricultural farming system, agricultural product processing and marketing, relationship and impact of farming on the natural resources and environment, and knowledge transferring techniques.
Integrative research in bioscience for sustainable agriculture	Analysis of the situation and agriculture problems from the farmers, agricultural operation agencies or agricultural entrepreneurs, concepts and impacts of integrative research to agriculture, environment, and health, presenting research guidelines for solving agricultural problems by applying the knowledge of bioscience or with other academic fields appropriately.
Soil fertility and protection for sustainable agriculture	Nutrient recycling in soil, soil fertility analysis, plant-soil-microbe interaction, methods of enhancing soil fertility for crop production, and soil protection method and application for sustainable agriculture.
Food safety standard and international policy	Physical, chemical and biological hazards in food processing and production, standard and good manufacturing practices in food safety, hazard analysis and critical control point, maximum residue limiting value related to food safety, and international food safety policy.
Maritime zones and marine and coastal resource management	Maritime zones and coasts; geology and geomorphology of Thai seas; marine and coastal deposition and sedimentation; Thai coastal landscapes; living and non-living marine and coastal resources; settlement of people in coastal zones; public health system of coastal community; stability, prosperity, sustainability and economic benefits of Thai seas; coastal management of Thai seas.
Fundamental aquatic environment management	Impacts of human activities on population structure of aquatic animals and environment; sediment and water quality management; fishery resource management; issue-based management principle.
Renewable energy technology	Meaning of renewable energy; converting renewable energy to thermal and electrical energy; solar, wind, hydro, and biomass energy; case studies of renewable energy resources; selection and management of renewable energy.
Sustainable Technology	Definition and importance of sustainable technology; effects of technology on economy, society, and environment; examples of sustainable technology; creative and sustainable product design.
Household Environmental Management	Natural lighting for household energy conservation; water conservation garden; indoor water conservation; passive air ventilation; solid waste separation; solid waste composting; household hazardous waste management.
Environment, Pollution And Energy	Ecosystem; water pollution; air pollution; soil pollution; solid waste; energy and its impact on global climate.