

# FACULTY OF SCIENCE AND NATURAL RESOURCES

## FOR FURTHER INQUIRIES, PLEASE CONTACT:-

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## INTRODUCTION

The Faculty of Science and Natural Resources (FSSA) was established with the primary aim to produce innovative and dynamic graduates in the field of science, technology and natural resources, and in line with the university's mission to become an innovative university status of international standing. With its campus location situated in a region rich in natural resources such as mineral, flora and fauna encompassing both terrestrial and marine, the programmes offered are based on science, technology and towards environmental sustainability. The faculty offers fourteen (14) programmes that lead to a Bachelor's Degree with Honours in biological science, chemistry, applied physics, applied mathematics, environmental science, earth science and forestry.

## VISION

The Faculty of Science and Natural Resources aims to become an innovative and dynamic institution in nurturing excellence and imparting the knowledge of science, technology and environmental sustainability.

## MISSION

The Faculty of Science and Natural Resources strives towards international recognition for excellence in instilling the knowledge of science, technology and sustainability in natural resources through teaching and learning, research, publication, multilateral collaboration, professional and community services to produce qualified, competitive and skilled human resource to fulfil the developmental needs of the community and nation.

## OBJECTIVES

- To produce knowledgeable, honest, well-balanced and competent graduates in the field of science, technology and natural resources that are competitive at national and global level.

- To expand the developments relating to science and technology through education and research, in line with the national desire to become a developed nation;
- To produce graduates that are efficient, skilled professionals with expertise based on the chosen programme core and well supported by predetermined elective courses;
- To equip graduates with a strong theory and application of the programme core towards a strong foundation to pursue post graduate studies;
- To provide elective courses in fulfilment of University's goal towards producing a well-balanced graduate.

## PROGRAMMES

The programmes offered by the faculty are designed to combine earth and applied sciences in accordance to the rich natural resources that are ubiquitous in Malaysia, namely the state of Sabah. The programmes offered involve three branches of sciences, Physics, Biology and Forestry which offers a Bachelor's Degree in Sciences with Distinctions, as follows:

## PHYSICAL SCIENCES

### INDUSTRIAL PHYSICS

This programme aims to produce graduates with a strong foundation in physics and can contribute to the development of electronic – based industries. The students are provided with a strong foundation in basic physics disciplines while dynamic courses on the applications of physics, electronics and information technology are given through theoretical, laboratory works and industrial training which encourages students to be up-to-date with the current knowledge needed. The uniqueness of this multidiscipline programme ensures that the graduates have high market value in the industrial sectors, education, engineering industry, research and administrations.

#### Career Prospect

Physicists, electronic R&D, physic R&D, teacher, lecturer, administrative officer, research officer, technologists, programmers, medical physics.

### MATHEMATICS WITH ECONOMICS

This programme provides a background in mathematics and combines the relationship between mathematics and economics including microeconomics, macroeconomics, financial management and econometrics. Students will develop and demonstrate the ability to reason mathematically by constructing mathematical proof, recognizing and analysing accurate numerical data in mathematics core course. Students will be able to apply suitable mathematical analysis to develop a solution not only in economics but in other disciplines as well, such as biology, physics, engineering, environmental and marine science. Graduates with a strong mathematical background understanding in economics concepts are able to benefit from a wide range of career opportunities. They are also qualified to pursue their study on MSc and Ph.D programmes in mathematics with economics.

#### Career Prospect

Data scientist, bank officer, actuary, insurance officer, investment officer, researcher, lecturer, teacher, statistical analyst, financial planner, administrative officer and entrepreneur.

### MATHEMATICS WITH COMPUTER GRAPHICS

The program is designed to produce highly qualified graduates in the development of computer graphics applications based on strong mathematical theories and knowledge such as applications of scientific visualization, virtual reality, simulation and mathematical software. The rationale and purpose of the mathematics with computer graphics programme is to provide graduates who are competitive and creative in various industries and sectors in line with current needs. The program was also designed to produce mathematicians capable of translating mathematical knowledge and skills into visualization and simulation applications that meet the needs of industrial revolution 4.0.

## **Career Prospect**

Computer graphics application developers, virtual reality application programmers, scientific visualization engineers, system analysts, computer game programmers, researchers, mathematical software developers.

## **GEOLOGY**

The geology programme is framed to provide founding knowledge about the earth and the processes involved within and on the earth's surface. Earth's natural resources such as petroleum, gas, minerals and construction material as well as basic geological principles will be explained through classroom learning and a series of fieldwork made around Sabah. Industrial training held at the final semester is hoped to be benefited by students attending this course.

## **Career Prospect**

As geologist / geoscientist in government departments, higher education institution, geology related industries i.e. petroleum industry, mining, construction and tourism.

## **INDUSTRIAL CHEMISTRY**

This programme aims to produce graduates who can contribute to agencies that are based on chemistry or require the knowledge of chemistry, such as chemical industries, public or government institutions. Emphasis is given to the application of chemistry in industries, including material resources, instrumentation, chemical processes, technology and environment. In addition, basic understanding in physical, organic, inorganic and analytical chemistry is also emphasized. This programme also exposes students to industrial environment via industrial training and study tours to the chemical-based industries. Other than that, the programme aims to provide students with relevant skills via hands-on practical courses and research projects. Relevant elective courses will be offered to enrich the knowledge of the students in the fields closely related to the chemical industries.

## **Career Prospect**

Chemist, Safety Officers, ISO Auditor/ Consultant, science officer, Quality assurance officer, Quality control officer, research officer, Medical Lab Technologist, Chemical Engineer, Environmental Consultant, lecturer, teacher, business practitioner, industrial expert, forensic officer.

## BIOLOGICAL SCIENCES

### BIOTECHNOLOGY

This programme aims to produce graduates who can contribute to the development of biotechnology-based industries. Students will be exposed to basic biology and chemistry disciplines and later to apply these disciplines in biotechnology, medical or research biotechnology.

#### Career Prospect

Genetic counsellor, gene therapist, medical geneticist, public health officer, forensic scientist, lecturer, researcher, biomedical engineer, bioinformatics and biology modelling personnel, manufacturing technician, manufacturing and process specialist in pharmacogenomics, vaccines, drugs, foods and agricultural products (e.g. biopesticide), quality control analyst, environment consultant.

### CONSERVATION BIOLOGY

Conservation biology programme produces graduates who are knowledgeable and capable in leading the conservation of our natural resources, and its sustainable management. Students are exposed to various disciplines in biology which form the pillars for conservation efforts, interweaving the theory and practical aspects, to ensure that our graduates are industrially-relevant and future-proof, on their road towards being the steward of the environment.

#### Career Prospect

Researcher, lecturer, park manager, wildlife officer, pharmaceutical industry, non-governmental organization conservationist, tourism industry, public awareness officer, environmental officer.

### ENVIRONMENTAL SCIENCE

The Environmental Science degree programme is a multidisciplinary programme that emphasizes the role of basic scientific understanding and practical skills in the laboratory and field for the understanding and management of environmental problems. The strong scientific foundation in the first year leads to more detailed investigations in the second and third year of core Environmental Science topics such as air and water quality analyses, environmental hydrology, meteorology and climate change, geographic information system, environmental modelling, toxicology and environmental health, solid and toxic waste management, environmental law and environmental and resources management. These broad range of modules enable the student to have a broad environmental portfolio while maintaining a strong basis in the skills and knowledge of a competent Environmental Scientist.

## Career Prospect

Environment consultant, environment officer, research officer, Safety Officer, Lecturer, Research Technician, Teacher, Meteorology Officer, Environmental Auditor, Environmental Scientist, EIA Officer, Environmental Education Officer, ISO Consultant, Environmental related Industries, Environmental Entrepreneurs and others.

## MARINE SCIENCE

The marine science programme impart knowledge on the marine environment through lectures, laboratory classes and field excursions aimed to expose the students to the diversity of marine life, marine ecosystems and its interconnectivity to the environment. This course encompasses the management of marine protected areas, maritime policies, oceanic-atmospheric interactions, impacts of human activities and climate change on the oceans, to produce graduates who are able to understand and manage conservation and sustainable utilization of marine resources.

## Career Prospect

Administrative/enforcement officer (e.g. officer in the Marine Department, Maritime Enforcement Agency, Fisheries, Marine Parks Department), marine conservation officer, marine park manager, environmental consultant, scientist/ researcher, eco-tourism – SCUBA dive guide, aquarist, resident biologist in island

## AQUACULTURE

This programme aims to produce trained graduates in the aquaculture field who can assist in the development of the aquaculture industry and who have the capability of becoming successful aquaculture entrepreneurs and scientists. Students will be exposed to hatchery, pond and cage management and required to run and manage their own farm through shared farming concept. Students will be also exposed to the basics biology, chemistry and biotechnology disciplines in order to produce knowledgeable graduate for aquaculture industry. Industrial training at local and overseas aquaculture farms and higher learning institute related to aquaculture will expose them to critical stages in the farming process, and scientific approach.

## Career Prospect

Aquaculture entrepreneur, fish and crustacean farm manager, fisheries officer, research officer, science officer, lecturer, quality control (seafood), Scientist & consultant.

## FORESTRY

### INTERNATIONAL TROPICAL FORESTRY

The goal of the program is to produce graduates which are competent and strong in sustainable forest management based on strong knowledge of forestry science and forestry field technology, well trained in the interpretation of forest technology, forest policy and sensitive to current issues, have high human values, professional and responsibilities in their careers in the future.

#### Career Prospect

Forest officer / conservator, FMU managers, Monitoring officer, Forest auditor, Consultant on environmental impact assessment (EIA), watershed management hydrology, Forest Plantation manager, Researcher, Academician, Extension officer, Surveyors, Environmental & Community consultant/ entrepreneur / NGO.

### NATURE PARKS AND RECREATION

The goal of the program is to educate in conserving and managing nature parks such as national parks, forest recreational parks and protected areas with the understanding about the functions and values of forest ecosystem, while able to deal with the science and art of park planning and management of nature parks, recreational activities and sustainable tourism.

#### Career Prospect

Park managers/researcher/forest conservation officer, landscape consultant/entrepreneur, recreation officer, environmental impact consultant, wildlife officer

### WOOD TECHNOLOGY AND INDUSTRY

The goal of the program is to provide a strong foundation of knowledge and professional skilled manpower in the field of wood-based industries. With this, the program aims to produce graduates with theoretical and technical knowledge in the field of wood-based technology and industries, competent and have the soft-skills and good characteristics to meet the needs of the labour market and skilled workforce in wood-based industries.

#### Career Prospect

Factory manager/ operations/ production/ marketing/ quality control of forest products, wood certification auditors, wood engineers, forest officer, wood industry entrepreneur, wood science and product consultant, researchers and furniture designers.

## FOREST PLANTATION AND AGROFORESTRY

The goal of the program is to produce graduates with strong in theoretical knowledge and with completed practical training in forest plantations and agroforestry discipline, crop and tree productions, operation of scientific equipment and farm equipment, graduates that capable and knowledgeable in the management and implementation of research projects or plantation projects. The objective is also to produce graduates with soft skills (communication, professionalism, ethics and entrepreneurship), have the interest and awareness of current issues, standards and practices in the areas of interest.

### Career Prospect

Plantation / Farm / Nursery / Operation Manager, Research Officer and Plantation / Farm Entrepreneur/ Forest Officer

### ACADEMIC STAFF :

<http://www.ums.edu.my/fssa/>

<http://www.ums.edu.my/ipmbv2/>

<http://www.ums.edu.my/ibtpv2/>

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