

FISHERIES TRAINING AND EDUCATION IN
UNIVERSITI SAINS MALAYSIA*

by

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1.0 INTRODUCTION

Universiti Sains Malaysia (USM) was established in 1969 on the island of Penang with the first batch of students taking courses in the Schools of Biology, Chemistry and Physics and Mathematics. Over the last 20 years it had undergone rapid development and expansion. Currently the University operates 15 broad based Schools of studies spread over 3 campuses in North Malaysia as well as the country's only Off-Campus Degree Programme. Teaching and research in USM are further supported by a number of strategically located field stations.

In Universiti Sains Malaysia research and training in Fisheries education is mainly carried out by the School of Biological Sciences which since its inception has identified Aquatic Biology as a major area of its research and teaching thrust. Over the years a number of groups have built up solid track records as well as achieved international recognition, particularly in mangrove studies, marine ecosystem baseline studies and mariculture. In order to achieve even more coherent mobilization of existing facilities and resources in the field of marine science (including fisheries) among scientists that are currently spread over a number of teaching schools, the University established the Centre for Marine and Coastal Studies (CEMACS) in August 1991. Most of the research activities as well as post graduate training in fisheries and marine science are expected to be channelled through this Centre.

2.0 UNDERGRADUATE TRAINING

At the undergraduate level students who wish to pursue training in fisheries will have to register for the B.Sc Applied Science degree program offered by the School of Biological Sciences. Details pertaining to entrance requirements, fees, course structure, examination system, language and graduation requirements are presented as Appendix I.

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Universiti Sains Malaysia's undergraduate degree program is based on the unit-semester system similar to that used by American Universities. For the B.Sc. Applied Science program students are required to accumulate 126 credits for graduation as follows:-

Science I (Major)	80 units
Other Science subjects	16 units
Service Mathematics/Option/ Elective	14 units
Bahasa Malaysia & Tatanegara	2 units
English language/option	8 units
Co-curriculum/Elective	6 units

	126 units
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Aquatic Biology students follow a number of core biology courses (32 units) over the first two years of studies. During the third and fourth year they take an additional 48 units of core and elective courses in Aquatic Biology including a 6 unit research project during the final year. Table 1 summarises the courses currently offered. It can be seen that a large component is relevant to the broad field of fisheries.

Table 1: List of core and elective courses taken by USM's Aquatic Biology majors during the 3rd and 4th year of studies

<u>Core</u>	<u>Electives</u>
BAT 311/3 Limnology and Physico-Chemical Oceanography	BKT 372/4 Parasites of Aquatic Animals
BAT 312/3 Marine and Freshwater Biology	BST 324/3 Environmental Pollutions
BAT 314/3 Plankton and Productivity	BST 322/3 Tropical Ecosystems
BAT 411/3 Aquaculture	BST 323/3 Population and Community Ecology
BAT 412/3 Mangrove Dynamics and Management	BST 423/3 Environmental Management
BAT 413/3 Fisheries Management	BST 421/3 Ecology of Natural Resources
BAT 414/3 Aquatic Pollution	BST 422/3 Ecology of Conservation
BAT 400/6 Research Project	

University education in Malaysia is heavily subsidized by the government. Fees are low in comparison with most western countries. Currently both Malaysian and foreign students pay the same fee. The cost of living in Penang is relatively inexpensive especially if the student is able to secure hosted accommodation in the campus. Some 70% of the in-campus students are housed in hostels with priority being given to 1st year and final year students.

A constraint in following the undergraduate training programme at USM (as far as non-Malaysians are concerned) is the fact that all undergraduate teaching are conducted in Bahasa Malaysia, though most lecturers also communicate very well in English.

3.0 POST-GRADUATE

Fisheries training at the post graduate level (M.Sc. and Ph.D.) is currently available through research under the supervision of faculty members from the School of Biological Sciences as well as the Centre for Marine and Coastal Studies.

CEMACS's will also be offering a 1 year M.Sc. by coursework/research course starting in the 1993/94 academic session with the Marine Pollution option. The Tropical Mariculture option is scheduled to be offered in the 1995/96 academic session.

Details pertaining to entry requirements, fees, accommodation, research as well as other facilities are shown in Appendix II. Candidates sponsored by their respective governments may be given special exemptions on entry requirements under a Government to Government scheme. As in the case of undergraduates, post-graduate is also relatively inexpensive.

The School of Biological Sciences is equipped with modern laboratories as well as a freshwater hatchery/growout complex located in the main campus. Specialised laboratories for water quality, nutritional studies and fish disease diagnosis have been set up. Also available are electron microscopes (TEM and SEM), research photomicrographic systems, atomic absorption spectrophotometers (flame and flameless) as well as other analytical equipments such as GC-MS, electrophoresis etc.

CEMAC's maintains specialised environmental studies and mangrove studies laboratories in the main USM campus as well as wet laboratories, hatcheries, phytoplankton and microbiology laboratories as well as research vessels at the Muka Head Research Station. This station is located on a beach in a forest reserve about 28 km from the main campus. Approximately *MR\$2.7 M has been allocated for the upgrading of facilities in this research station for the period 1991-93.

The School of Biological Sciences has 51 staff members of which 44 are Ph.D.'s trained. Currently some 25% are engaged in research in various fisheries related fields. The Centre of Marine and Coastal Studies currently has 3 full time academic and 5 scientific officers. In addition 7 research associates who are full time staff of other schools have also been identified. Mariculture is a priority research area for CEMACS during the 1991-95 period. The others are Mangrove Studies and Pollution Studies. Selection of these three areas has been entirely influenced by USM's established strength in the areas concerned.

(Note: US\$1.00 = MR\$2.60)

Table 2 summarises the individual research interest(s) of USM's 'fisheries' group. This gives an indication of the type of research training that is available to graduate students. Aquaculture is an area of obvious strength while capture fisheries is poorly represented. This emphasis reflects both the result of their collective research interests as well as a conscious effort to avoid duplication with the Fisheries Research Institute (FRI) and the Faculty of Fisheries and Marine Science of the Agriculture University of Malaysia.

Table 2: Current staff research interests in fisheries and related sciences in Universiti Sains Malaysia

Name	Designation	Research interests related to fisheries
Dr. Ahyauddin Ali (1)	Assoc. Prof.	Primary production and water quality considerations in the intensive culture of freshwater fishes; reservoir and rice field fisheries management.
Dr. Dick Ho (1,2)	Assoc. Prof.	Automation in large scale phytoplankton culture
Dr. Eddy Tan (1)	Assoc. Prof.	Reproductive biology, seed production and selective breeding of freshwater fishes.
Dr. Khoo Khay Huat (1,2)	Assoc. Prof.	Reproductive biology and hatchery seed production of cultured marine fishes. Modelling and fisheries management.
Dr. Lai Hoi Chaw (1)	Assoc. Prof.	Control of biofouling in floating cages used in fish culture.
Dr. Leong Tak Seng (1,2)	Assoc. Prof.	Parasitic diseases of cultured fishes and their management.
Dr. Mashhor Mansor (1)	Assoc. Prof.	Breeding of aquarium fishes and plants.
Dr. Ong Jin Eong (2,1)	Assoc. Prof.	Estuary dynamics and productivity of mangroves.
Dr. Wong See Yong (1)	Assoc. Prof.	Bacterial diseases of cultured fishes and their management.
Dr. Wong Tat Meng (2,1)	Assoc. Prof.	Reproductive biology, hatchery seed production and culture of oysters, clams and other bivalves. Ecophysiology of estuarine animals.
Dr. Zubir Din (2,1)	Assoc. Prof.	Sublethal effects of environmental pollutants on cultured species.
Dr. Gong Wooi Khoon (1,2)	Lecturer	Productivity of Mangrove Ecosystem
Dr. Misni Surif (3,2)	Lecturer	Algal biology and culture
Dr. Rochada Hashim (1)	Lecturer	Fish nutrition and feed formulation.
Dr. Zulfigar Yassin (1,2)	Lecturer	Ecology and reproductive biology of sea cucumbers. Coral reef biology.

Note:

(1): School of Biological Sciences; (2): Centre for Marine and Coastal Studies; (3): Centre for Off-Campus Studies

Table 3: Titles Of Masters And Doctoral Thesis In Fisheries And Related Areas

Author	Year	Degree	Thesis Title
<u>Chan Eng Heng</u>	1976	M.Sc.	Some aspects of the biology and fishery of the grey mullet, <u>Liza subviridis</u> (Valenciennes, 1836)
<u>Fong Yok King</u>	1977	M.Sc.	Laboratory studies on the toxicities and interactions of PCB's (Polychlorinated Biphenyls) and p,p' - D.D.T. (1,1,1 Trichlore 2,2 - B,S (p-chlorophenyl) Ethane) on mullets
<u>Teng Seng Keh</u>	1978	Ph.D.	Studies on the estuary grouper <u>Epinephelus tauvina</u> Maxwell (Pisces: Serranidae) in floating net cages.
<u>Ong Tun Liang</u>	1981	M.Sc.	Ecology of cockle culture bed and its relationship to the growth of <u>Anadara granosa</u> (L)
<u>Md. Fazlul Awal Mollah</u>	1983	Ph.D.	Induced spawning and larval culture of the Catfish, <u>Clarias macrocephalus</u> (Gunther)
<u>Bessie Ong</u>	1984	M.Sc.	Vibriosis in cultured groupers <u>Epinephelus salmoides</u> . etiology and control by vaccination
<u>Lee Yoke Mun</u>	1984	M.Sc.	Energetics of leaf litter production and its pathway through the sesamid crabs in a mangrove ecosystem
<u>Zarina Zaman</u>	1985	Ph.D.	Parasitic fauna of paddy field catfish (Genus <u>clarias</u>) from Kedah and Perak, Peninsula Malaysia
<u>Liang Kok Seng</u>	1988	M.Sc.	Taxonomy, ecology and control of Monogenea in marine fishes cultured in floating cages in Penang
<u>Pipit Taufik</u>	1989	M.Sc.	Bacterial diseases of the catfish and their possible control through the use of chemotherapeutic agents.
<u>Japar Sidik Bujang</u>	1989	Ph.D.	Studies on leaf litter decomposition of the mangrove, <u>Rhizophona apiculata</u> (B.L.)
<u>Gias Uddin Ahmed</u>	1990	Ph.D.	The responses of the skin of the Catfish <u>Clarias macrocephalus</u> in relation to intensive fish farming.
<u>Permsak Pengmark</u>	1992	Ph.D.	Disease outbreak and its control in newly introduced seabass fingerlings, <u>Lates calcarifer</u> (Bloch) cultured in floating cages

Research funding from local and international agencies exceeded MR\$3.0 M for the 1988-1990 period while for the 1991-1995 funding is expected to go beyond the MR\$5.0 M mark.

A list of the titles of M.Sc and Ph.D. thesis in fisheries and related sciences is presented in Table 2 while Table 3 lists the projects undertaken by graduate students whose research are in progress.

Since the early 1980's, USM has trained an increasing number of foreign students from Asian countries such as Bangladesh, Indonesia, Myanmar and Thailand in various aspects of fisheries sciences. On the University level the post-graduate student community has developed a truly international flavour with students from Middle East and Africa as well as from Britain and USA besides those from Asia. However, students from the Pacific Island Nations are so far not represented. We will be happy to see students from PIN registering in our post graduate programs.

Table 4: Titles of projects currently undertaken by M.Sc. And Ph.D. candidates in fisheries and related areas

Candidate	Degree	Project Title
Balasuriya L.K.S.W.	Ph.D.	Studies on the ecology of gill monogeneans in floating cage cultured seabass, <u>Lates calcarifer</u> (Bloch)
Aileen Tan Shau Hwai	M.Sc	Studies on the breeding biology and larval development of the oyster <u>Crassostrea belcheri</u> (Sowerby)
Khairun Yahya	M.Sc.	Reproductive biology of the longtail shad (Terubok) <u>Hilsa</u> spp
Gunarto	M.Sc	Effect of environmental parameters on the growth and gonadal development in the oyster <u>Crassostrea belcheri</u> (Sowerby)
Mohd. Akhir Arshad	M.Sc.	The potential of some selected chemical prophylactic and bath immunisation treatments against Vibriosis in the grouper <u>Epinephelus salmoides</u>
Selvanathan	M.Sc.	Population dynamics of Leinaethids in Brunei
Si Si Hla Bu	M.Sc.	Fish health management: disease, parasites and their impact on aquaculture
Tengku FadiTah bt. Tengku Kamalden	M.Sc.	Respiration and bioenergetics of sea bass (Siakap) <u>Lates calcarifer</u>

4.0 NON-DEGREE TRAINING

USM's aquaculture group have conducted short-term extension courses to young scientists, fisheries officers and fish farmers from time to time. Examples of such courses include

- (a) Training course in catfish breeding and culture;
- (b) Training course in freshwater culture systems using formulated diets;
- (c) Training course in hatchery production of bivalve seeds;
- (d) Training course in fish health management;
- (e) Training course in use of statistics in fisheries.

Such courses are conducted on an ad-hoc basis, usually in response to specific request of end users and/or funding agencies. It is expected that the number of such courses will increase substantially in the near future.

5.0 FACULTY EXCHANGE AND VISITS

USM encourages faculty exchange and visits for training and collaborative research from most countries. Faculty on sabbatical leave have been provided with financial support to undertake collaborative research in appropriate institutions overseas. In turn it welcomes visiting scientists intending to carry out research in areas of mutual interests. Hands on training can also be provided to young scientists and researchers. To this end, the accommodation facilities at CEMACS's Muka Head Research Station is being upgraded to include 12 units of two bedroom self-contained flats to cater for the needs of visiting scientists and trainees. The targetted completion date is June 1993.

6.0 ACKNOWLEDGEMENT

I would like to thank the Vice-Chancellor for granting me leave to participate in this meeting, the organisers for the kind invitation and Puan Shahanum bt. Wan for typing this paper.

Appendix I : The academic system degree structure in the Science Schools of USM with emphasis on the School of Biological Sciences B. Applied Science degree with specialisation in Aquatic Biology

UNIVERSITI SAINS MALAYSIA
MINDEN, PENANG
MALAYSIA

The Pure Science Schools of Universiti Sains Malaysia offer three different undergraduate Degree Programs, namely Bachelor of Science (Honours), Bachelor of Applied Science (Honours), and Bachelor of Arts (Education) Honours (Arts-Science).

1. DEGREE PROGRAM STRUCTURE : BACHELOR OF SCIENCE (HONOURS)

The Bachelor of Science (Honours) Degree is offered by the Pure Science Schools of Universiti Sains Malaysia. For graduation, a student must accumulate at least 120 units within 8-14 Semesters.

Students from the Schools of Biology, Physics, Chemistry, Mathematics and Computer Science can take one of the following Programs : Single Subject, Major-Minor (Science) or Major-Minor (General Studies). All three programs require a total of 120 units for graduation.

Single Subject Program - B. Sc. (Hons.)

Science I	80 units
Science II/III/IV/V	10 units
#	
Service Mathematics /Option/Elective	14 units
*	
(including Islamic Civilisation)	
Bahasa Malaysia & Tatanegara	2 units
English I-IV/Option	8 units
Co-Curriculum/Elective	6 units

Total (Minimum)	120 units
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Major-Minor (Science) Program - B. Sc. (Hons.)

Science I (Major)	60 units
Science II (Minor)	20 units
Science I/II/III/IV/V	10 units
#	
Service Mathematics /Option/Elective	14
*	
(including Islamic Civilisation)	
Bahasa Malaysia & Tatanegara	2 units
English I-IV/Option	8 units
Co-curriculum/Elective	6 units

Total (Minimum)	120 units
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General Studies Program - B. Sc. (Hons.)

Science I (Major)	60 units
Minor (Choose any one Subject offered in the General Studies Program)	20-24 units
Science II/III/IV/V	10 units
#	
Service Mathematics /Elective/Option	14 units
*	
(including Islamic Civilisation)	
Bahasa Malaysia & Tatanegara	2 units
English I-IV/Option	8 units
Co-curriculum/Elective	6 units

Total (Minimum)	120 units
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* Compulsory course for Muslim students but an optional course for non-Muslim students.

Students that are required to take the Service Mathematics course package are subject to each School's requirements.

2. DEGREE PROGRAM STRUCTURE : BACHELOR OF APPLIED SCIENCE (HONS.)

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The Bachelor of Applied Science Degree Program offered by the Pure Science Schools is in line with the proposal from the Ministry of Education to extend the intake of students for Pure and Applied Sciences, and the directive that aspects of Applied Science be imbued into study programs offered by the Pure Science Schools.

Based on the wishes of the Government to develop heavy industries and promote technology transfer, it is projected that intensified training in industrial technology would be required. Foreseeing this requirement, it was proposed that an Applied Science Studies Program be offered by the Pure Science Schools to produce graduates with better capabilities to undertake research and development in industries. These efforts are to fulfill the manpower needs at Degree level for the fields of industrial technology. For graduation, a student has to accumulate at least 126 units within 8 to 14 semesters.

Single Subject Program - B. Appl. Sc. (Hons.)

Science I	80 units
Science II/III/IV/V	16 units
#	
Service Mathematics /Option/Elective	14 units
*	
(including Islamic Civilisation)	
Bahasa Malaysia & Tatanegara	2 units
English I-IV/Option	8 units
Co-curriculum/Elective	6 units

Total (Minimum)	126 units
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General Studies Program - B. Appl. Sc. (Hons.)

Science I	70 units
Science I/II/III/IV/V	6 units
#	
Service Mathematics /Option/Elective	14 units
*	
(including Islamic Civilisation)	
Minor	20-24 units
Bahasa Malaysia & Tatanegara	2 units
English I-IV/Option	8 units
Co-curriculum/Elective	6 units

Total (Minimum)	126 units
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* Compulsory course for Muslim students but an optional course for non-Muslim students.

Students that are required to take the Service Mathematics course package are subject to each School's requirements.

3. DEGREE PROGRAM STRUCTURE : BACHELOR OF ARTS (EDU.) HONOURS

Students that take up this Education program can choose the Ordinary Program or the General Studies Program. In line with current developments together with the multi-disciplinary studies philosophy, USM as of the 1987/88 Academic Session has introduced a double major Arts-Science (Education) Program that leads to the award of the Bachelor of Arts (Education) Honours [Arts-Science].

This program attempts to consolidate study areas of both the Arts and Science streams and is offered through the co-operation of the School of Humanities, School of Social Sciences, School of Physics, School of Biological Sciences, School of Mathematics and Computer Science and the School of Educational Studies.

This new integrated approach-cum-liberal studies program is relevant to developments at the school level with the implementation of the New Primary School Curriculum and the Integrated Secondary School Curriculum, where the practice of early specialisation after the Lower Certificate of Education is to be replaced with integrated teaching that include both Arts and Science subjects. This program will thus prepare future teachers for the teaching of this new group of students.

For this new program, the School of Humanities offers five major disciplines, namely English, Bahasa Malaysia, Geography, Literature and History. The School of Social Science will initially only offer Commerce. Whereas, the Pure Science Schools will offer studies in Biology, Physics, Chemistry and Mathematics. The School of Educational Studies will offer the professional education component. Courses in education will expose students to various aspects of teacher training so as to prepare students to be educators. The education fields studied will include professional aspects, basic education, teaching methods and practice to be followed by teaching practice in schools.

Program Structure - B. A. (Ed.) Hons. (Arts-Science)

Basic Arts	8 units
Service Mathematics/Mathematics Elective	8-10 units
Science/Mathematics Major	40 units
Arts Major	40 units
Education	44 units
Bahasa Malaysia & Tatanegara	2 units
Scientific English/Option	2-8 units
Islamic Civilisation/Option/Co-curriculum	4-8 units

Total	150-156 units
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ACADEMIC SYSTEM & COURSE OFFERINGS

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Students in Universiti Sains Malaysia register and follow undergraduate courses in two semesters, namely Semester I and Semester II. Courses that are taught in each semester are examined during the same semester.

Courses that are offered are divided into four levels, namely Level 100, 200, 300 and 400. Courses assigned to each level are deemed appropriate for the corresponding year of study.

Undergraduate courses offered follow the requirements of the degree program structure of each Pure Science School and are classified as core courses, elective courses, option courses or audit courses.

Supplementary Semester

The Supplementary Semester that was introduced as of the 1985/86 Academic Session is a timeframe within the normal vacation period used for the conduct of formal lectures/tutorials/practicals (as being conducted in the regular semester), but in a more intensive fashion. This Supplementary Semester is also used to offer other courses like option/elective courses, service courses, non-degree courses, short-term courses and also to conduct co-curricular activities and the Overseas Study Scheme. The Supplementary Semester structure comprises 6 weeks for teaching plus 1 week for examinations.

The Supplementary Semester is to assist students who :-

- (a) require some additional units necessary for graduation;
- (b) require additional time over and above the maximum set for graduation;
- (c) are required to fulfill prerequisite courses that are not offered in the First Semester of the following Academic Session;
- (d) are categorized in status as Probationary II and III.

The time students utilize for the Supplementary Semester is not taken into consideration for the minimum residential requirement (8 semesters) for graduation. The academic performance of students during the Supplementary Semester will also not be compiled and aggregated with their performances during the Second Semester in order to determine their academic status, but is considered for purposes of graduation and award of class of degree.

Courses : School Requirements

Each Pure Science School will offer Core and Elective Courses. Core Courses are divided into three categories : Core Compulsory, Core Required and Core Elective. Elective Courses are courses offered by other Pure Science Schools. For some Pure Science Schools, certain courses not offered by the Pure Science Schools may also be recognized as Elective Courses.

Option Courses

Option Courses are courses that must be taken that are offered by Schools other than the Pure or Applied Science Schools. Students that fail these courses may repeat them or they may replace them with other option courses.

Audit Courses

Students are allowed to register and follow audit courses with the choice of either sitting or not sitting for the examinations. The objective is to allow a student to enrich his knowledge. Grades obtained from these courses are recorded in academic transcripts as audit courses but the marks obtained are not taken into consideration for purposes of graduation. On the other hand, units obtained from audit courses cannot be later used in place of any compulsory/core/elective/option courses. Students that wish to be examined for an audit course must also fulfill the examination requirements set by the University. For students that do not wish to be examined, their academic transcripts will not record that courses have been audited.

Defination of a Unit

A theory course unit is equivalent to 14 hours per semester where 12 units are for lectures/tutorials/tests and the other 2 hours are for activities like additional reading, assignments, consultations with lecturers and others. One practical unit is equivalent to 21 hours per semester.

Course Pre-requisites

Pass (P) : If a course A is a required Pass (P) course to course B, then a Pass grade for course A must be obtained before a student can take course B.

Sequential (S) : If course A is a Sequential (S) course for course B, then course A must be taken and be examined before registering for course B.

Concurrent (C) : If course A is deemed to be Concurrent (C) with course B, then course A should be taken and examined at least concurrently with

course B.
Practicals

Practical courses are designed to implant practical expertise and knowledge in students about relevant equipment, and proficiency in preparing scientific reports. It is also for complementation of a theory course. Attendance in practical courses is compulsory.

Each practical unit involves 1 1/2 hours of practical work per week for each semester. Each student is required to prepare reports based on experiments conducted. Practical course assessment is based on the average of marks obtained for experimental reports and on required tests. There may be courses that require a "viva voce" based on experiments conducted.

Each student is required to conduct the requisite experiments during the semester. Number of experiments and time requirements vary from level to level.

Bahasa Malaysia Policy

In line with the Government of Malaysia policy to use Bahasa Malaysia as the official language and the prime medium of instruction in all institutions of higher learning, Universiti Sains Malaysia has implemented this language policy at all levels of teaching.

With the exception of Medical Sciences, all undergraduate programs (including Remedial Science) shall be taught and examined in full (100%) in Bahasa Malaysia as from the 1986/87 academic session. Post-graduate courses (by coursework) shall be conducted 100% in Bahasa Malaysia.

The General Studies Program

Ever since the University was incorporated, inter-disciplinary study is encouraged. By way of inter-disciplinary study, Science students may take optional courses in the Arts, while Arts students may take optional courses in the Sciences.

The General Studies Program aims to strengthen this concept of inter-disciplinary study and it is hoped that students can derive a wider knowledge and further improve their capabilities for gainful employment upon graduation.

Under the General Studies Program, students are given the choice to either follow a particular MINOR study program from the appended list, or to register for any of the offered courses as an OPTION.

Minor Study Programs Offered

- English
Communication
Translation Course (English to Bahasa Malaysia)
Mathematics
Islamic Studies
Developmental Studies
Management
Computer Science

Economics

With this, students can specialise in a MAJOR in his School and one Minor under the General Studies Program offered by another School. Under normal circumstances, a student requires at least 6 semesters to complete a minor under the General Studies Program.

Examination System

Courses that are taught in a particular semester shall be examined during the same semester. However, there are occasions where courses are taught throughout two semesters. The system of examination is as follows :-

Duration of Examinations

The duration of examinations at the end of the semester for each course is :

Course Load	Duration of Examination
2 units	2 hours
3 units and above	3 hours

System of Assessment

Performance of students are defined as follows :-

Average Marks	Grade	Description
70 or more	A	Pass - Distinction
60 - 69	B	Pass - Credit
50 - 59	C	Pass - Satisfactory
40 - 49	D	Pass
39 and below	F	Fail
0	X	Barred

Repetition of Courses

Students are allowed to repeat failed courses until they pass the course. This condition is subject to the maximum time allowed for candidature. For courses that are repeated and passed, marks credited is the average of marks obtained for all attempts. Should the average obtained be less than 40%, then the pass marks (40%) shall be credited for that course.

Service Mathematics

Students in Biology who do not pursue Mathematics as a Minor, and who do not choose Mathematics as Science II/III/IV/V must take the following Service Mathematics courses :

- MAK 110/4 Calculus & Linear Algebra
- MAK 115/2 Statistical Methods I

B00 284/4 Biostatistics
 Determination of Active/Probationary Status

ACTIVE STATUS : Students who attain an average of 40% or more based on all the courses registered for in a particular semester is allocated an ACTIVE Status for the following semester and may continue his studies.

PROBATIONARY STATUS : Students who attain an average of less than 40% for all the courses registered for in a semester shall be allocated a PROBATIONARY Status for the following semester. Students who receive 3 continuous probationary status are to discontinue their studies. Additionally, the University Board of Examiners has the final authority to terminate the studies of a student if his performance/progress is deemed unsatisfactory on the basis of the minimum credits accumulated in line with the total number of semesters completed :

Semester Completed -----	Minimum Accumulated Credits -----
Completion of Semester 3	26
Completion of Semester 5	46
Completion of Semester 7	66
Completion of Semester 9	86
Completion of Semester 11	106
Completion of Semester 13	Units for Graduation

System of Degree Classification
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Performance in all registered courses by a student in each level shall be considered in determining the degree class. Courses in Levels 100, 200, 300 and 400 are given 10%, 30, 30%, 30% weightage respectively.

Weightage of Overall Average and Requisite Conditions -----	Class of Degree -----
70 and above	First Class
60 - 69	Second Class Upper
50 - 59	Second Class Lower
40 - 49	Third Class

Students who have completed the maximum time allowed in University with at least a 40% overall average but accumulated only 95-119 units

39 and below	Fail
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THE SCHOOL OF BIOLOGICAL SCIENCES
UNIVERSITI SAINS MALAYSIA
MINDEN, PENANG

HISTORICAL BACKGROUND

Upon establishment of the University in 1969, the School of Biological Sciences offered a 3-year Bachelor of Science (Honours) Program. In that program, students can choose either a Single Subject Program with a Major in Biology or a Double Subject Program with Majors in Biology plus another Science Subject. Students were required to register for 120 units and pass at least 108 units.

As of the 1978/79 Academic Session, the above 3-year Program was replaced with a 4-year Program. With the increase, workload of students per year was correspondingly decreased. This enabled a student to specialise in a particular Thrust Area and to pursue a Research Project thereby furthering his basic expertise in his University education. Total units required for graduation was raised from 108 to 120.

As of the 1980/81 Academic Session, the University initiated a General Studies Program (GSP) with the objective of strengthening the concept of a multi-disciplinary studies program. This new program allowed an additional choice to students who may then pursue a Minor Subject in the Arts besides reading Biology as a Major Subject.

The University Senate abolished the Double Subject Program as of the 1983/84 Academic Session and substituted a Minor in a Second Science. Graduation requirement is maintained at 120 units, but students are required to read at least 60 units for his Major Subject. The University also allows students to pursue a Single Subject Program where he is required to acquire at least 80 units for his chosen Major.

As of the 1986/87 Academic Session, the School of Biological Sciences has offered 8 Thrust Areas for the Bachelor of Science (Honours), and 2 Thrust Areas for the Bachelor of Science (Education) Honours Programs. Students who choose to read Biology are required to take 32 units of Basic Biology courses while in their first and second years of study. In their third year, they then follow an elective course package in preparation for their chosen specialisation in their fourth year in either Basic Biology, Aquatic Biology, Environmental Biology, Biotechnology, Entomology, Parasitology and Plant Pathology. The Basic Biology Thrust Area offered to students in the Bachelor of Science (Education) Honours Program is divided into the Genetics/Biosystematics and Physiology/Biochemistry subprograms.

INTRODUCTION

The undergraduate Biology Program was reorganised in 1987 to be in concordance with the National Agricultural Policy, the Industrial Master Plan and other national development policies.

The Biological Sciences Study Program currently encompasses and offers in part 3 different undergraduate Degrees with Thrust Areas as follows :-

1. Bachelor of Science (Honours) - Biology Major, with Thrust Areas in :

Botany
Zoology
Microbiology

2. Bachelor of Applied Science (Honours) - Applied Biology,
with Thrust Areas in :

Aquatic Biology
Environmental Biology
Biotechnology
Applied Entomology
Applied Parasitology
Plant Pathology

3. Bachelor of Arts (Education) Arts-Science - Basic Biology
plus an Arts Program with Education

1. THE BIOLOGICAL SCIENCE STUDY PROGRAM - [B. SC. (HONS.)]

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The Biological Science Studies Program that is offered to Bachelor of Science (Honours) students involves several aspects of Pure Biology. The Thrust Areas offered include Botany, Zoology and Microbiology.

The Biological Science Studies Program is arranged as follows :

A. BASIC BIOLOGY Courses	30 units
(Core Compulsory)	
B. THRUST AREA Courses	30 units
(Core Required)	
C. ELECTIVE Courses	20 units
(for Single Major only)	

Students that follow the Major-Minor or Major-GSP (General Studies Program) System are required to take 60 units of Biology Courses, inclusive of 6 units for a Research Project at Level 400. Those that follow the Single Major System are required to take 80 units of Biology Courses, inclusive of 20 units of elective courses in Level 300 and 400 that are related to their B. Sc. course package and 6 units for a Research Project in Level 400. All students who major in Biology are also required to follow two Field Courses that are conducted in Level 100 and 200.

BASIC BIOLOGY courses aim to expose students majoring in Biology to a comprehensive background and prepare the basis for a specialisation in the Biological Sciences. Basic Biology courses which total 30 units are offered in Level 100 and 200, and are CORE COMPULSORY courses which all students who major in Biology must follow and pass.

2. THE BIOLOGICAL SCIENCE STUDY PROGRAM - [B. APPL. SC. (HONS.)]

The Biological Science Studies Program that is offered to Bachelor of Applied Science (Honours) students involves several aspects of Pure Biology. The Thrust Areas offered are Aquatic Biology, Environmental Biology, Biotechnology, Applied Entomology, Applied Parasitology and Plant Pathology.

The Biological Science Studies Program is arranged as follows :

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|--|----------|
| A. BASIC BIOLOGY Courses
(Core Compulsory) | 30 units |
| B. THRUST AREA Courses
(Core Required) | 30 units |
| C. ELECTIVE Courses
(for Single Major only) | 20 units |

Students that pursue the Major-Minor or Major-GSP (General Studies Program) systems are required to take 60 units of Biology courses, inclusive of 6 units for a Research Project at Level 400. Those that pursue the Single Major system are required to take 80 units of Biology courses, inclusive of 20 units of elective courses in Level 300 and 400 that are related to their B. Sc. course package and 6 units for a Research Project in Level 400. All students who major in Biology are also required to follow two Field Courses that are conducted in Level 100 and 200.

BASIC BIOLOGY courses aim to expose students majoring in Biology to a comprehensive Biology background and prepare the basis for a specialisation in Biological Science. Basic Biology courses which total 30 units are offered in Level 100 and 200, and are CORE COMPULSORY courses which all students who major in Biology must follow and pass.

THRUST AREA courses begin in the third year for any one of the Applied Biology thrusts comprising study programs in Aquatic Biology, Environmental Biology, Biotechnology, Applied Entomology, Applied Parasitology and Plant Pathology.

Students in the Major-Minor or Major-GSP study systems are required to follow a Thrust Area course package that totals 30 units each and another 10 units from an Elective package. For students who pursue the Single Major study system, besides the Thrust Area course package an additional 20 units of Elective courses have to be taken from a prescribed list of courses identified by each Thrust Area.

Courses offered are as follows :

LEVEL 100 - BASIC BIOLOGY

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|-----------|----------------------------|
| BOA 100/0 | Field Course I |
| BOI 101/2 | Cell Biology |
| BOI 102/2 | Introductory Genetics |
| BOI 120/2 | Biology of Non-Seed Plants |
| BOI 121/2 | Biology of Seed Plants |
| BOI 142/3 | Biology of Microorganisms |
| BOI 180/3 | Invertebrate Biology |
| BOI 181/2 | Vertebrate Biology |

LEVEL 200 - BASIC BIOLOGY

BOI 200/0 Field Course II
BOI 201/3 Principles of Biochemistry
BOI 202/3 General Genetics
BOI 220/3 Plant Physiology
BOI 260/3 Basic Ecology
BOI 280/3 Animal Physiology

The AQUATIC BIOLOGY THRUST AREA

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The Aquatic Biology Thrust Area aims at educating and exposing students to basic principles of aquatic science and utilizing this basic knowledge to applied fields. Students are exposed to the structure and function of aquatic flora and fauna, basic ecological aspects and productivity of several aquatic ecosystems. Students are also exposed to management aspects, exploitation and conservation of important aquatic resources from the ecological viewpoint in general, and their economic importance in particular. Use of aquatic resources in culture systems, agriculture and fisheries will also be detailed. Students who choose this thrust area may acquire a comprehensive background and should be able to correctly and successfully manage and exploit aquatic resources for agricultural production and also carry out elements of aquatic research.

LEVEL 300 - AQUATIC BIOLOGY THRUST AREA

BOA 300/0 Industrial Training in Applied Biology (Optional) *
BAT 311/3 Limnology & Chemi-Physico Oceanography
BAT 312/3 Marine & Fresh Water Biology
BAT 314/3 Plankton & Productivity

LEVEL 400 - AQUATIC BIOLOGY THRUST AREA

BAT 400/6 Aquatic Biology Project
BAT 411/3 Aquaculture
BAT 412/3 Mangrove Dynamics & Management
BAT 413/3 Fisheries Management
BAT 414/3 Aquatic Pollution

ELECTIVE COURSES

[Open to all related Level 300 and 400 courses that are recommended by the Program Chairman]

The ENVIRONMENTAL BIOLOGY THRUST AREA

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The Environmental Biology Thrust Area is designed with the goal of reinforcing a students knowledge and understanding of ecological concepts, roles and interactions between abiotic and biotic components of particular ecosystems; provide students with a comprehensive view of the diversity of tropical ecosystem structure and function; nurture objectivity with regards to the importance of protecting the environment and conservation of limited natural resources for society and the nation, with exposure to particular methodologies that include EIA studies and remote-sensing that are used in management of sensitive environments and conservation of natural resources.

LEVEL 300 - ENVIRONMENTAL BIOLOGY THRUST AREA

BOA 300/0 Industrial Training in Applied Biology (Optional) *
BST 321/4 Soil Science & Plant Nutrition
BST 322/3 Tropical Ecosystem
BST 323/3 Population Ecology & Community
BST 324/3 Environmental Pollution

LEVEL 400 - ENVIRONMENTAL BIOLOGY THRUST AREA

BST 400/6 Environmental Biology Project
BST 421/3 Ecology of Natural Resources
BST 422/2 Conservation Ecology
BST 423/3 Environmental Management
BST 424/3 Wild Life Management & Ecology

ELECTIVE COURSES

BSE 325/2 Biogeography

[And other related Level 300 and 400 courses that are recommended by the Program Chairman]

FEES

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The following fees are payable on admission to the undergraduate degree programme.

Item	(MR\$)	Comments
Course fees	660.00	per semester
Medical services	13.50	
Caution money	50.00	Refundable subject to satisfactory conduct
Orientation fees	50.00	
Students welfare fund	4.00	
Registration fee	7.00	
Registration card	2.00	
Hostel fee	230.00	per semester

Appendix II : Post-graduate training at Universiti Sains
Malaysia with particular reference to the
School of Biological Sciences and the
Centre for Marine and Coastal Studies

The University

University Sains Malaysia was established in June 1969. The main campus of the University is located at Minden, Penang. The University also has two branch campuses i.e. the branch campus for the School of Medical Sciences at Kubang Kerian, Kelantan and the branch campus for the Engineering Schools at Tronoh, Perak. In addition it also operates a number of research stations.

In the implementation of its academic programmes, courses of instructions are offered through broadly based schools. The existing schools can be categorised into:-

1. The Natural Science:

School of Physics
School of Chemical Sciences
School of Biological Sciences
School of Mathematical and Computer Sciences

2. The Applied Sciences:

School of Public Engineering
School of Materials and Mineral Resources Engineering
School of Electrical and Electronic Engineering
School of Mechanical Engineering
School of Industrial Technology
School of Pharmaceutical Sciences
School of Housing, Building and Planning
School of Medical Sciences

3. The Arts:

School of Humanities
School of Social Sciences
School of Educational Studies

Higher degree study is one of the academic programmes offered by University Sains Malaysia. Other academic programmes offered by the University are the undergraduate programme and certificates courses, the Off-Campus study programme and the Diploma programme.

Higher Degree Programme

The University launched its higher degree study programme in 1970. Initially this programme only admit candidates for post graduate study by research. In subsequent years various types of other programmes by course work and a combination of course work and disertation are being introduced. Currently all the teaching schools and some service units offer courses for higher degree study leading to the award of Masters or Doctor of Philosophy degrees. The higher degree courses offered at this University can be followed either on a part-time or full-time basis.

Types of Higher Degree Programme

The University offer three types of higher degree programme:-

(a) Research Degrees

Candidates pursuing such degree programme are required to be involved in a scheme of research under the supervision of a main supervisor appointed by the University and at the end of which are required to submit a thesis to be examined. The candidates concerned may also be required to pursue some pre-requisites courses concurrently with their research activities.

(b) Course Work Degrees

Course work degree candidates are required to attend formal lectures and tutorials as well as taking part in research projects, seminars and such other academic activities assigned by the schools or centres concerned. Candidates will be required to sit for an examination at the end of each semester.

(c) Course Work and Research Degrees

Candidates are required to start their programme of study by pursuing selected courses in their field of study and at the end of which sit for an examination. Following the successful completion of the course work component, candidates may be assigned a research project leading to the submission of a dissertation for examination. Candidates also may be allowed to pursue their course work and research activity concurrently.

Fields of Postgraduate Study/Research

Post graduate degrees (M.Sc. and Ph.D) are offered by all the schools listed on page one. Of particular relevance to training in fisheries are the following:

Programmes of Study	Areas of Study	Field of Research/Study	Level	Type of Candidature
A. By Research	(a) Biological Sciences	<u>SCHOOL OF BIOLOGICAL SCIENCES</u>		
		Aquatic Biology	M.Sc/Ph.D.	FT/PT
		Entomology	M.Sc/Ph.D.	FT/PT
		Plant Pathology	M.Sc/Ph.D.	FT/PT
		Parasitology	M.Sc/Ph.D.	FT/PT
		Microbiology	M.Sc/Ph.D.	FT/PT
		Environmental Biology	M.Sc/Ph.D.	FT/PT
		Biochemistry	M.Sc/Ph.D.	FT/PT
		Biotechnology	M.Sc/Ph.D.	FT/PT
		Botany	M.Sc/Ph.D.	FT/PT
		Zoology	M.Sc/Ph.D.	FT/PT
	Genetic	M.Sc/Ph.D.	FT/PT	
	(b) Marine and Coastal Studies	<u>CENTRE FOR MARINE AND COASTAL STUDIES</u>		
		Mariculture	M.Sc/Ph.D.	FT/PT
Pollution Studies		M.Sc/Ph.D.	FT/PT	
		Mangrove Studies	M.Sc/Ph.D.	FT/PT

Code: FT = Full Time

PT = Part Time

Entrance Requirements

Masters Degree

Applicants for courses leading to the award of a Master's degree shall possess a good Bachelor's degree, preferably with Second Class Upper Division Honours from a recognised University or equivalent qualifications acceptable to the Senate of the University. However, a candidate who is not in possession of the above qualification can be considered for admission if he or she possesses relevant and suitable research experience whilst showing keen interest in pursuing a higher degree.

Doctoral Degree

Applicants for admission to Ph.D. courses should ordinarily have obtained a Masters's degree from a recognised University or equivalent qualifications acceptable to the Senate of this University. In exceptional cases, Senate may admit those in possession of a Bachelor's degree to follow a Doctoral degree.

Bahasa Malaysia Requirements

A candidate who is domiciled in Malaysia must be in possession of a credit in Bahasa Malaysia at SPM/MCE level or its equivalent before being permitted to register for a higher degree at this University. Foreign candidates will be required to study Bahasa Malaysia and pass a prescribed examination which is equivalent to SRP/LCE* during their period of candidature. Further, individuals Schools or Centres are not precluded from specifying additional language requirements.

Bahasa Malaysia Requirements In Thesis Writing and Course Work

With effect from the 1983/84 Academic Session candidates in the Arts programmes are required to submit their thesis written in Bahasa Malaysia. For the sciences, the requirement was made effective from the 1986/87 Academic Session. However, candidates may apply for exemption if the field of study undertaken does not allow for the thesis to be written in Bahasa Malaysia or no suitable External Examiners who are proficient in the language could be appointed. With effect from the 1986/87 Academic Session all taught courses also conducted and examined fully in Bahasa Malaysia.

Periods Of Candidature And Residential Requirements

The periods of candidature for the Masters and Doctoral programmes and their residential requirements for both part-time and full-time candidates are as follows:-

* SRP/LCE = Sijil Rendah Pelajaran/Lower Certificate of Education

Programme of Study	Degree	Full Time		Part Time		Residential Requirements	
		Min	Max	Min	Max	Full Time	Part Time
By Research or By Research and Coursework	Masters	12 months	36 months	24 months	60 months	12 months	15 days per year
By Research	Ph.D.	24 months	72 months	36 months	96 months	24 months	15 days per year
By Coursework	M.Sc. (Planning)	2 semesters or 4 semesters	4 semesters or 6 semesters	-	-	2 semesters or 4 semesters	-

Other Requirements

Employees Of The Public Services, Statutory Bodies And Private Firms

The above category of applicants are required to obtain written permission or letters of clearance from their employers before they could be considered for admission into the Higher Degree Programme of the University.

Registering For More Than One Degree Of Study

Registered part-time or full-time Masters or Doctoral degree candidates of this University are not allowed to register for another degree programme at any other local or foreign university without the prior approval of this University.

Admission Procedures

Application to pursue Higher Degree Study at this University could be made on prescribed forms obtainable at the Office of The Dean of Postgraduate Study, Universiti Sains Malaysia, Minden 11800 Penang, Malaysia by enclosing a self addressed envelope measuring 22 cm x 25 cm with a 85 cents stamp and a Postal or Money Order under the name of the Bursar, USM. Details concerning applications are normally advertised in the local newspapers at regular intervals.

Candidates pursuing course work and a combination of course work and research degree programmes will be accepted for registration once a year i.e. at the commencement of the University's academic year which normally starts in July. However, for the research degree programmes, registration of candidates are conducted throughout the year.

Study Fees and Source of Funding

Fees (in Malaysian Ringgits)

The fees charged for higher degree study at this University are as follows:-

- I. Fees payable on application
 - Application fee \$ 19.00
- II. Fees payable on admission
 - (a) Caution Money: \$100.00
This fee is ordinarily refundable at the end of a student's course subject to satisfactory conduct
 - (b) Registration fee \$ 10.00
Payable once and not refundable
 - (c) Higher Degree Registration Card \$ 2.00
- III. Tuition/Research and Health Service Fee
 - (a) Tuition fees for course work students will have to be paid at the beginning of each academic session at or before the time of Registration
 - (b) The fees for full-time and part-time research students will have to be paid in advance calculated on the basis of every 12 months from the date that the candidates are initially registered.
 1. Tuition/Research Fee
 - (i) Master's Degree candidates not requiring the use of University computer/laboratory/studio facilities \$200.00
 - (ii) Master's Degree candidates requiring the use of University computer/laboratory/studio facilities \$300.00
 - (iii) Ph.D. Degree candidates not requiring the use of University computer/laboratory/studio facilities \$300.00
 - (iv) Ph.D. Degree candidates requiring the use of University computer/laboratory/studio facilities \$400.00

2. Health Service Fee

This fee is payable by all full-time candidates (Masters as well as Ph.D.) which must be settled at the beginning of each academic year and is not refundable \$ 36.00

IV. Examination Fees

(a) Thesis

(i) Master's Degree \$200.00
(ii) Ph.D. Degree \$300.00

Payable after having given notice to submit thesis

(b) Coursework

(i) Master's Degree \$200.00
per sesional examination

(c) Coursework and Thesis

(i) Master's Degree
Thesis \$150.00
Coursework \$150.00
per sesional examination

V. Re-examination Fees

(a) Thesis

(i) Master's Degree \$100.00
(ii) Ph.D. Degree \$150.00

(b) Coursework

(i) Master's Degree \$100.00
per examination

(c) Coursework and Thesis

(i) Master's Degree
Thesis \$100.00
Coursework \$ 50.00
per examination

University Facilities

To support the implementation of its academic programmes, the University provides various facilities which includes:-

The University Library *

The Library Collections consists of well over 509,249 books and bound journals, 5, 208 current serials, and 186,307 media materials and microforms. The annual intake is about 30,000 items for books, journal and media materials. It also has via computer linkage access to major data banks overseas.

*(USM faculty and students are also given access to the Fisheries Research Institute Library located about 1.5 KM from the main USM campus. This library houses a more extensive fisheries collection particularly reports in the "grey" literature.)

The Arts Centre

The Arts Centre was established to provide community services, public visual arts exhibition, and theatre and dance performance.

Centre for Educational Technology and Media

This Centre provides facilities and services for the utilization, production (non-print media) and management of educational materials and devices in the teaching-learning process of the University.

University Computer Centre

This service centre which offers computing facilities to the University in teaching, research and for the administration and maintenance needs of the University. The Computer Centre has a IBM 4381 mainframe with 4 megabytes of main storage and 4,180 Mb of disk storage and 50 terminals connected to it. Linked to this mainframe is the IBM 4361 which has 8 Mb of main storage and 3,351 Mb disk storage and another 50 terminals connected to it.

Centre for Language and Translation

This Centre provides proficiency courses in Bahasa Malaysia, English and Foreign Languages.

Teaching-Learning Advisory Unit

This Unit offers information, consultancy and advisory services to academic staff and students with the aim of assisting them in overcoming teaching-learning problems and in developing a more systematic approach to teaching and learning.

University Museum and Gallery

The University has a Museum and Gallery which was set up to supplement its teaching and research needs.

Other Facilities

Other facilities provided includes a Councelling and Career Guidance Service, Health/Dental Service, and Islamic Centre, A Student Centre, a Sport Complex, Hostels, a Central Printing Unit, A Cooperative Bookshop, canteens, banks and a post office.

Research Activities

For the University research is one of its most important activities. Towards this end the University is responsible for encouraging its academic staffs to be actively involved in research. In this regard priority is given to research which are of an applied nature and multi-disciplinary. However, pure and basic research are also encouraged.

In order to reflect the thrust of the University in the field of science a balance is maintained between research in the sciences and the arts. The University also encourages research in the form of Research and Development as part of its contribution to the national development.

Research Grants

Most of the research conducted in the University are funded by grants under R&D, short term research grants and also grants from outside bodies, both local and international. For the year 1989 a total of 7-8 millions dollars has been allocated for research activities for which 7 million dollars was expended under R&R, \$400,000 under short term research grants and the balance from outside agencies. The University is also actively seeking financial assistance from international agencies, foundations and other institutions including individuals for research projects and to augment the Research Fund.

Among the main research projects undertaken by the University are the Drug Abuse Project, Vector Control Project, KANITA Project and the UPPA Project.

The Industrial Research and Consultancy Unit which was established in 1981 made available the expertise of staffs and facilities of the University for the benefits of industries and the community besides assisting academic staffs in maintaining close contact with outside institutions, bodies and individuals.

Source of Funding

Scholarships for Foreign Students

All foreign candidates seeking admission to Universiti Sains Malaysia are advised to first find financial sponsors for their period of study. Universiti Sains Malaysia does not provide any form of financial assistance to foreign candidates.

Scholarships for foreign candidates are offered by the Malaysian Government under the Malaysian Technical Cooperative Programme (MTCP) scheme. Applications should be addressed to the respective national agencies of recipient countries such as the Ministry of Education or the Foreign Ministries.

Private Students

Privately sponsored candidates must provide a Bank Statement/Guarantee of financial resources before they are allowed to register. As a broad guideline, each candidate must typically have available a sum M\$6,000.00 (approx US\$2,175.00) per year to cover food, accommodation, travel, books, etc. This is a basic minimum.

Accommodation

University-provided accommodation is very limited, and although preference is given to foreign candidates, is available only a small proportion of students applying for on-campus accommodation.

When available, the rates for accommodation for postgraduate students are as follows:-

Hostels:

Single Room @ M\$14.70 per week
Double Room @ M\$12.95 per week per student

Master Flats:

Single Room @ M\$150.00 per month
Double Room @ M\$250.00 per month