PROSPECTUS 2016
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### RESEARCH IN SCHOOLS: MAIN CAMPUS

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Universiti Sains Malaysia (USM) offers excellent opportunities for research, innovation and education to both local and foreign undergraduates and post-graduates. The University's core competencies has remained unchanged in its 46 years of establishment: teaching, research and consultancies, which relate directly to the advancement of human resource development and capacity-building, knowledge and industrial competitiveness.

USM, which was granted the APEX status in 2008 has now made it a priority to steer its research capabilities towards reaching out and impacting the community. Research at USM aims to touch base with the needs of the poor and unrepresented. Above and beyond that, the University wants to be at the forefront of providing local solutions for global problems. At present, USM continues to address a wide range of problems in order to benefit society at large, besides striving to exercise broadened paradigms in its research work at the theoretical level.

The University has been actively developing broad-based research infrastructure involving the acquisition of a wide range of equipment, laboratory facilities and library holdings. It has also established new research institutes, centres and units, which are mostly located at USM’s rapidly developing Science and Arts Innovation Space, or better known as SAINS® USM. Through these entities, research talent and expertise are mobilised from different disciplines and segments of the University in line with its efforts in promoting trans-disciplinary research.

Research at USM is managed by the Research Creativity and Management Office (RCMO), in charge of overseeing matters pertaining to research information, grants, university facilities, equipment and human resources. The office was set up to be the bridge between USM researchers, grants financiers and the industry. There is also an Innovations and Commercialization Office, tasked with bringing the products, innovations, services and knowledge created by its researchers to the marketplace and end-users in an efficient manner.

USM’s research strengths are split into four categories, namely in the field of Science, Medical Health, Engineering and Arts. The 26 Schools spread out on three campuses each have its own niche area of research. Its many areas of research strength include environmental science, engineering, aquaculture, biomedical and pharmaceutical studies, information technology, food technology, polymer science, biotechnology, distance education, materials science, surface chemistry, local knowledge, tourism and robotic.

As a result of its’ research strength, the Institute For Research In Molecular Medicine (INFORMM) USM, Centre for Drug Research (CDR) USM and River Engineering and Urban Drainage Research Centre (REDAc) USM are recognized as Higher Institutions’ Centres of Excellence (HICoE) by the Ministry of Higher Education, Malaysia. For the year 2016, R&D division will take an aggressive approach to re-focus its research activities based on thematic issues that are embedded in issues and challenges of national socio-economic development, involving perspectives from various disciplines. By anchoring the problem statements of research endeavours on issues of relevance to national development, it will ensure that research findings and technologies developed will be feasible solutions to the nation’s problems and challenges.

It will also ensure that the total chain from problem to solution is appropriately covered, developing both fundamental and applied knowledge that will eventually resolve the issues. This approach of multi-disciplinary and transdisciplinary studies in nature will guarantee that outputs and findings will enrich not only the subjects but also contribute to the development of the related subjects and fields of discipline, thus ensuring USM will continue to make significant impact to its research stature.

Recognizing that its manpower is its main asset, the researchers at USM are duly honored at the Sanggar Sanjung Awards night which is an annual event. The Sanggar Sanjung or Hall of Fame event which began in 2001 is a special ceremony held to celebrate outstanding contributions of USM staff and Academic Staff Training Scheme (ASTS) Fellows in research, publications, personality, quality, creativity and teaching categories and who had received awards and accolades from both national and/or international agencies for their efforts and achievements. Furthermore, among the scientists from this University, some were awarded the Top Research Scientists Malaysia by the Academy of Sciences Malaysia (ASM).

USM has also become an important resource centre for the industry with university-industry links established via its holding company USAINS Holding Sdn. Bhd. which provides services such as consultancy, contract research, joint research and development initiatives, professional upgrading, rental of R&D spaces, as well as access to research equipment and laboratory facilities.
THE UNDERGRADUATE PROGRAMME

Virtually all undergraduate degree programs in arts at the University require a minimum full-time study period of three years and three and half years. Degrees in fine arts, music, arts (fine arts), pure sciences, applied sciences, computer science, management, education, accountancy, food technology, engineering, health sciences, pharmacy, medicine, and dentistry, however, require minimum periods of study are between four and five years.

For Malaysian students, degrees in the pure sciences, humanities, social sciences, and management may also be pursued through the distance education program. These degrees require a minimum study period of five years. For full time students, each academic year consists of two semesters. In order to graduate, students must accumulate the required number of credit units and fulfill other graduation requirements stated by the University Senate. All programs offered, with the exception of programs offered by the School of Medical Sciences and the School of Dental Sciences, currently follow this system.

Courses for all undergraduate degree programs are conducted through classroom lectures, tutorials, practical, fieldwork, seminars, and workshops. The courses are further classified into 4 types which is Core, Electives, Minor and University/Optional. Courses in Bahasa Malaysia (Malay Language), English Language, Islamic Civilization, Ethnic Relation, Entrepreneurship/Malaysia Studies are graduation requirements for all undergraduate students.

A course may be a prerequisite to, sequential to, or concurrent with another course. Courses are coded in ascending levels, viz. Levels 100, 200, 300, and 400. Examinations are held at the end of each semester and students are required to reach a satisfactory standard of performance before they are permitted to continue their studies in the following semester, failing which, they are placed under probation. A student can only remain under probation for a maximum of three consecutive semesters. Students failing compulsory courses must repeat them until they attain the minimum grade requirement. Students may also register for audit courses for self-enrichment purposes and may also sit for examinations in them, but the marks/grades obtained (R grade), do not contribute towards the credit units required for graduation and thus will not be counted in the GPA/CGPA calculation.

Student may enroll in major-minor programs but certain program require student to choose electives within the school itself. The elective courses cover certain aspects of the core component in the program.

The School of Medical Sciences also offers the international Medical Doctor degree in collaboration with Jawaharlal Nehru Medical College (KNMC), Karnataka Lingayat Education (KLE) University in Belgaum, Bangalore, India. Upon completion of their studies, students will be awarded the USM M.D. This is a locally accredited USM Medical Degree program conducted overseas and is customized to the fulfill needs of a medical career in Malaysia. Students will be trained by qualified and experienced lecturers and specialists in India during their period of study.

USM is collaborating with the Port Dickson Polytechnic through the offshore USM-KPT (PPD) programme for the Bachelor of Science Degree (Housing, Building and Planning) (Honours) (Architecture). This programme is aimed at expanding the educational opportunities across the campus while at the same time realising the motto of the university, “We Lead”. This programme is open to students with a Diploma in Architecture from Malaysian Polytechnics. The period of study is 3 years at the Port Dickson Polytechnic in Negeri Sembilan and upon completion of their studies, students will be conferred a Bachelor of Science Degree (Housing, Building and Planning) (Honours) (Architecture).
The university admits suitably qualified Malaysian citizens into its degree programs. A certain number of places are also allocated for foreign students. Applications for admission will be processed by the University itself. As a general admission requirement, the applicant must possess the Malaysian Certificate of Education with a credit in Bahasa Malaysia (Malay Language). In addition, the candidate must possess a Malaysian Higher School Certificate or a Matriculation Certificate, a Diploma, or any equivalent qualifications with a minimum B or CGPA 3.00 for Science based programs and B – or CGPA 2.67 for Arts based programs. Applicant must also obtain a minimum grade B [Science based programs] and B- [Arts based programs] in three subjects including General Studies and obtain a Band 2 in the Malaysian University English Test (MUET) or IELTS band 5.5. Other minimal entry prerequisites are subject to the requirements of the respective programs.

Admission of International Students into a Full-time Undergraduate Program

In line with the move towards internationalization, the University has made available a limited number of places to non-Malaysian citizens to undertake undergraduate courses on a full-time basis with the aim of earning USM degrees in selected disciplines. Interested candidates can apply directly to Deputy Registrar, Student Admission Section, Academic Management Division for the prescribed forms, fee schedule, and other related materials. As a general admission requirement, applicants must complete 12 years of primary and high school education and must possess a High School Certificate/or its equivalent or a diploma in the related field. Applicant must also obtain TOEFL score of 500 or IELTS Band 5.5. or MUET Band 3.0 or minimum Grade B (Level 4) in the Intensive English Program conducted by the School of Languages, Literacies and Translation USM.

Programmes Offered:

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<td>Bachelor of Health Science [Honours]</td>
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<td>Diploma in Nursing</td>
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All enquiries are welcome and should be sent to the Deputy Registrar, Students Admissions Section, Academic Management Division, Registry. Alternatively, relevant information can be sourced through the USM Homepage, at https://pohon.usm.my
UNDERGRADUATE PROGRAMME STRUCTURE

Bachelor of Applied Science with Honours
[B.App.Sc. (Hons.)]
The Bachelor of Applied Science [Honours] is a four-year degree programme jointly offered by the four Pure Science Schools to produce graduates in the various fields of applied science. In their first year, students are required to take basic courses related to their major disciplines, which are Applied Physics, Geophysics, Analytical Chemistry, Industrial Chemistry, Applied Biology (Agrobiology/Aquatic Biology/Biotechnology/Entomology & Parasitology/Environmental Biology) Entomology, Aquatic Biology, Biotechnology, Environmental Biology, Parasitology, Plant Pathology, Applied Statistics and Operations Research, Mathematics Mathematical Modelling, Engineering Physics and Medical Physics. After the first year, students major in their chosen disciplines and minor in any one of the other science disciplines. There is, however, an exception to this, wherein a student may opt for a double-major programme in Mathematics and Economies (where Economics is offered through the School of Social Sciences). Courses offered are ranked according to four levels, namely Levels 100, 200 and 300. Students must accumulate 120 credit units and fulfill all other relevant University requirements to obtain a Bachelor's degree in Applied Science.

Bachelor of Arts with Honours
[B.A. (Hons.)]
The Bachelor of Arts [Honours] is a three and a half-year degree programme offered by the School of Humanities. The Bachelor of Arts with Honours in English Language and Literature Studies (ELLS) is a three and half-year degree programme jointly offered by the four Pure Science Schools to produce graduates in the various fields of applied science. In their first year, students majoring in Translation and Interpretation are required to minor in another discipline such as Communication, Management, Economics, etc.

For the purposes of the course, English is the source language while Bahasa Malaysia is the target language. Students learn to interpret general texts in English and in Bahasa Malaysia. They also learn the techniques of translating documents from the English Language into Bahasa Malaysia and vice-versa using a range of texts drawn from legal, literary, scientific, and technical fields. Students are introduced to the latest techniques in information technology and its use in editing and translating texts. Students need to accumulate at least 120 credit units to graduate. In addition, students majoring in Translation and Interpretation are required to minor in another discipline such as Communication, Management, Economics, etc.

Bachelor of Arts with Honours
[B.A. (Hons.)(Eng. Lit. & Lang. Studies)]
The Bachelor of Arts with Honours in English Language and Literature Studies (ELLS) is a three and half-year degree programme offered by the School of Humanities. It requires 120 credit units for graduation. The ELLS programme consists of:

- A selection of common-core cross-disciplinary courses, which complements the mainstream courses as well as provides exposure to, and foundation in, areas relevant to future occupational and professional needs.
- Major courses, which involve an in-depth study of English Language and Literature in English.
- Minor courses in related disciplines, such as translation, communication, etc. from the second year onwards.
- An elective programme of five courses from such diverse fields such as Computer-Assisted Language Learning, Report Writing and Editing, Odes and Sonnets, English for Specific Purposes, Translation Methods, Lexicography and Terminology in Translation, and New Literatures in English. The Elective programme encourages a broad-based interdisciplinary education.
- University courses in Bahasa Malaysia, Writing Skills, Spoken English, and selected options.

In the foundation and major courses, learning and teaching theories are emphasised. In addition, students who choose not to do the elective courses may minor in another discipline, which is usually a teaching subject in the school curriculum. Minor Programmes comprising 16 units include:

- English Language and Literature
- Translation
- Japanese Language Studies
- Chinese Language Studies

Bachelor of Arts (Education) with Honours
[B.A. (Ed.) Hons.]
The Bachelor of Arts with Education [Honours] is a four-year degree programme which consists of two main components namely the academic component offered by the School of Humanities and the pedagogical
component offered by the School of Educational Studies. For the academic component, students enroll in at least four introductory courses, and one other course taken from another school, during the first year. They are required to major in a single school subject and minor in another subject relevant to the secondary school curriculum. Subjects offered by the School of Humanities for the major-minor specialisation include Bahasa Malaysia, English Language, Geography, Literature, and History; while the School of Social Sciences and the School of Management offer Economics and Commerce respectively. For the pedagogical component, students are not only provided with foundation courses in education but are also given exposure to methods of teaching the relevant school subject via a compulsory teaching practice session in schools. Students pursuing this degree are required to accumulate 130 credit units for graduation.

Bachelor of Arts with Honours [B.A (Hons.)] English for Professionals
The Bachelor of Arts (English for Professionals) Honours is a three-year degree programme offered by the School of Languages, Literacies and Translation which requires 110 credit units for graduation. The range of topics in the foundation and major courses provides a balance between theoretical content and practical language skills. This programme is designed to help undergraduates to develop and acquire:

- theoretical knowledge and principles necessary for understanding the structure and use of the English language;
- the ability to use the knowledge of the English Language (syntax, lexis, pragmatics) for academic purposes (report writing, project work, etc.);
- interpersonal skills, critical thinking skills and problem-solving abilities to contribute meaningfully to a changing international environment; and,
- a broad range of professional registers in English appropriate for interaction with employers and colleagues in a variety of work-related situations.

In addition, students may choose to minor in another discipline from among the various Minor Programmes comprising a minimum of 16 units that are offered by the other Schools.

Bachelor of Science (Education) with Honours [B.Sc. (Ed.) Hons.]
The Bachelor of Science with Education (Honours) is a four-year degree programme. The programme comprises two main components, viz the academic component offered by the Schools of Biological Sciences, Chemical Sciences, Mathematical Sciences, Computer Sciences and Physics, and the pedagogical component by the School of Educational Studies. For the academic component, students major in one of the four science disciplines, namely Physics, Chemistry, Biology and Mathematics, and minor in another subject from the list mentioned above. Several arts subjects are also offered as minor programmes. The pedagogical component includes a compulsory teaching practice session. Students pursuing this degree are required to accumulate 130 credit units for graduation.

Bachelor of Communication with Honours [B.Comm. (Hons.)]
The Bachelor of Communication [Honours] is a four-year degree programme, designed to incorporate the various theoretical and practical dimensions of communication and media studies. In the first year, students take communication courses which are aimed at orienting them to the fundamentals of communication, including theory, research, technology and culture. In the second year, students choose one of four communication subjects for specialisation. These consist of courses in journalism, film, television, and persuasive communication. At the end of the third year, students are placed in a communication organisation to undergo five months of industrial training which will prepare them for professional work situations.

Bachelor of Computer Science with Honours [B.Comp.Sc. (Hons.)]
The Bachelor of Computer Science with Honours is a four-year programme offered by the School of Computer Sciences which encompasses all aspects of computing as a discipline. The programme covers theoretical and scientific foundations as well as various extensive applications in industry and commerce. The curriculum of the programme emphasizes problem-based learning concepts in particular through practical/project/training-based courses that are integrated throughout the years. It also underscores and inculcates a research based approach of thinking among students.

In the first year, students learn the basics of Computer Science such as algorithms and problem solving, programming techniques using high level language, data structures, and computer organisation and are given a strong foundation in mathematics and logic. Year II and Year III offer an integrated and a wide spectrum of courses focusing on a variety of areas in computing that allow students to specialise in a specific area namely:

- Intelligent Systems
- Software Engineering
- Information Systems Engineering
- Multimedia Computing
- Network Computing
- Distributed Systems & Security

Second year topics also include common core courses namely operating systems, data communication, programming language concepts and paradigms, algorithms, database organisation, system analysis and design. Practical and project based courses namely integrated software development, group minor project and research methods and special topics on the specialisation area are also offered.

During the second semester and the long vacation of the third year students will be assigned to various organisations for full-time industrial training for a period of six months. In the final year, students will take other advanced courses to enhance their field of specialisation that focuses on the main research activities of the school. Students are also required to complete a major project during the fourth year under the supervision of at least one academic staff member and to undertake a course on professional and enterpreneurship development.

The specialisation areas together with the common core courses have been designed in such a way as to ensure that graduates will have the widest choice in their later careers in areas such as business, industry, public sector, research and education, taking up jobs such as System Analyst, Analyst/Programmer, System Engineer, System Programmer, System Administrator, Software Engineer, Information Systems/Information Technology Officer, Software Project Manager, Software Quality Officer, Knowledge Engineer, Information Systems Project Manager, Multimedia Project Manager, Information Research Manager, Information Systems Manager,
The Bachelor of Education (TESOL) with Honours (B.Ed. (Hons.))

The Bachelor of Education (TESOL) with Honours degree programme is a four-year professional programme aimed at producing English teachers to teach English as a Second Language in Malaysian secondary schools. In this programme, the professional and pedagogical components are under the School of Educational Studies. For students majoring in Preschool and Special Education (Professional), the minor component has to be taken from the pure science Schools or the School of Humanities. For the academic component, students are required to take courses in the Sciences or Humanities as well as to study a particular area in a discipline outside the Sciences and Humanities for exposure. For the pedagogical component, students are required to read foundation courses in education and courses on methods of teaching in the relevant school subjects. In addition, they have to choose an area of specialisation in education in the form of a minor package consisting of five courses. Teaching practice and practical sub-components are compulsory. Students pursuing this degree programme must accumulate 130 credit units for graduation.

The Bachelor of Education Honours degree programme is a four-year professional programme designed to produce teachers who will be proficient in teaching students with disabilities. The course will cover three disability areas—learning disabilities, visual impairment and hearing impairment.

The objectives of the Bachelor of Management degree programme as follows:

- To make available to the country, managers who have basic skills and expertise in specialised fields of management
- To produce managers who are efficient, effective, analytical and possess excellent communication skills
- To instil ethical values and to ensure that future managers are aware of their social responsibilities.
- To produce management graduates equipped with skills in information technology who are capable of adapting to continuous changes in technology
- To produce managers who possess global and innovative entrepreneurship skills

Bachelor of Accounting (B.Acc. (Hons.))

The Bachelor of Accounting (Honours) is a four-year professional degree programme, which incorporates various theoretical and practical dimensions of accounting, IT and business. The curriculum was designed in consultation with the Malaysian Institute of Accountants (MIA) and was evaluated by practitioners, renowned accounting professors and the Malaysian Association of Certified Public Accountants (MACPA). To ensure that the professional climate of the programme is preserved, practicing accountants will also be required to participate in the teaching of selected courses. Upon completion of the degree, students are required to gain three years of working experience after which they are eligible to apply for professional membership.

Student is required to accumulate 139 credit units for graduation. In the first year, students enrol in foundation courses. This prepares them for the problem-oriented accounting, finance and management courses in the second and the third year.

The courses are designed to provide the students with some ‘hands-on’ experience in using various types of accounting software. This is to equip them with the necessary IT skills so that they are able to work in a near ‘paperless’ world which places great emphasis on electronic transactions.

The USM accounting programme intends to supply the nation with accountants of the highest calibre, who are knowledgeable in the field of accounting as well as equipped with IT knowledge and management skills. It is envisaged that this initiative will enable the country to achieve the number of accountants needed to achieve Vision 2020.

Doctor of Dental Surgery (D.D.S.)

The School of Dental Sciences, established in 1998, offers an undergraduate degree programme, namely the Doctor of Dental Surgery (D.D.S.). The School has adopted an integrated problem-based and problem-solving medical education programme using the ‘organ-system’ approach. The curriculum is designed to offer three phases of study over a period of five years. In the first year (Phase 1) students undergo rigorous training which prepares them for the problem-based course that is undertaken in the second phase of the dental course. The course provides an understanding of the structure.
and function of human beings, their responses to injury, growth and development, with emphasis on and relevance to the oral environment, their roles in the community, an introduction to clinical studies and a structured first-aid course. The relevant materials are taught in a series of four core topics: First Aid and Nursing Courses, The Normal Human Being, Tissue Response, Community Medicine and Dentistry, Oral Biology and Behavioural Sciences.

Phase I consists of a course in clinical sciences formulated on a problem-based learning approach which is taken in the second and third years of study. The aim is to integrate the teaching of the basic Medical and Dental Sciences with that of clinical sciences, thereby providing a scientific understanding of the disease systems of the body and its impact on the oral cavity. Clinical relevance is maintained throughout the course. Included are the following systems: Cardiovascular, Respiratory, Genitourinary, Gastrointestinal, Endocrine, Nervous, Hematology, Reproductive, Musculoskeletal, Psychological Medicine, Communicable Diseases, Dental Biotechnology, Dental Restorative and Head & Neck Block.

An important Introductory General Block precedes these teaching blocks where foundational courses in of clinical sciences, communication skills and bioethics are taught. The main clinical work is in the form of bedside clinical teaching and dental chair side clinical teaching which are carried out by students, following a satisfactory level of competence shown in the dental preclinical skills laboratory. The emphasis is on acquiring basic clinical examination skills of the various organ systems and a high level of competence in oro-facial and head and neck examination, diagnosis and treatment planning. Electives either confer experiential learning of broad-based societal needs, or generate in-depth scientific investigative work within departments.

The Community and Family Case Study (CFCS) is a fully integrated School programme which runs through Phases I, II and III. It provides the students with experiential learning through a holistic approach to patient care within the community emphasizing oral health as an integral part of general health. Although students are exposed to general clinical work from the first year, the senior years are dedicated to dental and oral clinical teaching, i.e. during Phase III (years 4 and 5).

The aim of this clinical course is to allow students to develop competence in dental and oral clinical practice and gives an orientation to Community Service based on the oral care delivery services of both the teaching and community services, providing avenues for research-oriented interests, facilitating personal advancement as well as providing remedial classes for slow learners. The elective course in the fourth year is compulsory for dental students who have performed satisfactorily in their core curriculum subjects and they are given the liberty to choose their subjects of interest with some assistance from Faculty staff members. Students are encouraged to design their electives individually or in pairs. Optional electives are also available for those interested in pursuing their interests during the vacation. These courses are designed to promote a continuing interest in subjects outside the core structure of the dental course.

Doctor of Medicine (M.D.)

The School of Medical Sciences, Universiti Sains Malaysia, has adopted an integrated problem-based and problem-solving medical education programme using the ‘organ-system’ approach. The curriculum offers three phases over a period of five years.

In the first year (Phase 1) students undergo rigorous training which prepares them for the problem-based course that is undertaken in the second phase of the medical course.

The course provides an understanding of the structure and function of human beings, their responses to injury, growth and development, their roles in the community, an introduction to human relationships, their behavior and emotions, an introduction to clinical studies and a structured first-aid course. The relevant materials are taught in a series of four core topics: First Aid and Nursing Courses, The Normal Human Being, Tissue Response, and Community Medicine and Behavioural Sciences.

Phase II consists of a course in clinical sciences formulated on problem-based learning which is taken in the second and third years of study. The aim is to integrate the teaching of the basic medical sciences with that of clinical sciences thereby providing a scientific understanding of the disease systems of the body. Clinical relevance is maintained throughout the course as the following systems are included: Cardiovascular, Respiratory, Genitourinary, Gastrointestinal, Endocrine, Nervous, Hematology, Reproductive, Musculoskeletal, Psychological Medicine, and Communicable Diseases.

An important introductory General Block precedes these teaching blocks where foundational courses in clinical sciences, communication skills, and bioethics are taught. The main clinical work is in the form of bedside clinical teaching as the emphasis is on acquiring basic clinical examination skills of the various organ systems. Electives either confer experiential learning of broad-based societal needs, or generate in-depth scientific investigative work within departments.

The Community and Family Case Study (CFCS) is a fully integrated School programme which runs through Phases II and III. It provides the students with experiential learning through the holistic approach to patient care within the community. Although students are exposed to clinical work from the first year, considerable emphasis is given to the acquisition of this skill in the last two years of the medical course, i.e. during Phase III (years 4 and 5). The aim of this clinical course is to allow students to develop competence in clinical practice, and gives an orientation to Community Service based on the health care delivery services of both the teaching hospital and the network of the supporting hospitals in the district. The purpose also is to inculcate a sense of professional responsibility and adaptability towards health issues of the community and to design approaches for their resolution in an independent manner. The elective programme of the School offers a varied spectrum of courses aimed at promoting individual interests beyond the scope of the medical curriculum, inculcating interest in community services, providing avenues for research-oriented interests, facilitating personal advancement as well as providing remedial periods for slow learners.

The elective course in the fourth year is compulsory for students who have performed satisfactorily in their core curriculum subjects and the students are given the liberty to choose their subjects of interest with some assistance from Faculty members. Students are encouraged to design their electives individually or in pairs.
The objectives of The Bachelor of Pharmacy Degree are as follows:

- To produce graduates who are competent, skillful, resourceful, ethical and professional.
- To cultivate leadership values and critical thinking in order to produce graduates who are self-reliant.
- To produce graduates who are caring, compassionate and show respect and fairness to others.
- To nurture graduates for life-long learning who are able to adapt to socio-economic, health and environmental changes.

Final year students pursue courses in clinical pharmacy and take part in clinical discussions at the hospital. The professional courses come under one of the disciplines of Pharmaceutical Chemistry, Pharmaceutical Technology, Physiology, Pharmacology, and Clinical Pharmacy. At levels 200 and 300, students receive their practical training in community pharmacy/industry during the long vacation, for a period of one week. Level 400 pharmacy students work with community pharmacists for 2 weeks, during their mid-semester break.

Bachelor of Science with Honours [B.Soc.Sc. (Hons.)]

The Bachelor of Social Science programme is designed to provide a broad based Social Science education, which encompasses various fields with the intention of producing students who are not only knowledgeable but also sensitive to and capable of handling social problems innovatively.

For this purpose, the School of Social Sciences offers basic courses, common core courses and four major fields of specialization (programmes), which integrate theory, practice and methods. At the early stage, students are introduced to issues, methods and philosophy of Social Science viewed in a general manner and from various perspectives. Subsequent specialization at higher levels examines the issues in an in-depth manner. Students are allowed to major in any field of specialization according to their interests, orientation and academic capability.

Apart from preparing students to handle various economic, social and political problems, particularly in a developing country such as Malaysia, specialization in the Social Sciences also takes into account the importance of the employment and manpower needs for national development.

The objectives of the programme are as follows:

- To maintain the concept of a liberal, inter-disciplinary and multi-disciplinary education.
- To produce mature graduates with analytical expertise and the ability to communicate and offer solutions to social and economic issues.
- To produce graduates who are aware of and sensitive to current social and economic issues and committed to improving the welfare of society.
- To contribute to the efforts in managing human resources in order to attain the national objective of becoming an industrialised nation.
Major in Graphic Communications

Courses offered in Graphic Communications are related to computer graphic and design work, studio practices and theories in visual art. The programme is designed to provide the necessary knowledge in graphic design and visual skills, through manual practice or computer-based work.

Students are trained through various projects, related to graphic art and computer applications, and visual design techniques. The courses included are: Introduction to Fine Arts, Design Theories, Drawings, 2- and 3-D Typography, Visual Communication, Computer Generated Images, Interactive Multimedia, Practical Training and Art Project. During each semester, students are expected to produce studio work or visual projects and participate in art displays/exhibitions.

Major in Acting and Directing

This programme offers courses which are suitable for theatre designers, professional actors, directors or administrators in the area of performing or stage arts. The courses offered are also designed to accommodate many aspects of acting and directing, and stage designs, which can be used in TV productions and film industries.

The main area of study for this programme is focused on theoretical frameworks and studio practices. These include courses such as: Introduction to Drama and Theatre, Acting and Directing, Traditional Theatres, Children’s Drama and Theatre, Technical Theatre, Theories and Principles of Theatres, Perception of Art, Western and Eastern Theatres and Modern Malaysian Theatres, Practical Training and Art Project. Students are expected to have some theatrical or performance work during their period of study.

Major in New Media Design and Technology

The New Media Design and Technology programme prepares students to pursue careers in the field of computer-generated imagery for the information and entertainment industries. The industries produce special effects and animated characters for films; interactive media for the World Wide Web and for game development, and motion graphics for broadcast and feature titles. The New Media Design and Technology department offers an innovative curriculum, professional-level computer facilities, and a supportive learning environment.

With a strong emphasis on industry, the undergraduate programme allows students to focus their studies in specific areas such as two-dimensional or three-dimensional character animation, game development, experimental animation and interactivity or motion graphics. Each area of concentration builds upon a common set of digital design skills developed as a logical extension of foundation studies. Students are encouraged to take electives in other areas.

Major in Product Design

The Product Design course explores the design processes through which a product is conceived, developed, fabricated, and marketed. It gives the students the opportunity to work towards acquiring control of the physical and visual construction of a given concept allowing the desired content to be fully communicated. Ideations are developed through drawings and/or models, and then progress to full-sized working pieces. The product design major requires students to attend a broadrange of classes including Sculpture, Ceramics, Metals, and Woodwork.

Bachelor of Arts (Fine Arts)

The Bachelor of Arts (Fine Arts) is a three and half-year programme. The Fine Arts program offers the opportunity for students to concentrate and explore their areas of interest via traditional and new forms of art. Exploration in new art forms such as media and electronic arts enables students to further developed conceptual thinking and creative possibilities presented by rapidly expanding technology.

Bachelor of Health Science with Honours

The School of Health Sciences offers eight four-year programmes namely Audiology, Exercise & Sports Science, Speech Pathology, Biomedicine, Nursing, Dietetics, Medical Radiation, Nutrition, Environmental and Occupational Health and Forensic Science. Upon completion, graduates are conferred a Bachelor of Health Science (Biomedicine/Nursing/Dietetics/Medical Radiation/Speech Pathology/Audiology/Exercise and Sports Science/Nutrition/Environmental and Occupational Health) or a Bachelor of Science (Forensic Science) degree.
Courses offered are designed to equip students with skills in their chosen fields of specialisation as well as good background knowledge in other aspects of the health sciences. Students are also expected to take 15-20 units of elective courses in areas such as social health issues, information technology and others to help them become well-equipped graduates who are able to adjust in a positive way to societal demands, and are sensitive to societal obligations and needs. During the course, they have to undergo practical training and hands-on experience at relevant institutions in Malaysia. Students need to accumulate a total of 130-145 (depending on the programme) credit units from core, elective and university courses to graduate.

Career opportunities are varied and numerous notably in the health, medical and therapeutic industries, biomedical research, food and nutritional industry, and pharmaceutics.

**Bachelor of Music with Honours [B.Mus. (Hons.)]**

The Bachelor of Music with Honours is a four-year programme. The main areas of study involve different aspects of performance and pedagogy in music. Courses are designed for music practitioners, conductors, technicians, administrators, teachers or professional musicians.

Courses offered include: Introduction to Music, Basic Pedagogy, Theories and Arrangements of Music, Vocal and Instrumental, Appreciation of Asian, African and the Pacific Music, Conducting, Score Reading, Composition, Malaysian and Western Music, Western Ensemble and Instrumental Repertoire.

Throughout the period of study, students are exposed to the theoretical frameworks of the various music disciplines, and emphasis is placed on studio practices. These provide students with a proper understanding of music and develop their competency and skills in their own area of specialisation. Students of this programme are expected to participate in all performances/repertories organised by the Music Section.

**Bachelor of Economics with Honours [B.Ec. (Hons.)]**

The Bachelor of Economics [Honours] is a four-year degree programme offered by the School of Social Sciences. The programme combines a strong theoretical foundation and basic mathematics (quantitative method) to prepare students to apply and use economic theory and quantitative methods in analysing and solving economics problems. Some of the core courses offered such as Microeconomics, Macroeconomics, Mathematics, Economics, Applied Statistics and Basic Econometrics equip students with the concepts, principles and methods that are important in Economics. Higher level applied courses, with these course codes: 200, 300 and 400 include Islamic Economics, Development Economics, Behavioral Economics, Industrial Organisation, Money, Banking and Finance, Energy Economics, Tourism Economics, Monetary Economics, Public Sector Economics and Health Economics. Besides the compulsory 12-week Industrial Training stint, all economic students have to complete a research project. The annual intake is limited to between 40 – 50 students to allow for a more focused pedagogical input for and appraisal of the courses and students.

**Bachelor of Social Work with Honours [B.SW (Hons.)]**

The Bachelor of Social Work [Honours] which is a four-year degree programme offered by the School of Social Sciences aims at producing trained and competent generalist social workers. All new students will take the basic social sciences and the university requisite courses in their first year of study. After completing their first year, students will take the required core and elective social work courses. These courses are primarily divided into the different components, which include theory and methods in social work; social policy; and several other courses relevant to the situational-based contexts found in social work. All courses are coded 100, 200, 300 or 400 to reflect the levels of study. Students must undergo 900 to 1,000 hours of supervised practicum training and must accumulate at least 121 credit units to fulfill the graduation requirements. The annual intake for the programme is limited to about 50 students and all prospective students will also need to pass an interview.
Postgraduate education is receiving more attention and becoming more important for today’s world. Postgraduate education at USM is a journey which leads to promising opportunities to acquire requisite skills for achieving your academic goals. As one of the Research Intensive Universities in Malaysia, USM is highly committed to the authenticity of the kind of knowledge offered within postgraduate programmes.

Postgraduate education at USM comprises coursework, research mode and mixed mode programmes, where students incorporate both research and courses in their studies. With more than 40 years experiences of providing postgraduate education to more than 20959 alumni, USM’s degree in internationally well recognised. USM offers 13 PhD and Doctorate mixed-mode and coursework programme, 57 Masters mixed-mode programmes, 73 Masters Coursework programmes and 2382 of researchs fields.

Institute of Postraduate Studies
USM’s Institute of Postgraduate Studies (IPS) is the great lever of promoting and advancing postgraduate studies at USM. It paves the way for USM to be a trustable university for both national and international postgraduate students. IPS plays its role as a coodinator for all Schools and Centres of Excellence pertaining to the postgraduate studies in USM, as well as internationalising the higher education offered by USM.

IPS combines highly skilled staffs and efforts to advance higher education in 45 Schools and Centres of Excellence, residing at USM’s main Campus in Minden, Penang Island; Engineering Campus in Seri Ampangan,Nibong Tebal, Penang; Health Campus in Kubang Kerian, Kelantan and IPS USM@KL in Kuala Lumpur.

USM as a research-oriented university, delegates at IPS to serve as its focus for the development of skills, both at specific and generic level, which are regarded as being fundamental to the quality of the postgraduate experience at USM. Postgraduate students should not only be trained in their disciplinary knowledge; they are supposed to have a deep analytical skills and capacities that allow them to navigate a variety of careers and adapt to changes after graduation to contribute to the economic growth and societal development.

Therefore, IPS has established Postgraduate Academic Support Services (PASS) to create a brightening path for postgraduate students to develop their research and soft skills.

Support services given by PASS include:
• Professional and Personal Development Programme (PPD)
The Institute of Postgraduate Studies (IPS) has introduced a comprehensive range of workshops under the Professional and Personal Development Programme (PPD) to ALL postgraduate students. The workshops are conducted systematically through course offerings that span a holistic range of knowledge and skills, such as Responsible Research Conduct, Research Environment, Research Conduct, Research Management Skills, Academic Writing and Publishing, Oral Communication, Personal Development, Research Skills, and many more.

Through structured training programmes, USM provides and increasing number of opportunities to develop and imporove your research and transferable skills. The courses aim to increase students’ knowledge, soft skills, ability, and credibility to develop them, such that to enable them to compete and progress both academically and in their future workplace. The workshops will connect participants in a combination of instructive and interactive individual and group activities to obtain a better learning environment and outcome.

• Advisory Services
Advisory services are provided free of charge to ALL postgraduate students of USM. They are provided by committed academicians with years of experience, this includes immediate access to growing wealth of techniques and methodologies in statistical analysis and thesis-writing styles.

1. Statistical Advance: appropriate statistical methodology, analysis, and interpretation of Results.
2. Editorial Advice: all aspects of thesis writing skills, such as referencing styles and writing styles in line with IPS requirements, and Bahasa Malaysia and English language editing advice for your thesis, papers and articles for publication.

Willing to apply for USM?
Based on USM’s forty years of experience in educating postgraduate student, we can certainly reassure students that USM is one of the most correct options amongst world-class universities. Students intending to apply for USM’s postgraduate studies will need to hold a related Bachelor’s Degree from recognised universities for institutions.

Enthusiastic students can also be on the Fast-track to a Ph.D. programme from a Bachelor’s Degree, while getting awarded with a USM Fellowship. Holders of a Bachelor’s Degree with CGPA 3.67 can take the opportunity to directly apply for candidature as a Ph.D. student at USM.

On the other hand, applicants for USM's Ph.D. programme are generally expected to have obtained their Master’s degree from recognised universities or institutions. More information, regarding what is required when applying for postgraduate studies in USM, is provided at www.ips.usm.my

Besides, postgraduate students can apply for a wide range of schemes of financial assistance offered by IPS. Here are some of the funds that prospective students can apply for:
• Vice-Chancellor Award
• USM Fellowship
• USM Global Fellowship
• Bridging Fund
• Graduate Assistant
• IPS Graduate Fund
• TWAS-USM Post Doctoral Research Fellowship
• Research University Postgraduate grant (USM-RU-PGRS)
Details of the schemes (and many more schemes), as well as the information on how to apply for these funds, and the requirements are provided at IPS’s website www.ips.usm.my

USM Postgraduate Student Ambassador Programme
The Institute of Postgraduate Studies, Universiti Sains Malaysia, has initiated an interactive programme to bridge the University and international students through the setting up of the USM Postgraduate Student Ambassador Programme in March, 2009.

Prospective students can easily contact student ambassadors representing 53 countries. Thus, do not hesitate to contact USM’s student ambassadors since they are expected to introduce USM’s postgraduate life to their fellow countrymen via various activities and platforms.

IPS Welcomes

If you need further information, do not hesitate to contact us. You can reach us by e-mail, telephone, or talk to IPS’s officers during office hours.

For further enquiries, please contact:

Dean
Institute of Postgraduate Studies
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USM INTERNATIONAL MOBILITY & CAREER CENTRE (USM-IMCC)

MISSION AND HISTORY
Universiti Sains Malaysia (USM) established in 1969, is a comprehensive research university with 5 campuses, 24 Schools, 14 Centers and 7 Units. The academic programmes are offered through its school system that allows students to combine subjects from a few schools and organize courses in such a manner that a degree of specialization in a chosen field is possible.

USM International Office (IO) was established in 1986 that offers various Study Abroad Programmes to international students. We would like to welcome students to join the exchange programme and experience living in Malaysia, a diverse country that is rich in cultures and a great hub for travelling to other South East Asian countries.

The Study Abroad Programme provides students the opportunity to study for as long as two semesters at USM. USM is one of Malaysia’s leading University situated in one of the UNESCO World Heritage Site (since 2008), in the state of Penang. Coming to USM would allow you to experience first class education in the best studying environment and discover a nation known throughout the world as being ‘truly Asia’.

STUDY ABROAD PROGRAMME
USM International Office offers a wide range of Study Abroad Programmes for local and international students. These programmes are offered to all undergraduate, postgraduate as well as the staffs of USM. With more than 150 partner universities to choose from, students can undergo once in a life time experience as an exchange students across the globe.

Local students can visit our office during the consultation hours to get more details of Student Abroad Programmes as well as opportunity for financial assistance from USM and our partner universities.

International students form our partner universities can download forms on the right side of this page to apply.

USM, a university in a garden offers 5 star higher education to students across the globe with international students of more than 50 nationalities currently register at USM.

Kindly contact us during office hours at USM International Career & Exchange (USM-IMCC):

Monday - Thursday
08:10 AM - 01:00 PM
02:00 PM - 05:15 PM

Friday
08:10 AM - 12:15 PM
02:45 PM - 05:15 PM
Close On Saturday, Sunday And Public Holidays, Sundays
RESEARCH INSTITUTES, CENTRES & UNITS
Advanced Medical and Dental Institute (AMDI) had a humble beginning in 2002, upon receiving the formally approved memorandum from the Ministry of Education to set up an institute. AMDI was established with novel and unconventional approaches that lead to the development of cutting-edge advanced research, innovative postgraduate programmes in the areas of medicine, dentistry and health sciences and tertiary healthcare services. Clusters have been set up by AMDI to spearhead the academic and research activities in the area of Lifestyle Sciences, Oncological & Radiological Sciences, Regenerative Medicine, Infectomics, Integrative Medicine and Craniofacial & Biomaterial Sciences.

Research

AMDI is equipped with facilities to conduct research in the fields of medicine and dentistry. The core activities of AMDI focuses in on the elements of advanced translational research. In order to achieve this, AMDI has the latest and most advanced research facilities. These top notch facilities include Laboratories, Animal Research Complex and Clinical Research Complex.

Academic

AMDI aims at training and producing highly qualified clinical specialists and scientists. We offer two unique programmes in Malaysia that are only offered at AMDI which are the Masters of Medicine (Transfusion Medicine) and (Nuclear Medicine). The graduands from these programmes will serve as Transfusion Medicine specialists and Nuclear Medicine specialists. The research-mode programmes include Master of Science and Doctor of Philosophy which spans across health, medical and dental research areas. In addition, AMDI offers one-year mixed mode programmes which include the Master of Science (Oral Science), Master of Science (Health Toxicology), Master of Science (Medical Research), and Master of Science (Transfusion Science).

Clinical Services

AMDI offers a comprehensive range of clinical services. Oncology, General Surgery, Paediatrics, Otorhinolaryngology, Ophthalmology, Orthodontics and Prosthodontics are among the speciality services that are offered in order to cater to the needs of the community in the Northern Region of Peninsula of Malaysia. The Clinical Trial Complex is well-equipped with state-of-the-art facilities and equipments for Advanced Diagnostic Imaging and Laboratory Testing and intervention such as radiation therapy (EBRT, IMRT & Brachytherapy) and chemotheraphy.

Industry & Community Linkages

AMDI has had an overwhelming reception to provide the community in Kepala Batas regardless of any issues focusing on healthy lifestyle and healthcare services. The division of Industrial and Community Linkages has been assigned to be responsible in developing community involvement programmes and sustainable industry for the benefit of AMDI, the community and Industry.

List of Management & Cluster Heads

www.amdi.usm.my

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Cluster Head

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**Regenerative Medicine Cluster**
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Analytical Biochemistry Research Centre (ABrC) was established on 1 January 2016. It was formed with the integration of expertise from both Doping Control Center (DCC) and Centre for Advanced Analytical Toxicology Services (CAATS). The vision of the centre is to “become a centre of excellence and to lead the education, research and services in the field of biochemical analysis”, and the mission is “meeting the needs of the stakeholders through the delivery of science, research and service by utilizing the latest technology, dedicated staff, conducive working environment and a strong network of cooperation towards a sustainable well-being society”. To achieve this, three main objectives were established:

(1) Service

Our main strength is the diversity of analysis using mass spectrometry. Various analytical techniques are provided to government and private agencies monitoring program for regulatory purposes, forensic testing and research. ABrC is an ISO/IEC 17025 accredited laboratory under National Association of Testing Authorities (NATA), Australia. As an accredited laboratory, ABrC conducts analysis according to the highest quality standards and guidelines, as outlined by NATA. This quality system is essential for protecting both the client and the laboratory for any adjudication process. NATA accreditation benefits ABrC by instituting appropriate laboratory standards, thereby providing the laboratory with a benchmark for maintaining its quality and performance. The range of services is:

- **Workplace Safety**
  - Alcohol confirmation in blood
  - Confirmation and quantification for cannabinoids / barbiturates / cocaine / opiates / benzodiazepines / amphetamines / methadone / propoxyphene / phencyclidine / ecstasy / ketamine in urine
  - Determination of amphetamine isomer

- **Environmental Toxicology**
  - Analysis of polychlorinated dibenzo-dioxins (PCDDs), polychlorinated dibenzo-furans (PCDFs) and polychlorobiphenyls (PCBs)
  - Cadmium analysis (cadmium in urine, cadmium in blood & cadmium in membrane cellulose ester)
  - Creatinine and beta -2-microglobulin analyses

- **Food Safety**
  - Determination of 3-monochloropropane-1,2-diol in food (3-MCPD)
  - Determination of b-agonists / chloramphenicol / nitrofurans / metabolites / polycyclic aromatic hydrocarbons / steroid and stilbene / dyes / anthelmintic drugs / in food and agricultural materials
  - Analysis of melamine in food

- **Biochemical and Metabolic analyses**
  - Analysis of growth promoter in animal feed sample
  - Analysis of nitrofuran in agricultural materials
  - Analysis of acrylamide in aqueous and food
  - Analysis of target compound - aristolochic acid / glucocorticosteroid / sildenafil / tadalafil
  - Analysis of polychlorinated dibenzo-dioxins (PCDDs), polychlorinated dibenzo-furans (PCDFs) and polychlorobiphenyls (PCBs)

- **Biochemical and Metabolic analyses**
  - Analysis of amino acid and acylcarnitine in newborn screening

(2) Training

The centre is fully equipped with different mass spectrometers, such as LCMS QQQ or GCMS QQQ, LCMS Q-TOF, MALDI-TOF, MALDI TOF/TOF, LCMS LTQ Orbitrap, etc. It is our vision to be a platform for training skilled workers who are competent in the field of analytical biochemistry through education and research. In this term, the centre offers postgraduate study as well as in-house/industrial training (by request). Among the topics of training are:

- Biochemical analysis
- Environmental biochemistry
- Environmental toxicology
- Food biochemistry
- Forensic toxicology
- Genomics
- Glycomics
- Lipidomics
- Metabolomics
- Proteomics

(3) Research

The centre is also supporting the research and development (R&D) in the particular field of analytical biochemistry and therefore collaborative research with different industries and academic organizations is well encouraged. Currently, we have academicians and several senior science/research officers, who are supporting such activity. Our target is to be a global recognized research centre through high impact factor publications and research collaborations.
ANIMAL RESEARCH AND SERVICE CENTRE

Animal-based research in Universiti Sains Malaysia (USM) has started since 1986 in line with the establishment of an animal resource facility known as the Animal House Unit. Initially, this unit was managed by the Pharmacology Department, School of Medicine in USM Penang. However, in 1990, the Animal House Unit was relocated to Kubang Kerian, Kelantan following the establishment of the School of Medical Sciences in Health Campus. In 1995, animal-based research and teaching activities in USM Penang were resumed in a new building of animal house. This new facility was co-managed by the School of Biological Sciences and School of Pharmaceutical Sciences.

In 2005, the management of the Animal House Unit in Health Campus was placed under the purview of the Director’s Office to better serve the animal-based biomedical research community. The facility was then renamed the Laboratory Animal Research Unit (LARUSM).

With the conferment of APEX university status to USM and the increase demand for better quality animal research and teaching facilities, the Animal House in USM Penang was upgraded and rechristened the Animal Research and Wellness Unit (ARWU) in 2009. Subsequently, the administration of ARWU was taken over by the Research Creativity and Management Office (RCMO) to ensure that the facility was better managed in accordance with an acceptable standard.

In order to better coordinate the management and maintenance of both LARUSM and ARWU, the RCMO has proposed the establishment of an animal service centre for USM. This is to ensure that a comprehensive support and service for animal-based research and teaching can be efficiently provided under a single management structure. The proposal was discussed and then approved by the USM’s top management in 2010. Consequently, the Animal Research and Service Centre (ARASC) were officially established on January 1st, 2011. ARASC is headed by a director and currently consist of one animal facility each in USM Main Campus and Health Campus.

Products and Services

ARASC support the animal-based research community with the delivery of best practice and standard laboratory animal products and services:

1. Laboratory animal breeding and procurement.
2. Laboratory animal food, bedding, cage and medication.
3. Research animal placement and laboratory.
5. Veterinary and technical expertise to assist researchers in animal handling and management.
6. Animal carcass disposal service.
7. Necropsy service and sampling for testing.
8. Treatment for sick/unhealthy animal housed in ARASC.

Note: Details on current pricing for animals and charges for services provided can be obtained by contacting us directly.

Further enquiries, please contact:
Animal Research and Service Centre (ARASC)
Universiti Sains Malaysia
Health Campus
16150 Kubang Kerian, Kelantan
Tel: 09-7671221
Fax: 09-7671222

Main Campus
Animal Research and Service Centre
Bangunan L15, Universiti Sains Malaysia, 11800 Pulau Pinang, Malaysia.
Tel: 04-6535227
Fax: 04-6535232
http://www.arasc.usm.my/
The Centre for Chemical Biology (CCB@USM) is a cutting-edge research centre that is borderless, colourless and genderless since its establishment in 2009. With a unifying motto for all its researchers — ‘researching molecules to appreciate life’ — CCB has been actively researching the secrets of life at the cellular and molecular levels. Equipped with state-of-the-art facilities, CCB aims to create a vibrant research environment that can promote transdisciplinary research to drive exciting research questions and, more specifically, to discover and utilize powerful molecules to gain a better understanding of selected biological pathways.

Research at CCB@USM

Research at CCB encompasses three major areas — Genes and Genomes, Structural Biology, and Chemical Biology — that complete the pipeline of chemical biology research ranging from the genome of an organism to the potent molecules it produces. Together these three areas constitute a dedicated and comprehensive approach to discovering exciting chemical entities, many of which possess the ability to unravel important biological pathways.

One of the major achievements by CCB is the decoding of the rubber genome in 2013, providing invaluable information that will facilitate the development of high-yielding rubber clones. CCB has also sequenced the genome of an Aureispira bacterium isolated at a beach near Queensbay Mall, Penang, which preys on other bacteria and interestingly also produces the important fatty acid arachidonic acid. In addition, CCB has been intensively isolating microbial species for natural metabolite studies, including several unique bacterial strains from mangrove soils. On the other hand, several 3D structures of enzymes from the bacteria isolated at CCB have also been solved, such as an α-amylase which displays an industrially desirable characteristic that does not require Ca2+ supplement for its activity.

The main research topics that CCB is currently pursuing include the following:

- In-depth resequencing of the rubber genome
- Rubber transcriptomic analysis on latex production and diseases resistance
- Metagenomic analysis of mangrove soils
- Structural and functional studies of industrially related enzymes
- Discovery of novel metabolites from microorganisms
- Whole-organism screening of small molecules
- Molecular and genetic studies of medically and economically important pest insects

Facilities at CCB@USM

CCB was created not only with a focus on functionality, atmosphere and comfort, but also with providing a conducive research environment for researchers and particularly students in mind. Upon its conceptualization in the beginning of 2008, renovations of CCB’s new home began in November 2008 and were fast-tracked for completion within three months. After being endorsed by the Ministry of Higher Education on 3 February 2009, CCB became one of the first occupants at the Science and Arts Innovation Space (SAINS@USM). To date, CCB has housed over 50 students, postdoctoral researchers, faculty members and administrative staff, and is still growing.

Highlights of CCB’s facilities:

- Next Generation Sequencing Research
- Altix 450 high performance server and Dell servers to accommodate computationally demanding processes and to share information with collaborators around the world
- X-ray diffraction system for structure determination of biomolecules such as proteins
- Liquid chromatography systems for protein purification
- BIOLOG for phylogenetic analysis of microbial samples

Utilising the in-house knowledge and facilities, CCB has started offering next-generation sequencing services since last year, in addition to the presently available services for DNA sequencing, microbial identification, real-time PCR and protein X-ray crystallography.

For more details, please contact:

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The Centre for Drug Research (CDR) was established in 1985 to undertake research in socio-medical, clinical, pharmacological and health areas that require resources and facilities crossing academic and professional boundaries. Research focus is on major health issues-drug-dependency and tropical health particularly indigenous diseases. Both basic and applied studies are conducted to attain proper understanding of and the eventual resolution of these health problems. In fulfilling national needs, CDR undertakes research to generate new knowledge on non-medical and illicit use of drugs and to ensure effective dissemination and use of the research results to reduce drug abuse, improve addiction prevention, treatment and policy.

The Centre collaborates with various agencies of the Federal and State Governments in its efforts under youth outreach programmes, to organise talks on the dangers and adverse health effects of abusing drugs, promoting drug-free lifestyles, as well as preventive approaches for the drug abuse problem.

CDR also collaborates with international bodies such as UNICEF, UNODC, Reckitt Beckinser (UK), Open Society Institute (Switzerland), Yale University (USA), University of Erlangen (Germany) and University of Newcastle (UK), King’s College (UK), Uppsala University (Sweden) to execute research and training projects on behalf of these bodies.

Among the awards and recognition attained by the Centre are:

- Designated as one of the Higher Institutions’ Centres of Excellence (HiCoE) by the Ministry of Higher Education, Malaysia, with the niche area in behavioural research in addiction
- Recognition by USM as having World-Class Research Programmes
- Recognition as a Bionexus Partners Laboratory Unit by Malaysian Biotechnology Corporation (an agency under the purview of Ministry of Science, Technology and Innovation, and is owned by the Minister of Finance Incorporated, Malaysia)

The Centre’s research activities are focused on the following themes. Drug discovery activities are focusing on the discovery of new lead compounds from natural resources. Lead optimisation is performed using knowledge-based modification of lead compounds. Toxicology, pharmacokinetics and drug metabolism screenings are conducted using in-house facilities. Behavioural research offers activities for understanding behavior and its neural underpinnings. Blood brain barrier offers model to study the transport mechanisms of psychoactive drugs and assess the impact of disease condition on the transport mechanisms.

The Centre has a number of exciting research projects that impact many important areas including:

- Drug discovery and development of potential psychoactive compounds for the treatment of drug addiction and chronic pain from selected local plants
- Drug design and synthesis of new pharmacologically important agents for the treatment of drug addiction.
- Clinical pharmacokinetic, metabolism and pharmacological studies
- Biological activities of herbs and synthetic compounds for analgesics, anti-infectives and psychoactives activities
- Developing medication assisted treatment (MAT) for drug use disorders
- The emergence of new psychoactive substances (NPS): Prevalence and risk –associated with NPS use in Malaysia
- Quality assurance and bioequivalence study of pharmaceutical products
- Behavioural research on natural and synthetic compounds
- Blood brain barrier research on psychoactive compounds

The Centre possesses various research facilities in its laboratories. Analytical laboratories are well equipped with instruments that are capable of analyzing any chemicals, drugs and xenobiotics, qualitative and quantitatively, with accuracy and precision to nano level measurement. Structural characterisation and elucidation can also be studied. Drug discovery and development laboratories offer natural product extraction/isolation, organic synthesis and ADME/ toxicity screening. A comprehensive range of solutions for clinical trial and bioequivalent studies including protocol writing, case report form design, data management and report writing are available. CDR laboratories are equipped with behavior study-related instruments such as open field exploration, passive avoidance and condition place preference. Stereotaxic equipment is available to locate structures in the brain by means of coordinates. Tissue culture laboratories hold facilities to conduct various cell-based assay and protein expression. The computer facilities host computers and workstations equipped with various data management and biostatistical software, as well as drug design and simulation software packages.

CDR also provides practical training to post-graduate students who undertake graduate work leading to a higher degree.
Academic Staff

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CETREE&GT also collaborates with the following organisations for consultation:

- Ministry of Energy, Green Technology and Water (KeTTHA)
- Ministry of Education Malaysia (MoE)
- Ministry of Science, Technology and Innovation (MOSTI)
- Sustainable Energy Development Authority (SEDA) Malaysia
- Green Foundation Malaysia (YaHijau)
- Malaysia Green Technology Corporation (MGTC)
- Malacca Green Technology Corporation (MGTC)
- National Science Centre
- Malaysian Institute of Teacher Education
- Sime Darby Plantation
- PHILIPS
- Danida
- Malaysian Astronaut Foundation
- Petroscience
- Sabah Electricity Sdn. Bhd. (SESB)
- Denmark’s Development Cooperation (DANIDA)
- Elsbett Engineering Germany
- National Kaohsiung University of Applied Science, Taiwan

The Centre for Archaeological Research Malaysia, established in 1995, was officially launched by the Honorable Minister of Higher Education Malaysia in 2009 as the Centre for Global Archaeological Research (CGAR) in recognition of its global contribution. CGAR is the only one in the country which offers a minor package in archaeology at Universiti Sains Malaysia. We are actively training new students from the field of arts and pure sciences, and staff from other universities, the Department of National Heritage, Museum Departments and other relevant institutions in various aspects of archaeological research and work.

CGAR has a multi-disciplinary team of archaeologists who are actively involved in archaeological research throughout the country. We have contributed a considerable amount of new knowledge on the prehistory of Malaysia and Southeast Asia with major discoveries. In 1998, the centre was instrumental in the establishment of a consortium between Universiti Sains Malaysia and Silpakorn University of Thailand, Universitas Gadjah Mada of Indonesia and University of Philippines which introduces joint training courses and research activities in the field of archaeology. In mid 2011, the centre collaborated with Universitas Sumatera Utara (USU), Indonesia to enhance the quality of research activities between the two organizations. In 2002, CGAR celebrated its 25th year of archaeological research in Malaysia. In conjunction with the event, the USM Archaeological Gallery and the Earth Material Characterisation Laboratory (MPBB) were launched to strengthen the role of the centre as a leader in archaeological research in Malaysia. Furthermore, starting from 2012, the book of “Inaugural Archaeology Series” is published periodically based on the latest research evidence. Besides these publications, CGAR also launched the “Sahabat@Arkeologi” programme to train and upgrade knowledge and technical skills of the National Heritage Department and museum staff, both national and international, in the field of archaeology. To provide advisory and consultancy services in the preservation and conservation of cultural heritage through research, establishment of exhibitions and museums and HIA (Heritage Impact Assessments) studies.

**Research Activities**

The centre adopts multi-disciplinary research approaches through cooperation with local and foreign researchers from Southeast Asia, China, India, Bosnia Herzegovina, Japan, Australia, the United Kingdom, the United States of America and Pakistan.

The intensive research programme of the centre has extended the knowledge of prehistory in Malaysia to more than 1.83 million years with the discovery of Bukit Bunuh, Lenggong, Perak in 2009. Other important sites discovered include Bukit Jawa (about 200,000 years ago), Kota Tampan (74,000 years old Lithic workshop), and Gua Harimau (a burial site with the earliest evidence of Bronze Age technology in Malaysia). The centre’s research activities in Sarawak (Kakus, Bau and Niah) and Sabah (Bukit Tengkorak, Melanta Tutup, Bukit Kamiri, Balambangan, Tingkayu, Mansuli, Samang Buaat, Kinabatangan, Bingkor, Keningau and Marudu) have also yielded exciting new results and data to both the Malaysian and Southeast Asian prehistory.

Recent archaeological research in Sungai Batu, Bujang Valley, Kedah has also provided many significant discoveries in 2007. To date, the excavations at Sungai Batu have unearthed archetype structures such as a ritual monument, iron smelting sites, riverside jetties and administrative building. These structures have been dated to as early as the 5th Century BC, putting Sungai Batu as the earliest civilization in Southeast Asia. The findings of seven in-situ iron smelting furnaces in Jeniang, which is located 40 kms to the northeast of Sungai Batu, revealed that the Lembah Bujang civilization covered an area larger than what was initially thought. Sungai Batu has been declared a National Heritage Site in year 2013.

In short, the centre’s research activities have generated more than 90% of new data and knowledge on the prehistory of the country and contributed towards rewriting many sections of the Malaysian prehistory through revised interpretations of numerous earlier works carried out during the colonial times. The centre is also in the process of updating the archaeological data for Lembah Bujang, especially in Sungai Batu’s protohistory chronology.

**Consultancy**

We have offered our expertise to various consultancy projects and a few highlights as in the following. We were...
involved in various Environmental Impact Assessment (EIA) projects such as the Bakun Hydroelectric Project and the Cultural and Archaeological Impact Assessment in Murum Dam, Belaga in Sarawak, and the preparation of the World Heritage Site nomination for the Lenggong Valley in 2009-2010.

More recent highlights,

- Survey and archaeological mapping at the Penang State Museum to trace the old museum site that was destroyed during the 2nd World War (Phase I), sponsored by Arkitek Urbansima Sdn.Bhd., 2013.
- Restoration of the wall painting at Boon San Tong Khoo Kongsi (Phase I), sponsored by the Trustees of Boon San Tong Khoo Kongsi, Penang, 2013.
- Earth Characterization Analysis for Universiti Teknologi MARA in Perlis, Universiti Malaysia Sabah (UMS) in Sabah, Polis DiRaja Malaysia (PDRM), Bukit Aman, Jabatan Mineral and Galian (JMG) in Johor, 2015.

In addition, the centre is also actively involved in organizing numerous archaeological exhibitions at local museums such as Perak Museum, Miri Museum, Sarawak and Terengganu Museum. Some of our findings have found their way into international exhibitions such as the exhibition on Early Man held at the National Science Museum in Tokyo, Japan. Our research has also led to the establishment of archaeological museums in the country such as the Lenggong Archaeological Museum in Kota Tampan, Lenggong, Perak, the Megalith Park in Putrajaya and the Bukit Tengkorak Archaeological Gallery in Semporna, Sabah.

Public Education

The centre has been actively promoting and creating public archaeological and cultural heritage awareness in Malaysia through newspapers, TV programmes and talk shows, on local and foreign media (The London Times, Asia Week, Discovery Channel, and History Channel), as well as engaging public talks in universities, schools and public groups. New knowledge on Malaysian archaeology is also shared with the public through school textbooks, encyclopedia and archaeological seminars and conferences. Recently, we organized the Festival of Kedah Tua and Kedah Tua International Conference (2016) that have brought forth international researchers to Kedah, which have fostered research interests and generated new links and ideas for joint research. The event also brought the latest findings in Sungai Batu Archaeological Complex back to the local communities, which encourages the cherishment and preservation of our cultural heritage.

Courses offered in Archaeology

We have a minor package programme with elective/optional courses in archaeology offered to all undergraduates in USM. The syllabus covers Introduction to Archaeology; Ascent of Man and Civilisation; Archaeological Excavation; Science in Archaeology; and Southeast Asian Archaeology. Students are offered site visits and excavations as well as hands-on work in the laboratory for a more complete understanding of evidence gathering, environment reconstruction and archaeological interpretations.

For postgraduate studies, we offer both M.A. and Ph.D. degrees in Archaeology. We have strong collaboration links with numerous international universities (ASEAN region, Japan, Australia, the United States of America and the United Kingdom) that provide appropriate and thorough postgraduate training in areas most relevant to our needs. For further information, please visit: https://arkeologi.usm.my/
Universities everywhere are beginning to realize that their roles too are changing rapidly in a world which is being globalised at an astounding rate. Convinced that building capacity for making decisions that considers the long-term future of economy, ecology, and equity is a key task of education, Universiti Sains Malaysia (USM) has embraced the vision of becoming a sustainability-led university of world-class standing as part of its APEX initiative. In response to these needs, the Centre for Global Sustainability Studies – CGSS@USM was officially launched on 14th of December, 2009 by the Minister of Higher Education, Malaysia, the Honorable Dato’ Seri Mohamed Khaled Nordin. CGSS@USM, by design avoids unnecessary and costly duplication, fills gaps and promotes synergies. In the complex exercise of sustainability mainstreaming at USM, the Centre is dedicated to the task of coordinating all efforts as an absolute necessity demonstrated by many other universities globally. Hence, its key roles are as follows:

- To serve as a forum for dialogue and creative new ideas.
- To serve as a hub for the international community of scholars.
- To serve as a bridge between the national and international academic community on one hand and the policymakers, the corporate sector and civil society on the other.
- To play the role of catalyst, partner or lead agency in facilitating interdisciplinary initiatives such as solution oriented research needed for the promotion of sustainability studies.
- To contribute to capacity building through innovative curricular changes, particularly in Malaysia and the developing countries, focusing on individual, institutional and systemic capacity concerns.
- To internalize the power of the principles and practices of education for sustainable development as the best means for building capacity and changing the mindset necessary for the sustainability transition envisioned by USM-APEX.
- To carefully profile and position the Centre to be a leader in SD/ESD matters by bring about institutional changes at various levels.
- To promote synergy by consciously avoiding duplication, filling gaps and promoting team spirit.

CGSS@USM is structured based on the following key result areas (KRAs):

- Teaching and Training
- Research, Innovation, Knowledge Transfer and Publication
- Community Engagement

Research

Since its inception, CGSS has been actively involved in a number of research projects. The more recent ones include:

- Disaster Risk Management: A development of Disaster Preparedness Model for Hospital towards Sustainable Development
- Governance for Disaster Risk Reduction: Integrated Governance Approaches to Flood Disaster Management in Malaysia Using Risk Reduction Tools Leading to Sustainability Development
- Melestarikan Pengangkutan Awam di kawasan Eko-Pelancongan
- A Heuristic Evolutionary base Model for Flood Disaster Logistic Scheduling
- Kajian Kesedaran Golongan Belia Pulau Pinang Terhadap Kelestarian
- Investigation of artificial intelligence in influeneing human cognitive the for sustainable development in education
- Morphometric analysis and the application of molecular techniques in solving phenotypic plasticity of Reshia bitubecularis (subfamily Rapaninae : Family Muricidae) inferred from mtDNA COI and 16S for future sustainable food security
- Membentuk Model Pemantauan Menggunakan Sistem Informasi Geografi (GIS)Untuk Memperkasa Golongan B40 Menjelang Wawasan 2020
- Penilaian Semula Program 1AZAM Kerajaan Pusat dalam Kalangan Penduduk Miskin Bandar

Teaching and Training

With regard to the formal curriculum, a programme and a course – both with a specific focus on sustainable development, have been developed. Additionally, training exercises have also been developed and implemented. Teaching and Training initiatives include:

- Master’s in Sustainable Development Practice (MSDP) – Course Work Mode : CGSS@USM in conjunction with Columbia University's
As a research centre, CGSS@USM has introduced and offer the research mode courses on sustainability as follows:

a. Master of Science (Sustainability)
b. Master of Arts (Sustainability)
c. Doctor of Philosophy (Sustainability)

WSU 101: Another achievement by CGSS@USM with regard to formal curriculum development is the introduction of the elective sustainability course WSU 101 (Sustainability: Issues, Challenges and Prospects). This course emphasizes the implementation of sustainable development through the study of global case studies and examples drawn from sustainability programmes from around the world. At the end of the course, students are expected to demonstrate their level of sustainability understanding through group projects. Additionally, this course aims to expose students to the latest developments in the sustainability studies agenda while nurturing the skills needed toward developing sustainability-oriented programmes.

Minor on Sustainability: CGSS has introduced a Minor in Sustainability to undergraduate students beginning from academic session 2015/2016. Five schools are involved in offering courses on the minor in sustainability studies.

Publication


Knowledge Transfer / Services

South East Asia Sustainability Network (SEASN): For the first time university under CGSS@USM representatives from ASEAN countries congregated to discuss the direction and planning for future sustainability. SEASN was established to promote sustainability in the field of higher education, NGOs, industry and various agencies in South East Asia. It also aims to share information and best practices in the field of sustainability between education institutions and other organizations.

Disaster Risk Management – Sustainable Development (DRM-SD) Training: DRM-SD training is organized by CGSS@USM to bring together multiple stakeholders to explore ways to minimize the risk posed by natural hazards before it is realized as disaster. The integration of disaster
risk management into sustainable development policies and practices by enhancing stakeholder capacity for intervention.

- **Sustainability Assessment Methodology (SAM)**: CGSS provides a service to determine the sustainability in any document (eg: annual reports, thesis etc) by using Sustainability Assessment Methodology (SAM) to the USM community and the public.

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<thead>
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http://cgss.usm.my
Centre for Herbal Standardization (CHEST) is located at Science & Art Innovation Space (sains@usm), provides a platform where natural products drug discovery guided by traditional knowledge can be accomplished. CHEST is the leading centre in USM with the state-of-the-art facilities to focus in herbal research and services. This centre offers best-in-class platform for herbal standardization where the practise of good quality assurance lead to the development of herbal products which are of high quality, safety and efficacy. In the last five years, CHEST has placed increasing emphasis in providing solutions and benefits to various corporate as well as government sectors. CHEST is one of the research institutions, local universities and government agencies in Malaysia which was given the responsibility to develop Malaysian Herbal Monograph. The monographs serve as a comprehensive reference and provide requisite information in its bid to increase the value of local herals. In turn, this would elevate the status of the Malaysian herbal industry.

Vision
To be the world leader in herbal service provider, research and development.

Missions
To lead in research & services in the aspect of quality, safety and efficacy of herbs.

To achieve recognition in quality laboratory management system. To contribute towards higher national sustainable development by nurturing herbal research expertise.

Values
QUALITY Create and expect excellence.

INTEGRITY and HONESTY Be honest and have integrity in all we do.

PASSION Be passionate, positive and proud with our roles.

ACCOUNTABILITY Honour expectations and obligations.

PROFESSIONALISM It is our priority.

CHEST is devoted to providing services that consistently meet high quality and performance standards.

The following are a comprehensive range of services offered by CHEST.

Herbal monograph development services
-The purpose of the monographs is to provide scientific information on the safety, efficacy, and quality control / quality assurance of widely used medicinal plants, in order to facilitate their appropriate use.

Analytical services
- Stability study

- To provide evidence on how the quality of an active substance or medicinal product varies with time under the influence of a variety of environmental factors such as temperature and humidity.

- Drug-drug & herb-drug interaction

- Important safety and regulatory issues may occur through inhibition or induction of drug metabolizing enzymes.

- Extraction and isolation/fractionation services

- Purification of chemical substance(s) of interest from plant extracts.

- Physicochemical testing

- Elemental analysis using Carbon Hydrogen and Nitrogen (CHN) analyzer

- Differential Scanning Calorimetry (DSC) analysis

- Thermogravimetric analysis (TGA)

- Spectroscopic

- Ultraviolet–Visible (UV–VIS) Spectroscopy

- Fourier Transform Infrared (FTIR) Spectroscopy

- aman Spectroscopy

- Chromatographic

- High–Performance Liquid Chromatography (HPLC)

- High–Performance Thin-Layer Chromatography (HPTLC)

- Liquid Chromatography–Mass Spectrometry (LCMS)

- Gas Chromatography–Mass Spectrometry (GCMS)

- Mass spectrometric

- Flow Injection–Mass Spectrometry (FIMS)

Contact Information
You are welcome to enquire our customer service for service pricing and details. Our team is committed to your success.

SAINS@USM
Ground Floor, Block B
No 10, Persiaran Bukit Jambul
11900 Bayan Lepas
Pulau Pinang, Malaysia
&604-653 5542/5568
www.chest.usm.my
The Centre for Islamic Development Management Studies, or ISDEV, was founded in 1995 at the School of Social Sciences, Universiti Sains Malaysia, Penang, Malaysia. Its name evolved from the original International Project for Islamic Political Economy (IPIPE), to Islamic Development Management Project (IDMP) in 1997, and finally, to its current name, Centre for Islamic Development Management Studies (ISDEV) in September 2005. The Centre has been upgraded to a Research Centre of Excellence in 2014 and ever since operates independently of the School of Social Sciences.

As a research and educational centre, ISDEV gathers its academic members from various disciplines and schools within the University. It aims at pioneering an initiative to broaden the field of Islamic development management beyond its current scope that confines to development and management per se. Instead it adopts a trans-disciplinary approach to development and management, integrating social, economic, and political tools of analysis to understand development management in an integrative and holistic manner based on Islamic principles.

ISDEV attempts to accomplish this objective through research and consultancies, publications, supervision of graduate students, and organisation of academic meetings such as conferences, seminars, workshop, in-house seminars, and study groups, as follows.

Research and Consultancies (On-Going)
- Islamic-Based Development, consisting of five Clusters: The Mould and Index of Islamic-Based Development, Istibdal Waqf, Islamic Corporate Social Responsibility, Politics of Islamic-Based Development Strategies, and Human Development Management in Islamic Development Institutions
- The Arts of Reasoning in Islamic Research Methodology
- Agricultural Zakat Accounting of the Agro-Entrepreneurs in Malaysia
- An Analysis of Quality Management in Islamic Development Institutions in Brunei Darussalam
- Tasawur of Islamic-Based Development: A Study of Hadith in Sahih Al-Bukhari
- Application of Rukyah and Hisab in Southeast Asia
- Indicators of Development, Players in Islamic Sustainable Development Index
- Integrated Crowd and Health Management System
- Policies of Islamic-Based Development in the Context of Zikir Nation in Brunei Darussalam (in collaboration with Universiti Islam Sultan Sharif Ali, Brunei Darussalam)
- Quality Management of the Islamic Development Institutions in Brunei Darussalam (in collaboration with Universiti Islam Sultan Sharif Ali, Brunei Darussalam)
- Application of Istibdal Waqf in Development: A Comparative Study of Brunei Darussalam and Malaysia (in collaboration with Universiti Islam Sultan Sharif Ali, Brunei Darussalam)
- Sustainable Development Planning in Islamic Perspective (in collaboration with Universitas Islam Bandung, Indonesia)
- The Development of Workplace Financial Education for Civil Servants Using Islamic Financial Planning Approach (in collaboration with Universiti Sains Islam Malaysia)

Publications (2014)
- 65 ISDEV Paper Series
- About 30 books especially with the cooperation of Dewan Bahasa dan Pustaka
- 16 Chapters in books
- 14 Journal Articles
- >100 Popular writings
- 9 Papers in Proceedings

Postgraduate Programs
- Master of Social Sciences (Islamic Development Management) by Mixed Mode
  - (Graduated: 79, On-Going: 71)
- Master by Research (Graduated: 1, On-Going: 4)
- PhD by Research (Graduated: 25; On-Going: 64)

Annual Conferences
- International Conference on Islamic Development Management (IDMAC)
- ISDEV International Graduate Workshop (INGRAW) (in collaboration with Institute of Postgraduate Studies, Universiti Sains Malaysia)
- International Workshop on Islamic-Based Development (WAPI) (in collaboration with Universitas Muhammadiyah Sumatera Utara)
- International Conference on Islamic Development (ICID) (in collaboration with Universitas Muhammadiyah Sumatera Utara)
- International Conference on Islamic-Based Development (KIPI) (in collaboration with Universitas Jember, Indonesia)
For details, please contact:

Director
Centre for Islamic Development Management Studies (ISDEV)
Universiti Sains Malaysia
11800 Penang
Malaysia

Tel: (6)-04-653 2656 / 3422 / 4601 / 5812 / 5813
Fax: (60-04-653 2124
E-mail: isdev@usm.my
URL: www.isdev.usm.my
http://isdevnews07.blogspot.com
The Centre for Marine and Coastal studies (CEMACS) was established in August 1991 to undertake research and postgraduate training in Marine Science and Coastal Ecosystems. It provides the institutional mechanism for mobilising and integrating the University’s considerable expertise and resources in marine science. The main objective of CEMACS is to enhance the capability of conducting integrated inter- and multi-disciplinary studies leading towards solving problems related to marine and coastal ecosystems.

CEMACS is located at Teluk Aling the northwest coast of Penang Island in the Penang National Park. The centre is served by a number of core academics working in collaboration with research associates identified from other teaching schools as well as from outside the University. The centre’s international associates include those from Canada, Australia, USA, UK, Japan, Cambodia, Indonesia, India, Iran, Australia, China, Singapore, Vietnam and Denmark. Associates of CEMACS are provided with the direct access to the Centre’s considerable research and training facilities. Presently, research and training conducted at the centre is focused on biodiversity and conservation of marine ecosystems, coastal forest ecosystems, mariculture and marine mammal ecology (dugong and dolphin).

**Research & Postgraduates**

CEMACS is an ideal permanent base for postgraduate studies and collaborative research as it provides marine and coastal field studies that offer unique coastal, marine and rainforest habitats and exceptional species diversity. At CEMACS, our thrust areas include:

- Study on Mangrove Ecosystems - Research on various aspects of the dynamics operating in this complex ecosystem such as biological productivity, estuarine hydrodynamics and nutrient fluxes.
- Marine Pollution and Toxicology - Research on the behaviour of environmental pollutants in the estuarine and coastal waters, and their effects on physiological status of marine organisms.
- Mariculture - Research on marine aquaculture of fish, seaweed, mollusk and crustacean for sustainability.
- Coral Reef Ecosystem - Research in monitoring, understanding and restoring coral reefs from the microbiology and genetics aspects and also reef processes and the effects of natural and man-made influences on the health and conservation of coral reefs.
- Integrated Coastal Zone Management - Research in the management of the coast using an integrated approach, regarding all aspects of the coastal zone, including geographical and political boundaries, in an attempt to achieve sustainability.
- Marine Sciences - Research in marine biodiversity, impacts and adaptation to climate change, water quality and ecosystem health.
- Biodiversity Conservation - Research in the theory and practice of ecological networks to conserve biodiversity; sustainable utilization and conservation of flora and fauna; biodiversity change and sustainable development.

**Facilities**

CEMACS is equipped with facilities such as teaching laboratory; wet laboratory; hatcheries for breeding of fish and other marine organisms; laboratories for microalgae cultivation; microbiology and media preparation. Most of the laboratories are supplied with high quality sea water, compressed air, standard laboratory equipments as well as computer facilities. These are particularly suited for studies on larval biology and seed production, experimental ecophysiology and ecotoxicology studies and mariculture.

CEMACS laboratories are well equipped with scientific equipments including various microscope systems; field equipments include fluorometer, echo sounder, water quality analysis instruments, current meter and global positioning system. For underwater research, the centre has several SCUBA diving equipments.

CEMACS has several boats for transportation and research purposes.

CEMACS has an extensive Marine Reference Collection and Museum with specimens comprising of mollusk, gorgonians, corals, echinoderms, fishes, crustaceans and herbarium collection of flora and fauna around the region.

CEMACS outstanding facilities can cater for programs such as training courses/workshops for groups up to 25 scientists and 60 students. Our conference room can accommodate up to 50 pax participants. Accommodation facilities include self-contained flatlets (25 pax capacity) as well as dormitories (60 pax capacity). This centre is also fully equipped with WIFI coverage for internet usage. Various softwares are available for research including Neural Network softwares for eco-modelling. Our cafe will be in operation during workshops/seminars and field courses.

**Funding**

Research in CEMACS has received funding support from both international and local agencies such as TEXCHEM Food Sdn. Bhd., Tenaga Nasional Berhad (TNB), ACIAR, DANCED, ASEAN-Australia, IPS of Sweden, IDRC, CIDA of Canada, Toray Foundation of Japan, SARCS/LOICZ, Netherlands Foundation for Tropical Research (WOTRO), UNDP-SG Programme, Wetlands International, Shell Malaysia, National Oceanography Directorate (NOD), Ministry of Science, Technology & Innovations (MOSTI) and USM grants.

For correspondence / Research & Information; please contact:

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http://cemacs.usm.my/ for more information
CenPRIS is a research centre, serving as the focus of the University’s efforts in applied social research, consultancy services and post-graduate supervision related to public policy and international studies. The Centre was established in 2007 from the amalgamation of two existing Centres of Excellence of the University: the Centre for Policy Research (CPR), which was established in 1974, and the Centre for International Studies (CIS), which was established in 2004. With the amalgamation, in the context of increasing globalisation and Malaysia being a highly open economy, the public policy aspect of the Centre’s activities now has an international dimension to it. Nation building, which is the key research theme of the Centre, will have both domestic, comparative and international perspectives.

CenPRIS focuses on the 4 (four) core areas in policy research and development, namely political, economic, social and educational dimensions with the underlying purpose of nation-building.

The Centre’s post-graduate studies program prepares candidates for scholarly and leadership roles in government, universities, international non-governmental organisations (INGOs), international non-profit organizations (INPOs), social enterprise, and organisational development departments, research organisations, and other settings where knowledge and research skills in public policy and international studies are needed. The Centre is committed to accomplishing the USM APEX mission by creating an intellectually vibrant atmosphere for scholarship involving an active faculty from a broad spectrum of academic disciplines and extensive interaction with government agencies and community groups, both at the national international levels.

STUDY/COURSE/SERVICE OFFERINGS

Master of Arts and Doctor of Philosophy (Research)

Under the umbrella of nation-building, the offerings of CenPRIS are as follows:

1. Political
   - Urban and Regional Development Policies
   - Political Economy
   - Public-Private Partnership Policies
   - NGO Related Research
   - Globalisation
   - Political Geography
   - Public Institutions Impact Studies
   - GIS in Policy Research

2. Social
   - Science & Technology Policies
   - Ethnic & Inter-Cultural Studies
   - Biodiversity Policies
   - NGO Related Research

- Cyber Policies
- Foresight and Scenario Planning Policies
- Governance Policies (Organisational, CSR)
- Social Sustainability Policies
- Sociology
- Public Institutions Impact Studies
- Social Policy Research
- Malaysia-Indonesia Comparative Policy

3. Economy
   - Public-Private Partnership Policies
   - Economic Policy Analysis
   - International Economics & Finance
   - Development Economics
   - Economics of Education
   - Statistics in Policy Analysis
   - Operational Research
   - Operations Management

4. Education
   - Educational Policy Analysis
   - Politics of Education
   - Sociology of Education
   - Bilingual Education
   - Research Methodology

Admission Requirements

Applicants should possess one of the following:

For M.A. - A Bachelors degree in related areas

For Ph.D. - A Masters or Bachelors (First Class Honours / CGPA >3.67) degree in related areas.

Duration

M.A. - Full-time: Min 12 months / Max 36 months
Part-time: Min 24 months / Max 72 months

Ph.D. - Full-time: Min 24 months / Max 60 months
Part-time: Min 36 months / Max 90 months

For further details, please contact:

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Universiti Sains Malaysia
11800 USM, Penang, Malaysia
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Fax : (+604) 658 4820
E-Mail : azeemf@usm.my
Website: http://cenpris.usm.my/index.php
Collaborative Micro-Electronic Design Excellence Centre, with a symmetric acronym CEDEC, was the Ministry of Finance-approved centre of excellence at USM for the coordination of an important area of microchip (IC) design among several Malaysian universities. The scarcity of local designers is seen as one of the obstacles of substantial investment in design related activities in Malaysia. Thus, the setting up of the Centre within university-producing graduates clearly marks a sharp contrast to previously supported initiatives in microelectronics.

The creation of the Centre is expected to spearhead concerted efforts towards creating more human resource focusing on microelectronic design. This is certainly much needed to complement already existing and established capabilities for fabrication, assembly, packaging and testing in Malaysia. CEDEC acts as an interface between the academic and industrial engineering worlds in the hope of enhancing teaching, research and industrial application through the use of shared facilities. Our main mission is to produce highly skilled design engineers and researchers to meet the needs of the rapidly-changing global semiconductor industry.

CEDEC is also necessary to realize the five-year Malaysia Plan and the governing of important documents such as Industrial Malaysia Plan (IMP), which can be realized with CEDEC's role:

- Conduct research relevant to national needs and global requirements.
- Training of experts and researchers through offerings of high degree programmes and student recruitment.
- Quality improvements through collaborative workspace between universities and industry, thus helping to promote R & D in universities to the local industry.

Increase efficiency in the use of equipment and software available in the industry to ensure that the quality of talent is of high efficiency.

Ensure that the electrical and electronic fields keep up with the development and swift changes and it also will maintain its position as one of the largest exporters in Malaysia.

Improved economy through the expertise and integrated circuit design production line with the government’s long-term strategy to drive the Malaysian economy towards a high-income country by 2020.

Fields of specialization:

- Analog & Digital Integrated Circuit Design (CMOS, BJT, FET)
- MEMs CMOS sensor
- System on Chip (SoC)
- System Microelectronic Design (Bio-Medic, Internet & Communication, Transportation, Food Supply, Safety.)
- Manufacturing Industry

Academic Programmes available in CEDEC:

- By Research
  MSc and PhD in Microelectronic System Engineering
- By Mixed Mode
  MSc in Microelectronic Engineering

### Academic Staff

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<th>Expertise</th>
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<td>En. Zulfiqar Ali Bin Abd.Aziz</td>
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INSTITUTE FOR RESEARCH IN MOLECULAR MEDICINE

The Institute for Research in Molecular Medicine (INFORMM) carries out translational and transdisciplinary research, focusing on biomarker discovery for infectious diseases, parasitic diseases and the development of diagnostics appropriate for use in target populations principally in low resource countries.

INFORMM was started by 11 scientists from the Schools of Medical, Dental and Health Sciences and Medical Innovation and Technology Development Unit of USM. In 2001, from the initial members of this loose research cluster, INFORMM now boasts 25 full-time PhD qualified lecturers. The multidisciplinary character of the institution has been maintained and is reflected in the recruitment of its younger staff members, who have been trained in the latest techniques in biotechnology and molecular biology, ranging from recombinant antibody development, protein expression and characterization, in silico modelling, biomarker discovery and nanobiotechnology.

INFORMM is also unique in USM in that it has two physical facilities, one in the Health Campus in Kelantan and the other at the Main Campus in Penang. This allows INFORMM to benefit from close collaboration with scientists from the basic sciences and engineering faculties as well as having access to the rich resources afforded by its presence in the Health Campus.

INFORMM as a HiCoE

INFORMM adopts the R-D-C-E concept in its research and innovation where research, development and innovation are performed under one roof, to bring the innovation to the market place in a timely manner. This has allowed it to achieve a measure of success in the invention and commercialization of diagnostic kits for the rapid diagnosis of typhoid and filariasis. Based on these initial successes, INFORMM was awarded the status of a HiCoE (Higher Institution Centre of Excellence) by the Ministry of Higher Education in 2010, an honour afforded to only five other institutions in the country. This special status guaranteed research allocations for an initial period of three years to enable the institution to achieve a regional and global presence in the research arena.

Mission

‘INFORMM will strive to attain research and academic excellence via knowledge creation through training, research and innovation in molecular medicine.’

Vision:

‘To excel in training, research and innovation in molecular medicine at the international level’

Research at INFORMM

As a research institution existing and competing in the global arena, INFORMM adopted the Blue Ocean Strategy to determine its research direction and boldly explore markets lacking in competition. INFORMM’s Blue Ocean Strategy revolves around performing research into the causes, treatment, prevention and diagnostics of infectious diseases affecting people in low resource countries where more than half of the world’s population are located.

Research at INFORMM is organized into three research clusters:

**Diagnostics Platform Development**

INFORMM constantly seeks to invent and innovate diagnostic platforms for DNA and protein based diagnostic tests. Traditionally the strength of INFORMM, the diagnostics platform continues to lead the way to achieve more significant regional and global presence. Diagnostics from INFORMM are sustainable point-of-care diagnostics which are original, of high quality and affordable. Developments in this cluster acts as an enabler for biomarkers and diagnostics tests to be developed for use and commercialization. Current research interests include utilizing the latest antibody design and development, microfluidic and nanoparticle based technology into its diagnostic tests and kit development.

**Biomarkers Discovery and Diagnostics for Infectious Diseases**

This is another strong research area in INFORMM, with good track record as it has achieved breakthroughs in discovering biomarkers and diagnostics. The focus area of this cluster is to expand into biomarker discovery and diagnostics into other infectious and parasitic diseases that affect people in low resource settings, using the latest research tools available. Along with biomarker discovery, new diagnostic tests can be associated with relevant treatment options to combat these infectious diseases, especially re-emerging ones where drug resistance has become a problem.

**Vaccines and Novel Therapeutics**

Medicine has evolved from its traditional drug based treatments to new novel therapies today, ranging from gene therapy to personalized medicine. Novel therapies enable a more targeted approach towards treatment of diseases thus leading to potential therapeutic candidates minus the side effects developed by conventional drug based treatments. INFORMM now has the critical mass in scientists, trained in vaccine design and development. This cluster seeks to spearhead research in design and development of vaccines for diseases affecting humans and animals and has developed the necessary collaborations and partners for this challenging research.

**Cancer Research Group**

Another research cluster at INFORMM is the cancer research group with members with expertise in elucidating the molecular mechanisms of cancer development, with
special focus on neuronal cancer. The knowledge gained from understanding molecular mechanisms is utilized in the search for potential anticancer agents from local medicinal plants, using appropriate tumour models and cell lines.

**Post Graduate Studies at INFORMM**

INFORMM offers postgraduate courses by research at both M.Sc. and Ph.D levels. Research topics are usually centered around the areas covered by the three research clusters at INFORMM. Postgraduate students perform their research in well-equipped laboratories in a conducive environment. Students have the opportunity to acquire training in research methods, broad based as well as specialized knowledge and laboratory skills that make them well equipped for their future careers. Students also acquire ancillary soft skills and knowledge like public speaking and making effective presentations, project planning, exposure to an ethical research environment and to medical and animal ethics. Apart from academic training, students have the opportunity to be involved in community engagement projects which gives the students the opportunity to realise the relevance of their expertise, knowledge, skills, resources and facilities to the needs of both society and the market place. Students may also have the opportunity to be attached to INFORMM’s collaborators like the Academia Sinica of Taiwan, RIKEN and Curtin University through appropriate fellowships.

INFORMM is also currently making preparations to offer an M.Sc Mixed-Mode program in 2016/2017. As the details of this program is finalised, it will become available on our website.

Further details of INFORMM and our research can be found at www.informm.usm.my. For enquiries please contact us at admin_informm@usm.my or via telephone at +6097672402/+6046534801
The National Advanced IPv6 Centre of Excellence (NAv6), is a matured research centre in the area of Next Generation Networks. Next Generation Networks is an effort to develop and deploy advanced network applications, services and technologies for educational and industrial purposes. The centre strives for excellence focusing on four major areas namely, Academic, Research & Development, Consultancy (Training/Courses), and Industry & Community Linkages’. Emphasis and thrust will be on research and postgraduate development.

NAv6 is an academic based R&D Centre functioning directly under the University (USM) since 19thNovember 2008. As such students can pursue their postgraduate research studies with the Centre leading to Masters and PhD. Currently, NAv6 has about 40 active postgraduate students who are working towards their Masters and Ph.D.s by research mode. Starting September 2015, NAv6 has started to offer a mixed-mode Masters program in Internet Engineering.

NAv6’s current areas of focus on Research & Development (R&D) include Internet Security, Internet of Things/Everything, Wireless Communication, Cloud Computing & Software Defined Network, Internet Governance and Network Engineering. The above areas have niche markets, with potential economic benefits and opportunities to gain technological edge in ICT expertise envisioning the future. In addition, the above areas are aligned with the national priorities set by the National Cyber-Security Policy (NCSP)–2014, RMK-11(2016-2020), Malaysia Education Blueprint (2011-2015) and the National Internet of Things Strategic Roadmap.

NAv6 has garnered high repute in terms of consultancy with public and private organisations, both locally and internationally. Major consultancy projects include the AI3 Satellite Project, IPv6 training for ICT staff at ministries and agencies of the Malaysian Government (under Ministry of Information, Communication and Culture - MICC) and expert advice and consultancy on IPv6 address allocations.

We have developed a comprehensive training program called the Certified Network Engineer in IPv6 (CNE6) that is endorsed by the Global IPv6 Forum and WIDE project (Japan). We have also successfully transferred our knowledge to the worldwide organizations by setting up authorized training centre. The objective in setting up an Authorized Training Centre (ATC) is to train, nurture and develop local expertise in IPv6. NAv6 has set up a few ATCs in Malaysia and also in various countries including Sudan, Senegal, Thailand, Singapore, Brunei, Iraq, Bangladesh and India. Up to date, we have trained more than 5000 participants.

NAv6 has been fostering and developing research collaborations with researchers from research institutions and centres locally and internationally. These include IPv6 Promotion Council of Japan, Ruijie Networks Co Ltd (China), Progreso Networks (S) Pte.Ltd. (Singapore) and ASAFF Solutions Sdn Bhd (Brunei).

The Services provided by NAv6:
Country IPv6 Roadmap development

The Country Roadmap sets out the transition timelines, recommendations, guidelines as well as the roles and responsibilities of key stakeholders in the adoption of IPv6. The objective of the study is to develop a country Strategic IPv6 Roadmap. This document outlines strategic planning for the implementation of IPv6 and its associated programmes. The Roadmap is the basic plan to determine all activities and programs relating to IPv6 implementation. It is a very important source for all agencies and other major stakeholders in producing the deployment plans.

IPv4 to IPv6 Pilot Project Deployment

The objective of the IPv6 deployment service is to conduct a detailed study of network infrastructure and critical applications and prepare a report detailing of Roadmap, Deployment Approach, Pilot project, test bed and timelines. During the deployment process, the implementation proposals will have minimal impact on day to day operations as well as additional costs. The work undertaken will involve study network which will involve gathering information on network infrastructure, key network equipment, servers, appliances and computers, gather information on critical applications, prepare plan to migrate to a dual stack IPv4/IPv6 network with minimal impact on existing critical applications, prepare a set of strategies covering IT equipment acquisition, new critical applications, manpower resource planning and network policies to prepare for IPv6 compliance audits based on Global Standards.

Contact:
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THE NATIONAL ADVANCED IPV6 CENTRE OF EXCELLENCE

Transforming Higher Education for a Sustainable Tomorrow
Training and Consultancy services:
- Digital & Analog IC design Services
- Analog IC Design Layout Training
- FPGA training
- EDA Imitative Programme
- MPW Support Programme
- IC design services
- Test & Measurement
- Embedded System Training

Our Research:

CMOS-MEMS Integration

Micro-ElectroMechanical Systems (MEMS) integrate mechanical and electrical components and have micron-sized features that can sense, process and/or control the surrounding environment. They may be fabricated using methods similar to those used to construct integrated circuits and they have the potential of providing significant cost advantages when batch fabricated. Their size also makes it possible to integrate them into a wide range of systems. MEMS-based sensors are a crucial component in automotive electronics such as cell phones, PDAs, and hard disk drives, computer peripherals, and wireless devices. Every major market has now embraced the technology.

Analog Mixed Signal

The analog Mixed signal research group focuses on integrated circuit design of analog circuit and digital circuits. The group interest is to explore new techniques, to design data converter circuits and application specifics circuitry. The group has managed to design circuits such as readout circuits, bandgap circuits, digital to analog converters, analog to digital converters and drivers. Applications of those circuits are in the areas of telecommunication, solid state lighting and medical engineering.

System on Chip

The evolution in the Integrated Circuit design technology has entered a new era, where the digital and analog domain shares the same area within a chip, leading to a single chip solution, known as System on Chip (SoC). SoC is gaining a momentous interest in the field of mobile communication. The greatest challenge at the moment is to improve the system’s efficiency in order to conserve the battery life. Hence, CEDEC’s current research is focused in innovating a low-power solution for fully integrated transceiver system catering for Internet of Things (IOT) application.

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Institut Penyelidikan Pendidikan Tinggi Negara (IPPTN) or the National Higher Education Research Institute (NAHERI) was established by the National Council for Higher Education (MPTN) and officially launched on 21st August 1997. To date, IPPTN is a Research Centre of Excellence of Universiti Sains Malaysia. It is located at the Sains@USM Campus, Bukit Jambul, Penang.

The vision of IPPTN is to be a referred research institute which leads policy research in higher education at the national and international levels. While the mission is to undertake quality and forward-looking policy research in higher education for the development and advancement of national higher education towards achieving excellence in the global context.

The aims:

- To identify issues and critical challenges related to higher education to help develop higher education institutions in Malaysia
- To conduct studies which can assist National Council on Higher Education (MPTN) formulate policies and strategies to develop higher education institutions in Malaysia
- To play a proactive role in identifying issues and challenges in the implementation of national higher education policies
- To be recognised as a body involved in conducting and coordinating research pertaining to higher education issues in Malaysia
- To become a reference and resource centre pertaining to higher education issues and policies nationally and globally
- To be recognised as an important channel between Malaysian higher education researchers and their global counterparts

IPPTN is a research institute which conducts relevant policy oriented studies in the field of higher education to assist in the development of higher education. The Institute carries out research on higher education policies, involving awareness and interest on such research locally and internationally. Besides policies, IPPTN’s portfolio includes multidisciplinary research in, among others, higher education leadership, governance and internationalisation. Its goal is to advance research, teaching and publication in higher education institutions. To this end, under Universiti Sains Malaysia, the Institute plans to provide quality Master and Doctoral programmes in higher education through the research mode. We seek to develop higher education systems and institutions towards international excellence.

Currently, the IPPTN structure consists of five full-time academics, 26 Associate Research Fellows, four permanent research officers, and a number of support staff. The Fellows range from institutions all over Malaysia (i.e., Universiti Islam Antarabangsa Malaysia, Universiti Utara Malaysia, Universiti Putra Malaysia, Universiti Kebangsaan Malaysia, Universiti Malaysia Perlis, Universiti Malaysia Sabah and Universiti Malaysia Kelantan).

With all the work that IPPTN has done, the Institute has greatly impacted the development of policy research and knowledge distribution. The following are among the many contributions:

1. conceptualisation of AKEPT (proposal preparation),
2. holding of GHEF biennially,
3. conceptualisation of and further work with PSPTN,
4. organisers of the CLMV Program and Malaysia’s Global Reach activities.
5. conceptualisation of the Commonwealth Tertiary Education Facility (CTEF), and
6. holding of the Muslim Universities’ Vice-Chancellors’ Forum. The Institute’s efforts have also involved building capacity in higher education through its publication of books. Newsletters, and bulletins and provision of training opportunities. As a member of the MPTN, IPPTN has been able to recommend effective policies towards building a growing and sustainable higher education sector in Malaysia.

Connect with us. Be part of our network today.

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The National Poison Centre (NPC) established in 1994 on the directive of the Cabinet is a consultation centre for poison and drug information and poisoning management. It earned an additional role in 1998 when it was designated as a World Health Organization Collaborating Centre for Drug Information, a status it holds to date. In 2001, another function was added to the Centre. It was provided with funding from the Rockefeller Foundation, New York, to set up a Clearinghouse for Tobacco Control to support tobacco-control activities in the Southeast Asia region.

Thus far, the NPC have executed all its given roles congruously, while continuing to make modifications and improvements to meet new challenges and expectations. The decision by the NPC to implement the ‘24/7 on-call’ service in 2003 to enable the hospitals and public to consult the centre round-the-clock was a bold step to accommodate the nation’s need for greater support for poisoning management. On average, the NPC handles about 6,000 poisoning consultation a year.

In the two decades of its operation, the NPC has gone through various transformations, not only to sustain its relevance but also to support the aspirations of USM, its mother institution and the government. However, its focus remains firmly etched in its original mission and vision to promote health, reduce poisoning and prevent death through excellence, compassion and innovation. Over time, these nurtured ideals have yielded satisfactory outcomes as, increasingly, the efforts and accomplishments of the NPC clearly reflect these stated qualities. As an example, where previously, health educational programs were carried out in the conventional manner using printed articles, speeches, or circular brochures, these have since been replaced with modern IT application, far-reaching and more easily accessible at the mere touch of the finger on iPads, mobile phones and tablets. This modern conveyance method, mainly home-grown products developed by the Informatics for Community Health unit in the NPC, have contributed greatly to the dissemination of education and health knowledge, benefitting not only the Malaysian population, but tested and used as far as in the South American Continent, Africa and Europe (a collaborative effort with the UNEP and IUPAC).

The NPC places great emphasis on community-based projects and, accordingly, design its many educational and intervention programmes to include community-engagements. Wherever possible, it ensures that its public programmes involve the government agencies as well as community, religious, school heads and NGOs as this have proven to bring about outcomes that are more effective.

The NPC also works with corporate entities and regularly contributes its expertise on health-related issues. In 2014, at the invitation of Petrosains, the PRN show case “Toxland Adventure” – a specially designed learning tool to help children understand the harmful effects of a number of household chemicals at a Science Festival.

At the international level, the NPC have collaborated with agencies in the UN in the execution of a number of projects. It also works with the IUPAC and a number of academic institutions in the United States, Canada and the Philippines on toxicology and tobacco control studies. Several collaborations have also been carried out with health institutes such as the Victoria Cancer Council (Australia) and Roswell Park Cancer Institute (USA). The NPC also work closely with the Southeast Asia Tobacco Control Alliance and the Asia Pacific Association of Medical Toxicology, the latter it serves as the Secretariat.

Another significant activity of the NPC is its provision of attachment training in various areas. These include trainings on Drug Information Service for local and external allied health professionals, use of advanced ITC applications and multi-media for Polytechnic/ Community College students and Computer Science undergraduates. A number of personnel in the NPC are also qualified trainers of the Visualisation in Participatory Programme (ViPP). The ViPP training method have been used successfully in training workshops as a tool for training-of-trainers, building capacity, school motivational camps, etc. Other specialised training provided by the NPC is the use of specialised laboratory instruments and equipment such as the Atomic Absorption Spectrometry, Gas Chromatography Mass Spectrometry and High Performance Liquid Chromatography, method development and validation procedures. Such training is particularly beneficial for laboratory technicians, science undergraduates/post-graduates and researchers. The NPC Toxicology Laboratory was recently re-accredited the MS ISO/IEC 17025:2005 for chemical testing for a further three years commencing June 2014.

The NPC also conducts research studies and publishes scientific findings on tobacco control, inhalant abuse, pesticides and rational drug use. A number of the findings have been presented at national and international conferences. In 2015, the NPC is embarking on collaboration with the Animal Research Centre at the Advance Medical and Dental Institute on chemical characterisation and product registration, and pre-clinical studies on certain compounds/products in lower animals, in particular rodents.

Academic staff of the NPC also teaches, supervise and examine designated courses for the School of Pharmaceutical Sciences and the Advance Medical and Dental Institute of USM, at undergraduate and post-graduate level. It also provides yearly clerkship for final year pharmacy students and Poison Control Clerkship for MSc Health Toxicology students. To date, five MSc
four PhD students have graduated under the supervision of the NPC.
The NPC is the first department in USM to receive the USM Quality Award (Service Sector), when the award was inaugurated in 1996. It has also earned a place in the USM Hall of Fame for Quality Service.

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RIVER ENGINEERING AND URBAN DRAINAGE RESEARCH CENTRE

River Engineering and Urban Drainage Research Centre (REDAC) is the first research centre at the USM Engineering Campus which was accorded the Higher Institution Centre of Excellence or HICoE for service on 9th October 2014 with a niche area on Sustainable Urban Stormwater Management. REDAC has been active in research and consultancy projects on Sustainable Urban Stormwater Management since 1997. Among the project sponsors are Ministry of Science, Technology and Innovation (MOSTI), Ministry of Education (MoE), Ministry of Natural Resources and Environment (NRE), Ministry of Agriculture and Agro-Based Industry (MoA), Department of Irrigation and Drainage (JPS), Prime Minister’s Economic Planning Unit (EPU), Seberang Perai Municipal Council (MPSP) and Public Works Department (JKR).

A green sustainable urban stormwater management system known as Bio-Ecological Drainage Systems (BIOECODS) was designed by REDAC and subsequently constructed at the USM Engineering Campus, Penang in 2002. BIOECODS attempts to solve three major problems commonly encountered in Malaysia namely flash floods, river pollution and water scarcity. By implementing BIOECODS, it will help preserve the natural characteristics of the existing river ecosystem. A presentation on BIOECODS was made at the 11th International Conference on Urban Drainage, Edinburgh, United Kingdom (UK) in September 2008. REDAC was also involved in several DID-related projects such as the preparation of Urban Stormwater Management Planning and Design Standard for Malaysia and Second Edition Urban Stormwater Management Manual for Malaysia or MSMA, and the Preparation of Design Guides for Erosion and Sediment Control in Malaysia.

REDAC has also been very active in promoting sustainable river management through applied research on sediment transport in rivers. River models such as FLUVIAL-12, HEC-RAS and INFOWORK-RS are used to study river morphology and the consequences for river equilibrium to be attained. A guideline titled “River Sand Mining Management” was recently approved by DID for use in Malaysia. The guideline was produced after an intensive field work and river modeling for three rivers namely Sungai Muda, Sungai Langat and Sungai Kerian. Flood hazard and risk assessment study is also conducted involving Sungai Muda and Sungai Pahang, taking into account recent major floods in 2003 and 2007. Recent massive flood in December 2014 affecting several states especially Kelantan, Pahang, Terengganu and Johor resulting in the collapse of bridges supports the on-going research on of bridge scour at abutments and piers with the aim of producing scour protection predictions suitable for rivers in Malaysia.

REDAC recently completed the Long Term Research Grant Scheme (LRGS) 2011 by Ministry of Higher Education (MOHE) on Water Security. LRGS is the fundamental nature of research, involving the scope of a more extensive and longer period of time and requires commitment. With LRGS, peer collaboration (multi-institutional) across multiple institutions and multiple disciplines can be built, placing Malaysia on the world map in terms of fundamental research in curtain niche areas.

Several articles based on the conducted research in urban drainage and river engineering were published in acclaimed international journals such as Journal of Hydraulic Engineering (American Society of Civil Engineers or ASCE), Water Management Journal (Institution of Civil Engineers or ICE UK), International Journal of River Basin Management (International Association for Hydro-Environment Engineering and Research or IAHR), Environmental Fluid Mechanics, Science of the Total Environment or STOTEN, Urban Water Journal (IAHR), and Journal of Hydro-Environment Research (IAHR).

A triennial international conference was organised by REDAC on Managing Rivers in the 21st Century, starting with Rivers’04 from 21st – 23rd September 2004 at Penang and Rivers’07 at Kuching, Sarawak from 6th – 8th June 2007. Rivers 2011 was organised in December 2011 in conjunction with the 10th Anniversary of REDAC. The International Journal of River Basin Management (JRBM) published special issues on Rivers’04 and Rivers 2011. Another special issue for Rivers’07 was published in Water Management Journal. With an active role in promoting sustainable river management, REDAC has been chosen to co-organize the largest event for the hydraulic community i.e. the 37th IAHR World Congress in 2017 to be held in Kuala Lumpur Convention Centre with an expected number of participants around 2000 from throughout the world.

REDAC offers postgraduate studies via research (M.Sc., Ph.D) in specialised areas of Urban Drainage Management, River Management, Hydro Informatics and Environmental Hydraulics Management. Further information on research activities of REDAC can be obtained from the following website: http://redac.eng.usm.my.

R & D Objectives

The research activities at REDAC are conducted with the following objectives:

- To accelerate the realisation of urban drainage metamorphosis in order to transform the quality of life in urban areas.
- To undertake holistic research and to develop new technology in River Engineering and Urban Drainage.
- To become a Centre of Excellence in River Engineering and Urban Drainage for engineers and scientists from Malaysia and the South East Asian region.
- To promote research network and international cooperation in River Engineering and Urban Drainage Research.
Research Facilities

REDAC facilities consist of a technical office and a Physical Modelling laboratory specializing in sediment transport modeling in drain and river, and bioretention facility. Examples of on-going sediment transport modelings are tipping sediment flushing gate, gross pollutant trap (GPT), and pipeline scour. The bioretention facility provides experiments on effects of vegetation and soil media on storm water pollutant removal capability of bioretention.

R&D, Postgraduate Studies, and Consultancies Services
REDAC is offering R&D, Postgraduate Studies and Consultancies Services in the following fields:

- Urban Drainage Management
- River Management
- Hydro-Informatics
- Environmental Hydraulics Management

For further details, please visit http://redac.eng.usm.my.

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SCIENCE AND ENGINEERING RESEARCH CENTRE

Objectives:

- To ensure multi and trans disciplinary fundamental and applied research executed actively and holistically
- To ensure research facilities (laboratories and equipments) usage is optimize which align with the concept of shared facilities and shared services.
- To manage, supervise and monitor research facilities effectively and efficiency
- To generate world class research and high impact research journals through state-of-the-art research instruments
- To realize University agenda in acculturate shared concept specially in research to increase productivity and reduce cost.

Corporate Facilities:

- Seminar Hall
- Training Room
- Meeting Room III

- Meeting Room II
- Banquet
- Galleria
- Computer Laboratory

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Vector Control Research Unit or VCRU was established in 1972 by a pioneer group of academicians who were actively involved in vector biology and control research. Understanding the importance of vector borne diseases and urban pest in the region, Vector Control Research Unit was finally established under the wing of School of Biological Sciences in 1991.

The unit’s function is wide and borderless involving multiple agencies from local, regional and international research institutions and industries. Therefore, skilled personal and support staff are critical in order to ensure smooth running of the unit’s activities. Cooperation and collaboration with multiple agencies need detailed planning and continuous monitoring to ensure effectiveness of the project as well as to uphold the status of VCRU as an independent laboratory for bio-efficacies testing as trusted by the industry player.

Currently, the unit provides research (30%) and services (70%) to the local and international organizations as well as the pesticide industry whereby VCRU provides testing and evaluation of public health pesticides. VCRU collaborate with WHOPES (World Health Organization Pesticide Evaluation Scheme) on the testing and evaluation of pesticide application under vector control program globally.

VCRU is one of the 3 WHO (World Health Organization) collaboration centre that evaluate space spraying, insecticide application equipment and larvicide. The Unit is the only agency appointed by WHO to produce and distribute the WHO Susceptibility Test Kits for monitoring insecticide resistance (figure 1).

VCRU also provide industrial training to local and international graduates in the field of medical and urban entomology, and also conduct various workshops for the training of public and private sector staff on the different aspects of vector biology and control.

VCRU is the only national laboratory that has the facilities for conducting the full range of test on household insecticides as by SIRIM and WHO for the purpose of registration and public health use. The Unit is the national and regional reference centre for the testing and evaluation of household insecticides. As a member of SIRIM’s Technical Committee for Household Insecticide Products and Industrial Committee for Materials, the VCRU is instrumental in the development of national guidelines for the laboratory testing of such products for registration and use in public health. Hence, the Unit has been recognized as a national and regional reference centre by the pesticide industry for the testing and evaluation of insecticides for personal and public health use. Tests results obtained by the Unit is widely accepted by the national pesticide board for registration of the products in the respective countries.

Vector Control Research Unit activities can be classified as:

1. BIO-EFFICACIES TESTING OF HOUSEHOLD PRODUCT VCRU conduct bio-efficacy testing (figure 1) for product registration. VCRU act as independent laboratory by preparing bio-efficacy report of a product prior to the product registration with the Malaysia Pesticide Board, Ministry of Agriculture.

2. INSECTICIDE RESISTANCE MONITORING (WHO TEST KIT - WHOPES) It is a project whereby VCRU is the only centre appointed by WHO to produce test kits for monitoring insecticide resistance in vector control program globally under the supervision of WHOPES. Aerosol testing under glass chamber

3. WHO COLLABORATION CENTRE FOR TESTING PHASE I, PHASE II AND PHASE III As WHO collaboration centre for aerial spraying and larvicide testing, VCRU conduct bio-efficacy testing and evaluation of insecticide formulation against vector mosquitoes under laboratory and field condition.

4. TRAINING VCRU also provides training in Vector Biology and Control for industry, Ministry of Health and university students.

Connect with us. Be part of our network today.

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The Centre for Research on Women and Gender (KANITA) is the first centre of its kind in Malaysia, pioneering a field that was little known and marginalised in the country’s academy. KANITA is also responsible for charting the earliest history of feminist research and advocacy in Universiti Sains Malaysia (USM). Beginning with the establishment of a UNICEF-funded research cluster on women, children and poverty in 1978, through which it gained the acronym KANITA (representing the combined Malay words for women and children) and evolving into what is today a centre of excellence within the university. KANITA reflects more than thirty years of critical thinking in the development of theoretical and methodological tools and policy strategies that aim at equalising and mainstreaming gender in education and nation building. The years of experience have provided KANITA with a solid foundation for women’s and gender studies programmes. The experience has also given rise to a new kind of academic culture that is enriched through multi- and interdisciplinary interactions with generic disciplines of social sciences, humanities, management, communication, education, medical sciences, health sciences and pharmaceutical sciences. Through fundamental, applied and policy research, innovations in training, publication and networking both nationally and globally, KANITA has brought new meaning to the process of engendering knowledge, thus, bringing feminist and gender perspectives to the forefront of academic thinking.

As a centre that aims at influencing policies and programmes, KANITA focuses on four thrust areas which have been identified as critical and important within the context of contemporary and emerging discourses on women and gender, given USM’s APEX status.

1. Health
2. Policy and Law
3. Sustainable Development
4. Leadership and Governance

Research at KANITA

KANITA’s core businesses are research and postgraduate programmes. In research, the aim is to conduct inter and transdisciplinary research in critical areas of women’s and gender issues and to utilise the findings for social transformation advocacy activities. Research findings are not only meant to have policy impact but are also aimed at stimulating intellectual and public discourses on women’s and gender issues. This fits well with USM’s emphasis on the importance of university to be engaged with the community and not remain aloof as an ivory tower. Thus, research and dissemination of findings are often done in collaboration with government and non-government organisations outside the university. KANITA has conducted research in several areas. Examples of such research are those on domestic violence, empowerment and microcredit, policies and laws, family, marriage, sexual harassment, masculinity, and other areas.

Postgraduate Programmes

KANITA offers postgraduate studies programmes for those interested in pursuing women’s or gender studies by research. Upon completion of the studies, students are awarded with Master of Social Sciences (Gender Studies) or Doctor of Philosophy degrees. Programmes are designed to produce postgraduates who are gender-sensitive in various work cultures and organisations, equipping those from various basic disciplines with knowledge and analytical skills of looking at the social world through a more comprehensive and inclusive manner.

The postgraduate programmes at KANITA aim at developing and enhancing candidates’ analytical and practical skills in their chosen disciplines through the use of the gender lense. This lense operates through the idea that gender matters to structures, theories and practices in any discipline that the lived realities of sections of society, particularly women are highly pertinent subject of deep inquiry.

Achievements

1. MOOC

This course introduces women and gender studies in the context of ASEAN. Women and Gender Studies is an interdisciplinary field of study that critically investigates the social and cultural constructions of being female and male, the relations and positions of women and men in society and also questions the historically disadvantaged positions of women in society. For this course, these discourses will be presented generally and then with a specific focus on contemporary application and development in the ASEAN region. Students will be exposed to the philosophies and theories of gender, gender discourses in the different settings, especially in ASEAN member countries, how women’s and men’s lives are affected by race, ethnicity, sexuality and location and selected issues forming the contemporary lived realities of women in societies in ASEAN countries.

2. International Conferences

KANITA strives to facilitate the engagement with gender and women’s studies around the world through academic discourses. In 2014,
KANITA successfully organised the KANITA Inaugural Postgraduate International Conference on Gender Studies (KPICGS) which was able to stimulate young researchers from all over the world to share their findings on different aspects of their research and academic journey in inquiring into the social world that impact on the lives of women. The conference gave the students the opportunities to engage in intellectual discussions with senior scholars especially during the keynote and plenary sessions. A one day workshop entitled Researching Women and Society (RWS) was also held in 2015 and this workshop will be held again in November 2016.

3. **Engagement with Multi-sectoral Partners**

To enhance sharing and transfer of knowledge, KANITA formally engages with multi-sectoral partners. In the last three years KANITA has signed Memoranda of Understanding or Agreement with Universitas Muhammadiyah Yogyakarta (UMY), Universitas Gadjah Mada, Korean Women Development Institute (KWDI), Norwegian University of Science and Technology (NTNU), Women’s Development Business Micro-Finance (WDB-MF) and Penang Development Corporation (PDC).

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The Centre for Development of Academic Excellence (CDAE), or Pusat Pembangunan Kecemerlangan Akademik, was formed by Universiti Sains Malaysia (USM) on the 1st of January 2012. Upon the merger with the Student Advisory & Development Unit on the 1st of January 2013, the centre acquired the name Centre for Academic Excellence & Student Advisory and Development, or Pusat Kecemerlangan Akademik & Penasihat dan Pembangunan Pelajar. This centre aims to improve the teaching and learning (T&L) quality among educators and students while planning and executing activities in accordance with the National Higher Education Strategic Plan and National e-Learning Policy initiated by the Ministry of Higher Education (MOHE). CDAE is led by the Director, Professor Dr. Abd Karim Alias and is currently located at Bangunan H24, Lorong Cahaya. The centre has also been given the mandate to implement the USM APEX Transformation Plan by developing and conducting activities focused on nurturing and learning. Through the establishment of CDAE, USM has taken another step towards advancing the higher education environment within the university and attaining the ultimate aim of MOHE - to turn the country into a centre of excellence for higher education. CDAE is destined to become an important component in the advancement of T&L activities at USM.

Objectives:

⁍ To transform T&L towards excellence in line with the National Higher Education Strategic Plan, National e-Learning Policy and USM APEX Transformation Plan by encouraging the implementation of Student-Centred Learning (SCL).

⁍ To plan and execute continuous personal & professional development programmes to increase the quality of T&L.

⁍ To encourage the use of technology-enhanced learning in T&L among lecturers through exposure and continuous training.

⁍ To plan and create Open Courseware (OCW) especially within sustainability related programmes.

⁍ To coordinate and encourage lifelong programmes offered by Responsibility Centres.

⁍ To plan, coordinate and implement courses/ workshops/trainings for character development, motivation, self-esteem and leadership qualities in students and evaluate the effectiveness of these programmes.

⁍ To become the one-stop centre of reference for lecturers and students regarding T&L.

⁍ To provide consultation services to students related to academic issues.

Services & Programmes

The activities that we offer for the enhancement of teaching and learning environment in Universiti Sains Malaysia incorporate a spectrum of services and programmes that are specifically devised to suit the primary components of USM—our staff and students. At CDAE, we believe that knowledge has to be shared and disseminated without boundaries. Consequently, we hope that these programmes (as listed below) will serve as a medium for continuous personal and professional development to increase the quality and excellence of T&L at USM.

Staff: OER@USM, CDAE Training, CDAE Workshop, CDAE Seminar Series, CDAE Consultation

Student: Motivational Talks, ICT for Career and Lifelong Learning, Speeches by USM Alumni, Programme for the Appreciation of Academic Sustainability, Student Academic Intervention System, Student Development Workshops

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The Centre for Instructional Technology and Multimedia (CITM) was established in 1984 to promote excellence in university instruction and to advance the development and use of instructional technology in teaching and learning. CITM is responsible for maximizing the effective use of Instructional and Information Communication (ICT) technologies to meet the University's academic and non-academic goals and agendas. CITM addresses this mission by providing professional and technical support for:

- Instructional Development involving the design, development, and evaluation of courses and instructional materials that employ instructional media, ICT and computer technology.

- Faculty and Staff Development through professional development workshops for faculty and staff especially in the use of computers and ICT in their efforts to improve or enhance instruction and learning. These workshops are also open to other colleges, government agencies, and organizations.

- Instructional Support services such as the provision and maintenance of audio/visual systems to the University community as well as providing facilities for graphics, photographic, video, and multimedia production. CITM also assists in the design of lecture theaters and continuously investigates, evaluates, acquires, and promotes emerging technologies to further enhance the teaching and learning processes and the delivery of instruction.

Leadership in research and advancement of Instructional Technology in teaching, learning, production and training is realized through continuous research and consultation projects undertaken by its staff and through the offering of:

- Two research-mode graduate programmes at the master's and doctoral levels (M.A. and Ph.D.). These programmes allow candidates to build and test processes, products, systems, and services for use in education and training settings through an interdisciplinary structure that encompasses instructional design theories and models, learning and cognition, instructional strategies and methods, mobile learning, visual design, web design, media design and ergonomics.

- A coursework-mode Master in Instructional Multimedia (MIM) degree programme that is conducted in English. This programme promotes the use of performance technology and emphasizes the application of systems approach models to design, develop and implement technology-based education and performance programmes.

- A set of courses for minor or specializations in Instructional Technology at the undergraduate and graduate levels for the School of Educational Studies for its B.Ed., B.A.Ed., B.Sc.Ed. and M.Ed. programmes.

For further information, please visit http://www.ptpm.usm.my/v4/, or contact:

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Centre for Knowledge, Communication and Technology (PPKT, its acronym in Bahasa Malaysia) was established in December 2002. As the premier ICT service provider in USM, PPKT’s mission is to create a competent and efficient customer-centred support service.

PPKT is responsible for the ICT services of USM’s three campuses: the Main Campus on Penang Island, the Engineering Campus on the main land of Penang and the Health Campus in Kelantan. Its operational support encompasses:

- The campus network and telecommunication infrastructure
- Administrative computer applications
- Computer facilities and support services

Vision

PPKT is committed towards becoming a catalyst for innovation by fulfilling the on-going operational and strategic ICT requirements of the University based on knowledge, research and innovation, locally and globally.

Mission

PPKT’s mission is to be competent and efficient in its provision of ICT services in the context of:

- Teaching and Learning
- Research and Innovation
- Business Processes

Services

PPKT provides high performance and secure ICT infrastructure, telecommunication and support services to USM. Ninety per cents of the applications used for administrative and academic purposes are developed and maintained by PPKT. Training continues to be one of the key responsibilities of PPKT where it is done on a continuous basis for all level of staff members, student and the public.

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Deputy Director, Information Systems
Fa’izah Md Zain
Deputy Director, PPKT Health Campus
Hamdan Ismail
Deputy Director, PPKT Engineering Campus
Mazlifendirizan Md Rejab
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The Division of Industry and Community Network (DICN or BJIM, Bahagian Jaringan Industri dan Masyarakat) is USM’s formal effort to link the University, Industry and the Community into sustainable partnerships. Since its inception in 2007, BJIM has extended its efforts beyond a national level into regional and international arenas. As an APEX University, USM through BJIM consistently embraces industry and community engagements that directly benefit the “bottom billion”.

Empowered by its academic and research strengths, BJIM brings together schools, centres, institutes and different groups in USM to initiate and undertake sustainable projects. Partnering with collaborators from industry and community, BJIM actively contribute to industries from different levels i.e. SMEs, MNCs and government agencies as well as to community such as individuals, non-government organisations (NGOs), community agencies, and organisations.

Areas of Linkages and Partnership

- Public-Private Research Network (PPRN)
- CREST (Collaborative, Research in Engineering, Science, & Technology)
- Collaborative research
- Consultancy/Contract research
- Testing & Facilities/Equipment for hire
- Student Internship/Industrial Training
- Industry engagements projects
- Knowledge Transfer Programme (KTP)
- Industry/Community Advisory Panel (ICAP)
- Community engagements projects
- Staff attachment
- Student Volunteer Programme
- Continuing education
- Corporate Social Responsibility (CSR)

Industry Network

The University-Industry Engagement at USM involves a strategic scholarly partnership between USM and industry. Both USM and partners commit to contribute and collaborate with one another in the fields of research, professional development and other scholarly activities that are relevant and mutually beneficial to the University and industry. The partnership implements ground-breaking projects and programmes which apply research ideas and concepts to meet the social, economic, knowledge and skill needs of communities. The expected outcome from this partnership will be reflected in the refinement and enhancement of the sustainability of both industry and the University, and their contributions to national development and enrichment.

The Industry Network engages experts and resources from industry and the University to develop and transform in sustainable and beneficial ways. Following are some efforts carried out to address niche industry and corporate sector requirements:

- CEO-Initiatives
- USM4SME
- Corporate Social Responsibilities (CSR) Projects

Community Network

Community engagement refers to the process by which organisations and individuals build on-going, permanent relationships; and apply a collaborative vision to benefit the community. It encompasses participation from the beginning by identifying issues and mobilising relevant resources and strategies in improving the community towards the change. The elements of engagement, partnership, coalitions and sustainability are essential in ensuring communities social functioning and well-being. Community engagement requires voluntary participation of all parties which results in mutually beneficial exchange of knowledge and resources.

The Community Network identifies, plans and implements diverse community engagement activities, projects and programmes. Amongst the key elements are bottom billion, sustainability, empowerment and inclusiveness. To realise these visions, the Community Network promotes capacity-building programmes, inculcates the spirit of volunteerism and spreads the culture of best practices in community engagement. Such forms of community engagements are initiated and enhanced through local and international community networks. Focus is placed on collaboration with NGOs, organisations and institutions of higher education in the Asia-Pacific region and beyond. BJIM promotes and legitimates community engagement as a field of scholarly studies.

Community Network consists of two clusters:

- University-Community Engagement (UCE) Cluster
- Orang Kurang Upaya (OKU) Cluster

For further information, kindly contact

Director
Division of Industry & Community Network,
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http://icn.usm.my
Kampus Sejahtera is a concept that refers to translating the idea of sustainability into reality for the entire USM community. Sejahtera in Malay embraces peace, harmony, tranquility, wellness and health. There is no equivalent word in the English language. Aligned with the global thinking (WSSD 2002 and Rio+20 2012), we have selected water, energy, health, agriculture and biodiversity as the five critical sustainability areas and these also included waste management where concrete result and must be obtained to educate the entire USM community on these issues. The Kampus Sejahtera Secretariat will be the main vehicle to move the aspiration of building global mindset citizen in the context of student development. The Kampus Sejahtera Secretariat will assist the students to be able to fit into the key competencies of a global graduate as follows. The first one is broad and extensive knowledge. In order to build numbers of students involved in sustainability based activities and programmes to enhance the student’s knowledge such as seminar or paper presentation. Secondly, advanced communication skills. It is explains about enculturation of public speaking, debate, forum and paper presentation among all students. Thirdly, realistic in decision making. More exposure and empowerment to real world projects in sustainability within the university. Lastly, 9 thrust of APEX. It is infuse all these 9 thrust of APEX. There are knowledge, the future, uniqueness, sustainability, humanity, universality, change sacrifice and wellness into all activities led by students. The movement of students in sustainability will be tailored to suit the global mindset characteristics and also the key competencies of student development.

There are three objectives in Kampus Sejahtera. First, to support any activity or project which propagates the pursuit of a sustainable campus. Second, to create a mindset for every individual to take responsibility for the campus and the last is to empower students as a key driver to promote and live in sustainable lifestyle. There are three main stake holders in moving Kampus Sejahtera to its objectives. They are student, academic staff and non academic staff. Students as a key driver to move the aspiration of sustainable-led university. After that, academic staff as a resource person to embed and inculate the right knowledge to the students. Lastly, non academic staff as a facilitate the technical part of movement by the students.

Among them are agroculture, biodiversity, health, energy, water and waste management. Secretariat Kampus Sejahtera to empowered of students through two main strategies. There are the sharing of knowledge and fieldwork training. These two strategies are implemented by six clusters established the sustainability. For the first main strategies is sharing of knowledge. Sharing of knowledge divided into three parts, they are Discussion Of Sustainability (Diskusi Kelestarian), Talk Series Kelestarian and Speaker Corner. Discussion of Sustainability is a casual and relaxed discussion on variety of topics about sustainability and presented by a moderator held regularly. Talk Series Kelestarian also held regularly and it is presented by invited speakers such as lecturer and volunteer students in Kampus Sejahtera. Last but not least, Speaker Corner also about sustainability and the concept are same with the both of parts. But, it happened at interested on campus. The duration in 15 until 30 minutes. It is presented by volunteer students also in Kampus Sejahtera. For the second main strategies is fieldwork training. There are many activities and programmes was conducted by volunteer students in campus and based on each of clusters. Such as Water Warrir. This programme are conducted by volunteer students and an activity undertaken to audit the toilet of equipment damage around the campus then it will lead to the waste of water and the hygiene of the toilets. Stick It To Save Water and Save Energy are an awareness campaign to stick the sticker for creating awareness of students to avoid wastage of water and energy in each of hostel. Other than that, the volunteer students also managed the food waste in the campus daily to produced the compost. The volunteers also collaborated with Taman Rekreasi USM (TRU) to rock melon fruit cultivation. It is also in order to practice the technology of plant in the city and utilize agriculture in sustainable development. Many activities and programmes on a healthy lifestyle and sustainable are progressed on a regularly such as an aerobics, Sejahtera Walk, cycling around campus and also for relaxing together. This is an effort to maintain cleanliness of campus environment and adopted a healthy lifestyle. Audit programme tree on campus is also done by volunteers Kampus Sejahtera in collaboration with EcoHub USM. This activity to identify biodiversity in campus than to knowing the healthy of trees from times to times, which of the campus.

In conclusion, through the principles and practices in Kampus Sejahtera Secretariat USM. They are can produced many future leaders who have mindset of sustainability. That leaders are an agent to changed ours country and the country in implementing aspects of sustainability for the sake of a better tomorrow.
HOSPITAL UNIVERSITI SAINS MALAYSIA

Hospital Universiti Sains Malaysia or better recognised as HUSM in the local community is regarded as one of the best teaching hospitals in Malaysia which started its operation on the 1st October 1983.

The mission of Hospital Universiti Sains Malaysia is "HUSM will explore new areas of patient care services and become a medical center of excellence with the provision of high quality and advanced technology”.

HUSM has taken proactive steps in order to be known as a teaching university hospital that provides learning and research facilities in the fields of medical science, dentistry and general health in order to ensure that USM graduates are skilled and competent and at the same time as a referral hospital that provides a higher level of medical science, dentistry and general health services to the public.

### Hospital Mesra Ibadah (Ibadah Friendly Hospital)
Since 2004, HUSM introduced the concept of Ibadah friendly Hospital that implements the Islamic values in all aspects of management and related practices, focusing to facilitate and promote religious service and embrace in every practice, to achieve a holistic and comprehensive health from the point of spiritual, physical and aqil

**Services Provided :**
- i. Family Medicine Clinic
- ii. Specialist Clinic Services :-
- iii. Staff & Student Clinic – General
- iv. Accident and Emergency Services
  - Pre hospital care

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<th>Paediatrics</th>
<th>Obstetrics &amp; Gynaecology</th>
<th>Dental specialist clinic</th>
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<td>• Neonatology</td>
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<td>• Cardiology</td>
<td>• Reconstructive/ Burns</td>
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<td>• Neurology</td>
<td>• Neuro Surgery</td>
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<td>Thoracic</td>
<td>• Cardiology</td>
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<td>• Pain Service</td>
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<td>• Oncology</td>
<td>• Genetic</td>
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<td>• Oral Health Education Unit</td>
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<td>• Infectious</td>
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<td>• Gastroenterology</td>
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<td>• Psychology</td>
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<td>• SCAN TEAM</td>
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<tr>
<th>Orthopaedic</th>
<th>Psychiatric</th>
<th>Ophthalmology</th>
<th>Otorhinolaryngology</th>
<th>Oncology &amp; Nuclear</th>
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<td>• General psychiatric</td>
<td>• General</td>
<td>• Otology</td>
<td>• Medical oncology</td>
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<td>• Spine</td>
<td>• Methadone</td>
<td>• Orbit</td>
<td>• Rhinology</td>
<td>• Radiation Oncology</td>
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<td>• Geriatric</td>
<td>• Retina</td>
<td>• Vertigo</td>
<td>• Hematology</td>
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<td>• Arthroplasty</td>
<td>• Psychotherapy</td>
<td>• Cornea</td>
<td>• Oncology</td>
<td>• DTPA (Diethyl Pantetic Acid)</td>
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<td>• Oncology reconstructive</td>
<td>• Group therapy (Teenagers)</td>
<td>• Occuloplasty</td>
<td>• Tinnitus</td>
<td>• Ablation</td>
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<td>(OORU)</td>
<td>• Child Psychiatry</td>
<td>• Neuro</td>
<td>• Sleep</td>
<td>• Iodine therapy</td>
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<td>• Paediatric</td>
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<td>• ophthalmology</td>
<td>• Dysphagia</td>
<td>• Bone scan</td>
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<td></td>
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<td>• EDCR (Dacryocystorhynostomy)</td>
<td>• Whole body Scan</td>
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### Hospital Universiti Sains Malaysia

**PROSPECTUS 2016**
Transforming Higher Education for a Sustainable Tomorrow
- Emergency medicine
- OSCC (one stop crisis centre)
- Hyperbaric
- OT (Elective and Emergency Cases)
v. Speech & Audiology Clinic
vi. Occupational Health Clinic
vii. Dietetic Clinic
Clinical support services
i. Radiology
ii. Diagnostic Lab
  • Chemical pathology
  • Haematology
  • Microbiology and Parasitology
  • Immunology
  • Farmacology
  • Pathology
  • Human genome
  • Endocrine
  • Therapeutic Drug Monitoring
iii. Pharmacy
iv. Invasive Cardiac Lab
v. Medical Transfusion Unit (Blood Bank)
vi. Clinical Skill Lab
vii. Medical Record
viii. Physiotherapy
ix. Medical Social Worker
x. Dietetic Unit
xi. Infectious Control Unit
Non Clinical Support Services
  ➤ Laundry and Housekeeping
  ➤ Medical Engineering
  ➤ Central Sterile Supply Department (CSSD)

**Information Systems**

Information System Unit of HUSM was established in year 2000 due to the specific needs of IT implementation in hospital. Since the beginning of establishment, the unit has extensively developing applications software for the hospital and the operating system being used is open source and free license. The applications that has been developed are:-

- LIFELINE
- LIS (Lab Information System)
- EMR (Electronic Medical Record)
- AMS (Asset Management System)
- POLS (Pharmacy Online Prescription)
- SPIFU & SPIFA (Sistem Pengurusan Inventori Farmasi Ubat/Alat)
- CSSD (Central Sterile Supply Department)
- FIRAS (Film Information Reject Analisyst)
- Electronic Transfusion System
- Mortuary Online System
- Keeps track of deceased patients in the hospital.
- HUSM Formulary Online System
- Diet Management System
- Electronic Medical Archive (EMA)
- Document Management [e-Clips ]
- Others

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Since February 2000, the Institutional Development Division (BPI) has been responsible for providing frameworks to help Universiti Sains Malaysia (USM) set up policies, standards, guidelines and strategies to ensure the competitiveness of the University in addition to its core functions, which are education, research, global positioning and financial sustainability.

BPI is also responsible for coordinating, implementing and monitoring strategic programs by the University for both short-term and long-term plans towards achieving the desired goals and impact, not only to USM, but also to the world.

Realizing that the University’s overall performance is also measured in terms of World University Rankings and Ratings, BPI is also entrusted with the responsibility to monitor and evaluate the USM’s overall performance through various methods and agencies, serving the needs of the University, the Ministry of Higher Education (MoHE) and other external stakeholders.

The activities undertaken by BPI are realized via two entities:

A. INSTITUTIONAL STRATEGIC DEVELOPMENT & MANAGEMENT SECTION
B. INSTITUTIONAL SYSTEMS DEVELOPMENT & DATA MANAGEMENT SECTION

(A) INSTITUTIONAL STRATEGIC DEVELOPMENT & MANAGEMENT SECTION

Two units operate under this section, namely:

i. Institutional Strategic Development Unit
ii. Institutional Strategic Management Unit

(A.1) Institutional Strategic Development Unit

This unit is responsible for analyzing the performance of the University in terms of development and progress, involving both national and international performance evaluations. In an era where the performances of Universities are under scrutiny and measured through numerous angles, it is pertinent that data collection, analysis and intensive monitoring of the University’s achievements are effectively undertaken. This will allow accurate and timely input to be relayed to the top management of the University in establishing relevant as well as feasible policies and strategies towards strengthening the University’s performance.

This unit is also responsible for monitoring the performance of programs under the University’s APEX 2020 program (Accelerated Program for Excellence). APEX program achievements are monitored against their project objectives and efficacy, and scheduled reports are presented to the top management of the University for executive decision.

(A.2) Institutional Strategic Management Unit

The roles of this unit is to ensure all strategic collaborative networks within the University and between the University and communities, in local as well as international organizations, are undertaken in line with the direction and interests of the University. This unit closely cooperates with the Legal Office to ensure that all collaborative agreement documents (MoUs/MoAs) fulfill both University policies and national legislation.

This unit is also the secretariat for the APEX University Allocation where it is responsible for coordinating as well as monitoring budgetary allocations and expenditure performance.

In addition, this unit acts as the Project Management Office, referred as the Institutional Project Management Office (iPMO) that liaises with MoHE’s Project Management Office (PMO) in implementing the National Higher Education Strategic Plan (PSPTN) and the recently launched Malaysian Education Blueprint (MEB) 2015-2025.

(B) INSTITUTIONAL SYSTEMS DEVELOPMENT & DATA MANAGEMENT SECTION

Two units operate under this section. They are:

i. Institutional Data & Information Management Unit
ii. Institutional Information Systems Development Unit

(B.1) Institutional Data & Information Management Unit

This unit undertakes the responsibility of ensuring comprehensive capture and storage of institutional data to be utilized in evaluating the performance of the University. Data collection and analysis are done based on glossaries of the various national and international evaluation agencies, as well as performance measurement instruments that the University is subjected to. Among
the national level evaluations that this unit focuses on are: (1) the Malaysian Research Assessment Instrument (MyRA), (2) the Malaysian Education Blueprint (MEB), and (3) the Malaysian Ministry of Higher Education System (MyMoheS).

Besides measuring the performance at the University level, this unit also undertakes analyse data that gauge the performance of all Schools and Research Centers in the University. With the assistance of this unit, Schools and Research Centers present their annual performance achievements to the top management of the University with BPI serving as a secretariat for establishing their Key Performance Indicators (KPIs), and allocation of financial incentives on a performance-based budget. The KPI achievements of the Schools and Research Centers are evaluated with the aim of promoting healthy competition and facilitating sharing of best practices and success stories.

Data collection and data analyses are also provided as per the needs of the top management of the University in planning and implementing strategies to attain the set short-term and long-term goals and objectives of the University. To facilitate this, BPI is involved in the preparation and publication of the following reports:

a) USM Annual Report to the Cabinet
b) USM in Numbers
c) USM Report Card

(B.2) Institutional Information Systems Development Unit

The function of this unit is to ensure that development (creation) and upgrading of systems and databases pertaining to the University’s data are continuously undertaken so that they remain at acceptable and conducive levels, being compliant with statutory requirements and good data management practices and operating procedures, as well as being able to fulfill the needs of all BPI stakeholders. In this day and age, ‘data’ is ‘king’, and BPI, as custodian of this asset, must ensure that the appropriate technologies and skills are used to manage it. The university needs data to make informed management decisions, and thus the importance of this unit.

Among the systems and databases entrusted under this unit are USM’s: (1) Institutional Repository System, (2) Dashboard (Administration & Services), (3) Annual Performance Evaluation Report for Academic Staff (SKT/ LPP/HCMS), (4) Collaborative Network Agreement (MOU/MOA) Document Management System, and (5) KPI Management System (KPI-MS). KPI-MS was recently upgraded and launched to help Schools and Research Centers manage their KPI achievements, with particular emphasis on research performance in compliance with the MyRA requirements of the country.

This unit works closely with the University’s Centre for Knowledge, Communication and Technology (PPKT) for hardware and software development and maintenance. Consultations between system developers and users are frequently held to ensure that the systems developed are relevant and meet current needs.

For further enquiries, please contact:

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The Universiti Sains Malaysia Islamic Centre started in 1983 as the Islamic Affairs Unit. The main function of the Islamic Centre is to educate and facilitate USM students and staff in developing their personality with strong Islamic characteristics through the concepts of Iman and Taqwa.

Continuous educational efforts have been carried out through various activities comprising lectures after prayers, seminars, courses, workshops and the distribution of brochures and magazines from time to time. The Islamic Centre gives University dwellers and those staying nearby including non-Muslims an opportunity to have a better grasp of Islam.

The Islamic Centre aspires to educate and to lead mankind in the best way possible to achieve the noblest development for human beings, as the servants and Caliphs of Allah through the dissemination of true knowledge, based on virtue of manner, quality and excellence, in order to motivate and to innovate so that the followers become worthy human beings.

The USM Islamic Centre also plays its role as an Islamic Education and Tuition Centre for the University’s Islamic students and staff by producing books, pamphlets and other research-related documents on Islam. In addition, the Islamic Centre offers other knowledge-based, welfare and counselling services to the students and staff.

The Centre has an active programme of seminar/conference and publications. A number of national and local agencies have work closely including the Federal Islamic Religious Council (JAKIM), Islamic Religious Council of Penang (JAIPP) and Mufti’s Department of Penang (JMNPP) with whom a few local seminars have been organized in year 2006 and 2007.

The publication unit established in this Centre is actively involved in the publication of all the Islamic base knowledge. This includes project writing al-Quran by using Thuluth (Khat) and also the establishment of study of al-Quran and Science.

The establishment of the student and an International Unit in the centre had provided the Muslim International student a stop centre in facilitating their need. This include in organizing the International Forum, Seminar and accommodating their culture social environment. The same activities were also activating at the three other centre, Health Campus in Kelantan, Engineering Campus in Nibong Tebal and Advanced Medical & Dental Institute (AMDI) in Kepala Batas, Penang.

For further details, please contact:

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Islamic Centre
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11800, Pulau Pinang
Tel: 04-653 2480/3910/3753
Fax: 04-6567732/6561305
Website: http://pusatislam.usm.my/
KNOWLEDGE TRANSFER CENTRE

In line with the objective of The Ministry of Higher Education (MOHE) to emphasise collaboration between university and industry which is outlined in the Malaysia Education Blueprint (Higher Education) PPPM (PT), Universiti Sains Malaysia (USM) and TORAY initiated the establishment of TORAY-USM Knowledge Transfer Centre (KTC) to enhance knowledge transfer collaborations with recognized relevant partners within and outside of the country.

TORAY-USM KTC is the centre that will facilitate knowledge transfer/exchange/sharing collaborations in USM niche areas for the benefits of industry and community. Currently there are 10 offices/units/centres placed at TORAY-USM KTC, each with their own specific knowledge program. Apart from USM own knowledge centres, the nation’s Knowledge Transfer Programme (KTP), several international networks and foreign university liaison offices from Japan are placed at KTC.

Core Centres

- Knowledge Transfer Programme
- National KTP Secretariat
- National KTP Monitoring
- USM KTP Secretariat
- Centre for Education and Training in Renewable Energy, Energy Efficiency & Green Technology (CETrEE&GT)
- YAYASAN USM
- Centre for Innovation and Productivity of Public Administration (PiPPa)

National and International Networking Centres

- Local Knowledge Secretariat
- Asia-Pacific University- Community Engagement Network (APUCEN)
- South East Asia Sustainability Network (SEASN)
- Japanese Cultural Centre (KUFS-USM)
- USM-NUT (Nagaoka University of Technology) Gigaku Techno Park
- Regional Sejahtera ESD Network (RSEN)

KNOWLEDGE TRANSFER PROGRAMME

The Knowledge Transfer Programme (KTP) which was implemented in the Tenth Malaysia Plan aims to transfer knowledge and results of research done by academia to the industry and community. KTP recognises a broad range of activities to support mutually beneficial collaborations between universities, industries and communities (government agencies/non-Government Organizations/public sector). It provides the platform for the exchange of tangible and intangible intellectual property, expertise, learning and skills between academia, industry and the community. The forms of interactions may include consultancy, education, training, graduate development, conferences, sharing of physical facilities and student placements.

Public Universities (PU) should effectively engage with industry and community towards mutually beneficial initiatives through role played by:

- Academia: able to provide relevant and up to date knowledge for knowledge transfer/exchange/sharing
- Industry: can utilise the resources of PU to enhance their business capability and economic activities
- Community: can benefit from the knowledge generated in PU to improve quality of life within the community.
- Graduate/Postgraduate Intern: enhance personal and professional development

NATIONAL KTP MONITORING

National KTP Monitoring is the secretariat responsible for conducting the monitoring and evaluation of projects under the Knowledge Transfer Programme (KTP). The main aim of National KTP Monitoring is to assess the outputs, outcomes and the impacts of all KTP projects.

Contacts:
Knowledge Transfer Programme Secretariat-(KTP)
Knowledge Transfer Centre Level 1,
TORAY-USM C26 Building Universiti Sains Malaysia
11800 USM Pulau Pinang
Tel : 04-653 6725
Fax : 04-653 6728
Email : ktpsecretariat@gmail.com.
ktc.usm.my
Fb Page : https://www.facebook.com/ktcusm/
MUZIUM & GALERI TUANKU FAUZIAH

Muzium & Galeri Tuanku Fauziah is an educational museum that converges art and science under one roof. In line with the University’s aim that the museum be used as a trans-disciplinary teaching and learning repository, attention has been given to the collection of items which are of relevance to courses taught in Performing Arts, Fine Arts, Anthropology, Archaeology, Astronomy, Ecology and Environment, Physics and Media Technology.

Muzium & Galeri Tuanku Fauziah is also known for its impressive permanent collection of modern art paintings by prominent Malaysian painters. Amongst them are Latiff Mohidin, Datuk Syed Ahmad Jamal, Dato’ Ibrahim Hussein, Jolly Koh, Dzulkifli Buyong, Zulkipli Dahalan, Ismail Zain, Lee Kian Seng, Cheong Kam Kow, Redza Piyadasa and Dato’ Mohd Hoessein Enas. Contemporary works by local and international artists such as from Cuba, Holland, France, Germany, Britain and Japan have been periodically shown to compliment the permanent collection. The section on performing Arts revolves around different kinds of theatre styles and traditional musical instruments based on South East Asia’s cultural heritage. Currently, it has expanded its collections to include contemporary video artworks by local artists as well as Islamic art and science artifacts. The museum has been visited by many researchers around the world, other than engaging on its own research activities especially on audience research and exhibition design. It has also published books and collaborated with several institutions on major exhibition and publication projects.

The Science and Technology floor has an area of 2,300 square metres. It is intended to be the University’s contribution to the public’s understanding and awareness of science and technology with interactive and hands-on exhibits. The planetarium Science Arcade is one example of the “hands-on” exhibit that has sparked interest amongst school children. It has been extended into a series of captivating and interactive “outreach” programme targeted for the general public as well as school children. The museum has expanded its outreach programme to include a convergence of other scientific or technological disciplines with the arts through its ‘Creative Link’ initiatives. It has brought its diverse collections and transdisciplinary public programmes to several locations such as hotels, shopping complexes, schools, mosques and sunday markets.

Guided tours for group visits are conducted on request for both adults and children. Facilities for classes, seminars or talks and temporary exhibition areas are available at the museum besides audio-video equipment for research and teaching.

Services

Exhibition management, exhibition design and installation, curatorial support, publication support, conservation of material culture, rental of space for exhibition and learning activities, workshops, smart camp, guided gallery tour, cultural performances and astronomy programmes.

Expertise


Visiting Hours

Monday – Saturday : 9.00am – 5.00pm
Closed : Friday (12.15pm – 2.45pm)
: Saturday (First Week)
: Sunday & Public Holiday

Entrance Fee

RM4.00 : Adult
RM2.00 : Children (5-12 years)
FREE : Staff & USM Student (with staff pass & matric card), Retirees, Senior Citizens & OKU.

Contact:
Muzium & Galeri Tuanku Fauziah
Universiti Sains Malaysia
11800 USM
Penang, Malaysia
Tel: +604-6533888 ext. 2137/ 5060/ 3261/ 3267/ 4786/ 4787/ 4788/ 4789
Fax: +604-6563531/ +604-6535060

For more information/enquiries, please visit:
http://www.mgtf.usm.my/
https://www.facebook.com/mgtfusm
http://www.mgtfusmpenang.blogspot.com/
The Quality and Accreditation (QA) Division handles accreditation matters with the aim of creating, implementing and maintaining an ongoing mechanism for assessment and improvement of accreditation operations and services to academic programs in the Engineering Campus.

The principle task of QA Division is handling the accreditation process of all the USM engineering academic programs in complying with the global standards of the International Engineering Alliance - Washington Accord (IEA-WA) and the Engineering Accreditation Council (EAC). The Engineering Programs in USM requires an official recognition by EAC and Board of Engineers Malaysia (BEM) every four years. This accreditation is the provision that enable the engineering students to register as BEM graduate member upon graduation and leading to their Registered Professional Engineer carrier after several years. The accreditation exercises are the contributing factor to the Engineering Schools in their Continual Quality Improvement (CQI) and act as an endorsement that the engineering education system has demonstrated strong, long-term commitment to quality assurance in producing engineers ready for industry practice in the international scene.

2014 has been a great year with respect to accreditation. Three engineering programs in USM were awarded full 5 year accreditation by the Board of Engineers Malaysia (BEM) i.e. Civil, Chemical, and Mechatronic Engineering. This is contributed to the strong commitment and awareness of the academic staff in the respective engineering schools in preparing to meet the accreditation standards of the EAC/BEM. USM has always put high priority and very serious in the implementation of Outcome Based Education (OBE). The top management of USM has given continuous support in ensuring that the engineering education has always been at the requirement level as in accordance with the guidelines of the Board of Engineers Malaysia (BEM).

The highlights of the major activity and achievements of QA Division Engineering Campus in quality assurance and accreditation for 2014 are as follows:

- Seminar on students’ role and expectations in EAC/BEM accreditation - 12th March 2014
- EAC/BEM panel visit for new cycle accreditation for 3 Engineering Programs - 20th to 21st March 2014
- Professional dialogue with the Director of Engineering Accreditation Department (EAD) on issues and requirement of EAC/BEM accreditation - 20th August 2014.
- Academic exercise on effective Implementation of Student Centered Teaching and Learning Techniques at Hotel Sunway, Seberang Jaya, PPinang – 19th to 21st October 2014

Further information on QA Division can be referred to

Quality and Accreditation Division
Director’s Office
Engineering Campus
Universiti Sains Malaysia
14300 Nibong Tebal, Penang
Tel: 04-5942148
Fax: 04-5941037
E-mail: cesanusi@usm.my
SEJAHTERA CENTRE

UMS Clinic was established in 1969 to provide medical and dental services to the students. The medical service was then extended to the staff in 1974, and subsequently in 1993, dependents of staff and students (in accordance to the Medical Health Scheme USM) as well as USM retirees are entitled to the medical service too.

Dr. Azizi Aiyub Ghazali was the first Director to head the UMS Clinic from the year 1973 to 1989, Dr. Sharifah Mariam Syed Hassan Aidid from the year 1989 to 2003 and Dr. Nurulain Abdullah Bayanuddin, from the year 2003 till 2014. In 1999, E-Clinic service was launched to provide better services to the UMS community. From the year 2014, under the directorship of Dr. Normala Abdul Wahid, the staff enrolment has increased to a total of 68 medical and supporting staff.

In June 2008 UMS Clinic moved to a new building and with the name changed to Sejahtera Centre to reflect the expansion of the multidisciplinary services offer to the UMS community. Sejahtera Centre is officially opened on 7 May 2010 by The Honourable Vice-Chancellor, Tan Sri Dato’ Dzulkifli Abdul Razak.

Services

In line with vision and mission of Pusat Sejahtera to create a campus community that is holistically healthy in terms of physical, mental, social and spiritual to meet the aspirations and the realization of the university to excel globally, Sejahtera Centre aims to provide quality health care services as well as health education programme and activities to the campus community.

Quality health care services provided by the Sejahtera Centre are the Outpatient Services, Dental Services, Pharmaceutical Services, Diagnostics Laboratory Services, Diagnostic Imaging Services (X-Ray), Haemodialysis, Physiotherapy, Counselling Services in cooperation with the UMS Counselling Unit and the Supporting (Standby) Services. Educational and Health Promotion Services which comprises of the Quit Smoking Clinic, Weight Management Clinic, Diabetes Management Clinic and Women Health Clinic was also introduced in line with the mission of UMS of providing on going health education to ensure a continuous healthy lifestyle for the UMS community.

Quit Smoking Clinic operates on every Thursday from 3:30 p.m. to 4.30 p.m. to provide counseling and therapy service to smokers to stop smoking. Weight Management Clinic operates on every Friday from 8:10 a.m. till 12:15 noon to counsel patient on healthy and proper weight control methods. Diabetes Management Clinic in cooperation with the National Poison Centre and School of Pharmacy operates on every Wednesday from 2:30 pm till 4:00 p.m. to conduct counseling session on the importance of healthy food intake and also to look for signal of diabetes in patient. Women Health Clinic provides screening for breast lumps, pap smear examination and also to educate patient on how to perform the Breast Self Examination (BSE) to check for lumps or other breast changes that may signal breast cancer.

In accordance with its name, Sejahtera, we believe that health is the responsibility of each individual and to achieve this noble goal, commitment, encouragement, support and involvement of every member of the campus is a must as with the words of pearls “ If it is to be, it is all up to me!”

Contact:
Director
Sejahtera Centre
Universiti Sains Malaysia
11800 USM, Penang

Tel: +604-6534941
Fax: +604-6534942
E-Mail: awnormala@usm.my
This 31-acre campus located in Bukit Jambul, Pulau Pinang is targeted to support and bring together start-up companies, innovators, industries and researchers with projects or products that are close to commercialization. The campus also provides support services and access to various research and technical expertise that USM has available.

The proposed development will comprise mainly of incubator buildings to accommodate research laboratories, studio facilities as well as commercial office spaces.

Our Partners
- Institute of Nano Optoelectronics Research and Technology (INOR)
- Centre for Chemical Biology (CCB)
- Centre for Herbal Standardization (CHEST)
- National Higher Education Research Institute (IPPTN)
- Collaborative Microelectronic Design Excellence Centre (CEDEC)
- Usains Holding Sdn. Bhd.
- Sentinext Therapeutics
- Collaborative Research in Engineering, Science and Technology (CREST)
- Talent Corporation

Facilities & Amenities
sains@usm offers a wide range of meeting spaces and facilities listed below making it an ideal venue to accommodate meetings, coferences, trainings as well as social and corporate events.
- Auditorium Murad Mohd Noor – 197 pax
- Auditorium Ishak Pateh Akhir – 108 pax
- Auditorium A & B – 50 pax
- Seminar Room 1, 2 & 3 – 30 pax
- Board Meeting Room – 30 pax
- Discussion Rooms and VIP Holding Room
- Sports facilities – playing field, basketball & futsal courts
- Cafeteria

Industry Collaboration Projects
CREST-NCIA-USM Incubator Centre
A tripartite initiative and collaboration between CREST, NCIA and USM to provide incubation for start-ups and medium sized Malaysian companies in the Electrical and Electronics (E&E) sector. Offering support from ideation, proof-of-concepts and commercialization, industry guidance and mentoring in emerging technologies such as Internet of Things (IoT), rapid prototyping and advanced materials.

Internet of Things (IoT) Cloud Data Centre and Research Lab
CREST, USM along with industry partners Intel, IBM, Kontron, Cisco and Dell where it focuses on the design, development and commercialization of IoT related solutions and products. This lab would also allow industry, academia, SMEs and entrepreneurs to collaborate and access IoT related knowledge and know-how through research and development activities.

Industry Talent Development Programs
sains@usm also partners with key agencies such as Talent Corporation, CREST as well as industries to run industry based talent development programs aimed at nurturing industry ready graduates and enculturating STEM education at various secondary schools. These programs are conducted together with key industry players and are listed below:
- Industry Academia Collaboration
- Industry in the Class Room
- Industry Youth Boot camp
- The Great Lab
- Industry Analytical Challenge
- Future Scientist Program

Latest Development
The latest development at sains@usm is the Inkubator Inovasi Universiti or I2U, a 9 storey incubation space and program focusing on the development of life-sciences and biotechnology. It will offer lab space, shared work space and shared lab facilities for academia and industry.

Contact Details:
Director
sains@usm
Universiti Sains Malaysia
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11900 Bayan Lepas, Pulau Pinang
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Fax: 04-653 5705
In a university that is highly involved with science and technology, culture has been prominently emphasised in bridging education and the nation which leads to the history and our roots. With this in mind, the Arts and Development Office which is also known as the Cultural Hall, was established to develop arts and cultural heritage activities within the university to cater to the community of USM. In other words, not only does it mainly organise cultural activities but it also functions to educate young generations through education and research such as seminars, cultural talks, national and international conferences, workshops etc. The Cultural Hall also desires to achieve the following objectives:

- To become a source of reference and a motivator in developing arts and cultural from the aspects of spirituality and personality development alongside with the university’s aspiration;
- To become a centre of research and reference especially for traditional arts performances;
- To establish and expand education about traditional arts performances through continuous cultural conservations and preservations; and
- To provide a platform for university students and staff to polish and demonstrate their skills, creativity and talents in performing arts.

Mission

To provide outstanding service and a platform for staff and students of USM in developing, promoting and upholding the arts, traditions and our cultural heritage.

Vision

Transforming Higher Education for a Sustainable Tomorrow

The Arts and Development Office is led by Associate Professor Mohamad Omar Bidin, the Director of Dewan Budaya whom is also the Dean of the School of the Arts, USM. The office is divided into 5 units:

1. Administration, Training and Human Resource (Senior Cultural Officer – Ms. Ramnah Ramli)
2. Students’ Affairs, Education and University’s Performance Unit (Cultural Officer - Mr. Murshid Md Hussain)
3. Sustainable Research, Publication and Theatre Development Unit (Cultural Officer - Mr. Ahmad Hashim)
4. Physical Facilities and Venue Unit (Cultural Officer - Mr. Norhelmi Othman)
5. Public Relation, Promotion and International Affairs Unit (Cultural Officer – Ms. Andy Siti Nurhidayah Rahim)

Each unit will provide its services and professional consultancies not only to the university but also to the outside community such as government agencies, public or private colleges and other universities, private sectors and so on.

What Do We Offer?

The Cultural Hall has been involved in many of USM’s major academic and cultural events such as the international and national level conferences, regional level seminars, public talks and numerous official functions of the university. Other performances such as traditional and modern theatres, dances, music and cultural festivals - either performed by international or local performers - have also been organised by the office. From time to time, the Arts and Cultural Development Office has also facilitated students’ co-curricular activities such as the choir, guitar, dance and jazz band and other cultural activities.

The Cultural Hall is also responsible to provide all its users with adequate space, production and consultations as well as to advice or to assist with technical support for any cultural functions and performances and its premises. The services and physical facilities for cultural performances and activities are provided by the Arts and Cultural Development Office are as follows:

SERVICES:

Performances:

i. Music
   - Dewan Budaya Band / Acoustic
   - USM Jazz Band
   - Keroncong ‘Alunan Mutiara’
ii. Dance
   - Traditional
   - Modern and Contemporary
iii. Theatre
   - Acting
   - Directing
   - Script Writing
iv. Event Management
   - Stage Management
   - Sound System
   - Light System
   - Production / Stage Crew
   - Documentation
v. Research and Publication
   - “Sulur Bayung” Magazine

Facilities

Auditorium

The auditorium has a proscenium stage with an area of 2,000 sq. ft. (40 x 50 sq. ft.). It has a seating capacity of 493 and is fully air conditioned. The auditorium is an exceptional choice for the staging of any productions such as concerts, theatres, conferences, public talks etc.
Its ample seating capacity guarantees a large enough space for any audience.

**Music Studio**

A music studio is provided for staff and students for jamming sessions and for practice purposes. Fully equipped with musical instruments such as electric guitars, acoustic guitars, bass guitar, keyboards, drums, percussion sets, etc.

**Dance Studio**

A dance studio furnished with wall mounted mirrors and curtains that can accommodate 40 dancers at a time. The studio provides a stage to place musical instruments such gamelan set, drums, audio system etc.

Open Space “Dataran Bintang” and “Permatang Pelajar” “Dataran Bintang” is an open space located next to the main auditorium, while “Permatang Pelajar” is located opposite the Dewan Budaya building. Both venues cover specific locations for exhibitions and cultural activities.

**Audio Visual and Sound Room**

These rooms are equipped with a 48-Channel Lighting Mixer Leap Frog 96 and a 40-Channel Sound Craft Audio Mixer System.

**Make – Up Rooms**

Separate make-ups rooms for female and male performers are provided.

**Other rooms and utilities**

VIP waiting room, banquet hall, ticketing counter and prayer room are also provided.

**Contact us:**

For more inquiries about Dewan Budaya or bookings, please contact Andy Siti Nurhidayah Rahim, our Cultural Officer at:

- Office : 04 – 653 3487 / 2307
- H/P No : (60)12-6824449
- E-mail : dewanbudaya@gmail.com/andysiti@usm.my
- Website : www.dewanbudaya.usm.my
- Facebook: Dewan Budaya USM
THE UNIVERSITY LIBRARY

The University Library was established since 1969 and it consists of the following libraries.

- Perpustakaan Hamzah Sendut (Main Library) 1 and 2 and new building at the Main Campus, Pulau Pinang
- Media Library at the Centre for Instructional Technology & Multimedia, Main Campus, Pulau Pinang
- Islamic Centre Library at Main Campus, Pulau Pinang
- Resource Center, School of Housing, Building and Planning, Main Campus, Pulau Pinang.
- Perpustakaan Hamdan Tahir (Medical Library) at the Health Campus, Kubang Kerian, Kelantan
- Perpustakaan Kejuruteraan at the Engineering Campus, Seri Ampangan, Nibong Tebal, Pulau Pinang.
- Pusat Ilmu Translational dan Maklumat (PITM) at the Advanced Medical Dental Institute (AMDI), Bandar Putra Bertam, Kepala Batas, Pulau Pinang.

Collection
The Library collection consists of over 1,136,009 titles of books and bound journals, more than 112,711 titles of e-books, 360,349 e-journal titles, 360,349 e-journal titles, 64 full text databases and 218,372 titles of media materials including microform format. About 10,000 copies of books, journals and media materials are added to the Library collection annually. The Library system houses Open Shelf, Reference, Current and Bound Journals, Bahasa Malaysia, Media and Red Spot Collections. Special collections include Malaykansia, USM Archives, Restricted and Rare Books. The Library also houses the National Laureate and Vice-Chancellors (of USM) collections.

Services
Apart from the normal loan services and facilities, the Library also provides Online Information Retrieval Service, Current Awareness Service, and Reference and Bibliographical Services. It also conducts User Education Programs, Strategic Program In Research Support Service (SPiReSS) and Document Supply and Reprographics Services. In addition, the Library supports Off-Campus educational programmes through the provision of postal loan services and the establishment of a number of regional library collections. The Library facilities and services are also extended to eligible members of the public.

Achievement

USM library had organized Persidangan Ketua-ketua Pustakawan Perpustakaan Universiti dan Perpustakaan Negara Malaysia (PERPUN) Strategic Planning Workshop from 10th – 12th December 2014 at Perpustakaan Hamzah Sendut Library Academic Lounge. It was a successful workshop on Librarianship Strategic Planning at the National level.

The USM library had continued its internationalization efforts by being the Secretariat of the ASEAN University Network Interlibrary Online (AUNILO) co-operated with the Secretariat of the ASEAN University Network (AUN) by coordinating the 10th Meeting of the AUNILO Committee from the 02nd – 04th April 2014 at Royal University of Phnom Penh, Cambodia.

12 librarians and 6 support staff had presented papers at national and international levels. This is an ongoing achievement of USM Library staffs in 2014 whereby their expertise and knowledge had been recognized globally.

Information about the Library and other electronic resources can be accessed through the library homepage: http://www.lib.usm.my

USAINS ensures that the innovative, educational and technical resources and other related services of USM are commercially marketed and promoted locally and internationally, for the benefit of the University. Each company in the group operates as a private company, limited by shares. The holding company is wholly-owned by USM, while the seven subsidiaries in turn are wholly-owned by the holding company.

The primary objective of USAINS is to manage the intellectual property generated by USM's large pool of subject matter experts, who undertake multi-disciplinary contract research projects as well as training and consultative works (including clinical trials and bio-equivalent studies), by linking these experts with international and local enterprises and with public-sector agencies. In this way we generate additional income for these experts and for the University. Related to these activities is the spawning of new ventures, assisting in sourcing for funds and venture capital involvement and with initial public listing of these ventures.

USAINS is registered as a Consultant/Contractor with the Ministry of Finance in a substantial number of fields. In addition, USAINS is also registered with FINAS, with Kastam & Eksais Di Raja Malaysia, with Ministry of Education, with Majlis Perbandaran Kuantan and with TM Research & Development. With these registrations, USAINS can utilize USM academic staff with the appropriate qualifications to provide consultancy services in their respective fields of expertise to the various Government agencies. Projects previously undertaken include road safety and sustainability, conservation of heritage sites, storm water controls and flood mitigation and an ecological assessment of a lake system.

Companies engaged in R&D activities with USAINS, in collaboration with USM, stand to qualify for tax benefits. Current contributions made to USM are tax-exempt for the amount of contribution made, as provided under Section 44 (6) of the Income Tax Act 1967 (Act 53). This exemption status has been granted to USM via Government Gazette No. 251 dated 20th July 1972.

In keeping with proper industrial practice, USAINS accords strict confidentiality over the findings of its contract research and consultancy projects. It is receptive to clients’ requirements regarding commercially valuable information that may require intellectual property protection or secrecy.

USAINS promotes and manages Laboratory Testing and Consultancy services provided by the 24 centres within USM, including the School of Civil Engineering, School of Chemical and Material Resources Engineering, School of Pharmaceutical Sciences, School of Chemical Sciences and School of Biological Sciences. A number of these centres are accredited to MS ISO 17025.

USAINS is an Approved Training Programmes provider (Class A) under the Human Resources Development Fund (HRDF). Employers who are registered with the Human Resources Development Council can obtain from HRDF either partial or full refund of the fees and allowances incurred in sponsoring their employees in the manufacturing and services sectors to attend the approved courses offered through USAINS under the SBL Scheme (Training Assistance Scheme), PROLUS Scheme (Approved Training Programme Scheme) and SBL- Khas Scheme. In addition, professional courses are also tailor-made to suit the needs of individual clients or industry and international organisations.

USAINS manages the financial aspects for most of the training programs conducted by Schools and Centres of Excellence of USM. In many cases, USAINS also manages administrative, logistics and technical arrangements for these programs. USAINS also collaborates with external training providers to offer training programs, including conferences, seminars, courses and workshops.

USAINS spearheads the direct commercialisation of USM's inventions and R, D & I products and processes. The resulting collaboration with industry usually takes the form of licensing arrangements, out-right sale of intellectual property, formation of joint-ventures and collaboration for proto-typing.

USAINS provides events management solutions through its modern facilities comprising three well-equipped auditoriums, meeting and discussion rooms and a fully air-conditioned exhibition area, in Kompleks EUREKA as well as at Sains@USM. We can also provide comprehensive secretarial services for events and arrange refreshment and accommodation packages.

Usains Tech Services Sdn Bhd manages an Executive Health Services Scheme (EHSS) for Hospital USM. Under the EHSS, patients of HUSM can choose to pay full-fee in
order to receive medical and dental treatments in a more comfortable environment and by USM’s Medical and Dental specialists of their choice. USAINS in managing the EHSS ensures that all parties involved (HUSM patient, HUSM/USM, Medical Specialists, and Supporting Staff of HUSM/USM) benefit from this scheme, without placing undue stress and pressure on public resources.

Usains Infotech Sdn Bhd is entrusted with operating the Centre of Excellence for the Electrical & Electronics industry by the Northern Corridor Implementation Authority (NCIA). It provides design and development services relating to IC design as well as conducts talent development programmes and outsourcing of engineers to the electronic industry.

Usains Biomics Sdn Bhd provides analytical services in relation to drugs, food, antibody services for diagnostic tests and teaching and training services in chromatography and mass spectrometry.

Leadership for USAINS is provided by its Board of Directors, members of which are nominated by USM.

For further information on the services offered by USAINS, kindly address all enquiries to:

The Group Managing Director
USAINS Holding Sdn. Bhd.
Level 2, Block C, Sains@USM
No.10, Persiaran Bukit Jambul
11900 Bayan Lepas, Pulau Pinang

Telephone, fax and Internet home page information are as follows:
Tel: +604-6437420
Fax: +604-6430490
Homepage: www.usainsgroup.com
E-mail: info@usainsgroup.com
USM PRESS

Penerbit Universiti Sains Malaysia (or USM Press) is a leading scholarly publisher established in 1972. It became an independent centre on 1 August 2002 and operated in building D34.

USM Press is headed by a Director that reports directly to the Vice Chancellor while matters regarding the publication policies are overseen by the University Publications Committee, that is, the Senate Committee responsible for enacting the publishing policy and the university’s publication planning. The committee is chaired by the Deputy Vice Chancellor (Research and Innovation).

The vision of USM Press is to be a world-class scholarly publisher with products of international standard that supports universal sustainability by disseminating and marketing its products globally.

The mission of USM Press is to be an established and outstanding scholarly publisher that spearheads the aspirations of the university in the effort to develop, disseminate and sustain knowledge.

There are four cores of the publishing organizational structure: acquisition, editorial, production and marketing, hence the five divisions of USM Press:

1. Administration Division
2. Acquisition and Editorial Division
3. Journal Division
4. Production and Design Section
5. Marketing Division

The publishing policy of USM Press is to increase the publication of high quality books and scholarly materials written by academicians and scholars for the accumulation and dissemination of knowledge and information for the benefit of humankind, and also to boost the image of Universiti Sains Malaysia.

The publishing corpus of USM Press consists of books, journals and public lecture series. For book publications, there are 8 categories:

1. Original work
2. School imprint (textbook/collection of articles)
3. Popular scholarly work
4. Creative work
5. Monograph
6. Special publication
7. Translation
8. University textbook

USM Press has continued to publish high quality publications, and received multiple awards in Anugerah MAPIIM, Anugerah PERSAMA, Anugerah MBKM, Anugerah Terjemahan Negara, Anugerah PNM, Anugerah Akademik Negara, etc. In addition, majority of its 16 journals are listed in the Scopus Index and Thomson Reuters Web of Science (ISI).

The marketing and selling of books by USM Press are done through distributors, tenderers, retailers, and sales activities in exhibitions and national and international book fairs. Online purchasing of books is also available through its e-commerce portal (www.karyausm.my) while its open access journals are accessible through the journal websites. Journal articles may also be accessed through databases such as EbscoHost and Proquest that focus on the marketing of journals as library digital collections.

In line with the advancement in technology and publishing industry, USM Press has taken significant steps towards developing electronic publishing to remain competitive and improve visibility of its publications. The electronic publications of USM Press are available at the local and international electronic bookstores such as eSentral, Bachabooku, Amazon.com, Google Play Books, Kono, Barnes and Nobles, Apple Store, etc.

Other than its core function as a publisher of scholarly works, USM Press also offers services to other parties in these areas: (1) joint venture in publishing, (2) publishing books on behalf of other institutions, (3) management of publishing projects, (4) publishing of special issues for journals, (5) electronic publishing, (6) publishing consultation, and (7) trainings in the form of short courses and workshops related to writing and publishing.

Authors from USM and other institutions are invited to publish their works with USM Press. The application to publish book(s) may be made online through the ePenerbit system at the website of USM Press while journal articles may be directly submitted to the respective journal’s editor-in-chief or email journal@usm.my. Enquiries may be made through email (penerbit@usm.my) or phone (04-653 4421/4420)

For further enquiries, please contact:

Penerbit Universiti Sains Malaysia
11800 USM, Pulau Pinang, Malaysia
Tel: 604 653 3888 ext. 4420/4421/4432
Fax: 604 657 5714
Email: penerbit@usm.my
http://www.penerbit.usm.my/
RESEARCH IN SCHOOLS
MAIN CAMPUS
The Graduate School of Business, USM, officially came into being on March 6, 2009. Its conception however, can be traced way back to 1989, when the School of Management USM, first began offering post-graduate programmes. Since then, GSB has come a long way. With an international student population comprising managers and professionals from various fields, GSB today is a fertile ground for peer learning and knowledge exchange for business leaders of the future. Its multi-disciplinary approach to knowledge coupled with its thrust in sustainability, ensures that students are provided a holistic learning experience that prepare them for the challenges ahead. As a testament to the quality of its programmes, in 2015, GSB was ranked top 20 in the Far East Region by Eduniversal for its MBA programme and Top 150 in the QS World University Rankings by Subject (Business & Management Studies). GSB is also accredited by the Malaysian Qualification Agency (MQA) and ABEST21 (The Alliance on Business Education and Scholarship for Tomorrow, a 21st Century organisation) which recognises GSB as a business school with excellence in the practice of sustainable learning and interdisciplinary teaching and research.


**Vision**

To be a Reputable Graduate Business School for a Sustainable Tomorrow

**Mission**

GSB strives to nurture responsible business leaders with the relevant knowledge and skills needed to drive business sustainability.

**Objectives**

To become a leading centre of excellence:

- For higher education through collaboration and smart partnerships with the industry and international universities.
- For the industry through applied research, consultancy, and training in the fields of management and business.
- That fulfils the national aspiration to nurture lifelong learning through its EDP and Consultation Services.
- That integrates sustainability values into the curriculum programmes and also the teaching and research activities.
- That strikes a balance between “academic” and “industry”.

Hence, GSB@USM aims:

- To integrate sustainability values into the programme curriculum and also in teaching and research activities.
- To become the leading centre of excellence for higher education through collaboration and smart partnerships with the industry and international universities.
- To become the leading centre of reference for the industry through applies research, consultancy, and training in the fields of management and business.
To meet the needs of the nation by offering business and management programmes; and consequently to nurture graduates with world-class entrepreneurial spirits.

To fulfil the nation’s aspirations in nurturing life-long learning by offering executive programmes to the industry and the public at large.

**Why GSB@USM?**

The Graduate School of Business at Universiti Sains Malaysia (GSB@USM) is the premier provider of management and business education in Malaysia. The postgraduate programmes were established in 1992 at the School of Management, and within a short period of time, has gained reputation as one of the sought after programmes in this region. The strong demands for PhD, DBA, and MBA programmes have resulted in the establishment of a separate graduate school, known as GSB@USM.

To date, we proudly offer PhD, DBA, MBA, and Online MBA programmes. These well thought out, planned and executed programmes are continuously being improved to suit the dynamic changes of the global business environment. These programmes have attracted students from over twenty countries from South East Asia, the Middle East, Europe, Africa, and the Indian subcontinent. The academic and research programmes at GSB go beyond functional aspects in management to encompass sustainable developments in economic, social, and environmental issues. This focus is in tandem with the school’s Business Sustainability agenda.

The faculty members at GSB comprise of multi-disciplinary backgrounds and are dynamic in nature. They are highly trained and experienced; much sought after, and they are prepared for any challenges. These attributes can be seen from the number of recognitions received, international publications, strong affiliations and working partnership with industry and professional bodies. In addition, we offer Executive Development Programmes and Consultancy services to various industries, locally and internationally.

**Academic Strategies**

GSB aims to equip graduates with the appropriate knowledge and skills that would enable them to face volatile business challenges while still upholding their integrity and ethical values. GSB collaborates with the industries to offer customised academic programmes and work with other universities to offer joint programmes. To ensure quality academic programmes, GSB strives to gain academic accreditation from international bodies and has set up the Graduate Business Club and GSB Alumni to address the students’ needs and grievances. GSB i-kelab was also formed to ensure not only interaction amongst staff, but also amongst staff and students.

**Achievements**

1. ISO 9001:2015 - Teaching and Learning since 2010
2. MQA Approval for all Academic Programmes
3. Top 50 business Schools rated by OIC (Organisation of Islamic Countries)
4. First to offer Online MBA in the Malaysia
5. Awarded ABEST21, (The Alliance on Business Education and Scholarship for Tomorrow, a 21st Century Organisation) Accreditation on 8th March 2014
6. Signatory of Principles for Responsible Management Education (PRME)
7. Member of Association Of Advance College Of School Of Business (AACSB)
8. Member of ASEAN University Network For Business And Economics (AUN-BE)
Academic Staff

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Deputy Dean (Research, Graduate & Network)
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Online MBA
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Dr. Mehran Nejati Ajibisheh
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Quality & Image
Mr. Shamzul Razni Abdul Razak
Expertise: Corporate Social Responsibility, Consumer Culture, Corporate Strategy
E-mail: sham_abdulrazak@usm.my

Our pedagogical strategies are geared towards fusing research and creative endeavor, scholarship and production, community outreach and private instruction into high-quality academic programs.

Our academic staffs are committed researchers in diverse fields from studio-practice industries. They cover histories and theories of design, art, music and theatre, ethnomusicology and, music technology and pedagogy. Our research interests include: the use of local materials in artistic production, technology in the arts, visual arts and theatre education, documentation and preservation. Globalization and the development of cultural identity through the arts and popular culture have also become significantly important areas of research at the School of the Arts.

Our postgraduate programs are internationally recognized for its research in the new media, visual arts, music and dance (traditional and contemporary).

All research findings are disseminated among staff and student, as well as to the community at large through programs such as research presentation, community outreach, artistic performances and industrial engagement. Findings are also published in our journal, Wacana Seni (Journal of Arts Discourse), and in international publications, both in textual and audiovisual forms. The School of the Arts promotes research collaboration and networking with key industries and external researchers at regional and international levels.

Dean
Assoc. Prof. Mohamad Omar Bidin
Deputy Dean (Academics, Students & Alumni)
Dr. Mumtaz Begum PV Aboo Backer
Deputy Dean (Research, Graduates & Linkages)
Dr. A.S. Hardy Shafii
http://art.usm.my
SCHOOL OF BIOLOGICAL SCIENCES

School of Biological Sciences was one of the pioneering schools established in 1969. It has over 63 highly qualified personnel specialised in various fields of biological sciences. Two undergraduate degrees are offered: Bachelor of Science (Hons.) (Biology) and Bachelor of Applied Science (Hons.) (Biology). B.Sc. (Hons.) offers fields of specialisation in Microbiology, Plant Biology and Animal Biology. B. App.Sc. (Hons.) offers fields of specialisation in Agrobiology, Aquatic Biology, Biotechnology, Environmental Biology and Entomology and Parasitology. The School also awards the Master of Science (M.Sc.) and Doctor of Philosophy (Ph.D) degrees through research mode. As of 2015, the school has about 836 undergraduate and 275 post-graduate students. About 14% of the post-graduate students are of foreign nationalities.

In the quest of knowledge, the School believes a highly interdisciplinary approach is the way ahead. The main research activities cover Bio-based and Biodegradable Plastics, Biocrystallography and Structural Bioinformatics, Fermentation and Enzyme Technology, In Vitro Plant Culture Technology, Plant Pathology, Molecular Ecology and Population Genetics, Soil Science, Vector & Urban Pest Control, Antarctic Biology, Wetlands Research, Wildlife Research, Coral Reef and Aquaculture. The School strives to maximise the utilisation of the available equipment to generate scientific data of the highest quality. The research facilities include the state-of-the-art Electron Microscopes Unit that houses various types of light microscopes, scanning and transmission electron microscopes including the newly acquired EFTEM (Energy Filter Transmission Electron Microscope) model ZEISS LIBRA 120; Vector Control Research Unit; Aquaculture Research Complex; Computer Laboratory; Animal House; Herbarium; Zoology Museum; Insectarium and various teaching and research laboratories.

The School has cooperatively promote successful academic and research through the signing of Memorandum of Understandings with universities and research foundations, amongst which include The Kyoto University, Kansai University, Nagasaki University, RIKEN, NARA Institute of Science and Technology (NAIST) of Japan, Universitas Airlangga, Surabaya Indonesia, Institute Technology Bandung (ITB), Bandung, Indonesia and a Research Collaboration and Commercialisation Agreement with Plainezus Research Laboratories Sdn. Bhd.

For further enquiries, please contact:
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The School of Chemical Sciences (SCS), established in 1969 is one of the pioneer schools of USM. With more than 30 academic staff and over 50 supporting staff, the School has been entrusted to provide professional training in chemistry to meet the demands of the industries and society.

Programmes Offered:

The School offers two undergraduate programmes leading to:

- Bachelor of Science (B.Sc.) with Honours degree
- Bachelor of Applied Science (B.App.Sc.) with Honours degree, majoring either in Industrial or Analytical Chemistry.

These programmes are recognised by Institut Kimia Malaysia (the Malaysian Institute of Chemistry) and accredited by the Royal Society of Chemistry (RSC) since 2015. These programmes include 8 weeks of industrial training with industrial partners, commercial and research laboratories.

Students are also encouraged to register for the final year research project (which covers 2 semesters) during their final year of studies.

The postgraduate programmes which offer M.Sc. and Ph.D. by research mode and mixed-mode M.Sc. (Chemical Instrumentation) have attracted many Malaysians and foreign students.

Specialisation

The School has given priority in creating a healthy research environment with a total of over 150 postgraduate students engaging in various areas of research including natural products, organic synthesis, nanoscience, electrochemistry, liquid crystals, organometallics, environmental chemistry, materials chemistry and chemical education. Most of our academic staff have been well endowed with research grants and funding from government and non-government bodies and industries to support these research activities.

RESEARCH GROUPS

The main research areas are in:

- Environmental / Green Chemistry
- Materials Chemistry
- Organic and Inorganic Synthesis
- Molecular Modeling
- Analytical Chemistry

(e.g: Liquid Crystals Materials, Nanohybrid Materials, Separation Science, Organic & Inorganic Polymers, Microscale Experiments,


Facilities

The School is well equipped with the facilities needed for undergraduate teaching and research programmes. These include FTIR with Microscope, NMR (300 MHz
Mission

In line with the APEX* status granted by the Ministry of Higher Education (Sept 2008), the School is poised to provide quality education to chemistry students for the workforce in the market place. We welcome applications and enquiries from students for our wide range of programmes. We are confident of offering you the courses that will suit your interests and develop your skills in preparation for your future career.

Academic Staff

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Deputy Dean (Research, Postgraduate & Networking)
Prof. Dr. Yeap Guan Yeow | gyyeap@usm.my

Programme Managers

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Physical Chemistry
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Industrial Chemistry
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Organic and Inorganic Chemistry
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, 400 MHz (for solid state analysis) and 500 MHz, TGA, GCMS, LCMS (TOF), HPLC, GC, IC, TGA / DSC, CHN, GPC, Total Organic Carbon Analyzer, Polarized Optical Microscope, UV-Vis, Flame Atomic Absorption / Hydride Generation spectrophotometer, Inductively Coupled Plasma Mass Spectrometer, Electrochemical system and Surface Area Analyzer.
**SCHOOL OF COMMUNICATION**

**USM** pioneered in offering communication studies in Malaysia with the first communication courses offered in 1971 at the School of Humanities. The Bachelor of Communication Programme was later introduced in 1984. In line with the university's strategic plan to expand, the School of Communication was established in 1995. This programme exposes students to the diverse traditions in the field. It also equips students with the skills and knowledge to meet the challenges of contemporary society, technology and industry. The communication programme offers specialization in Journalism, Film and Broadcasting and Persuasive Communication.

**Philosophy**

The School provides an open and integrated approach to communication studies through:

- **Multi-Disciplinary Approach**
  Students are exposed to the diverse intellectual traditions in communication studies in reflecting the multi-disciplinary nature of the field.

- **Liberal Education Approach**
  Through the major and minor curricula, students will be able to enhance their knowledge and skills in one area of specialization while taking different or related minor courses offered by other schools;

- **Integration of Theory and Practice**
  The programme offers a well-designed curriculum that integrates both aspects of theory and practice to prepare students for various opportunities and challenges in the media and communication industry.

**Undergraduate Programmes**

- **Journalism**
  Journalism emphasises both practical skills and theoretical knowledge. It offers a multifaceted educational experience that prepares students to critically analyze and synthesize information to communicate accurate news stories across various media platforms. Students will possess critical understanding and knowledge on various issues pertaining to the sociological aspects of journalism as well as useful skills in writing, reporting, photo-journalism and desktop publishing.

- **Film & Broadcasting**
  The Film & Broadcasting component offers a combination of critical and analytical understanding of screen studies and professional training in audio, video and film production. Students specialising in Film & Broadcasting will be able to produce quality media products as well as thought-provoking screen products that critically address various pressing issues in society.

- **Persuasive Communication**
  Persuasive Communication integrates several academic fields related to persuasion and influence, namely advertising, public relations, public communication campaign and event management. Students specializing in Persuasive Communication will be able to understand various intellectual paradigms, theories and knowledge, which they will then be able to apply to various practical-oriented courses.

**Postgraduate Programmes**

The School’s postgraduate programmes are designed to produce competent researchers with strong theoretical background, methodological sound to undertake research. The school offers three postgraduate programmes by coursework, namely:

- i. Master of Communication (Screen Studies)
- ii. Master of Communication (Integrated Marketing Communication).

It also offers a mixed mode programme under:

- iii. Master of Arts (Communication)
- iv. Master of Arts (Communication)
- v. Doctor of Philosophy.

Two programmes by research are:

- i. Master of Arts (Communication)
- ii. Doctor of Philosophy.
Admission Requirements for all Master programmes

➢ A relevant first degree with honours or equivalent from a recognised university.
➢ Working experience in related field would be an added advantage.
➢ Foreign applicants should have English proficiency of TOEFL (550) or IELTS Band 6.

Admission Requirements for Doctor of Philosophy

➢ Applicants should possess a Master’s degree or bachelor’s degree with first class honours in a related field from a recognised university.
➢ Applicants are required to submit a research proposal.
➢ Foreign applicants should have English proficiency of TOEFL (550) or IELTS Band 6.

Awards Achieved in 2015

Receiver: Harm Hui Shing (Undergraduate student)
Competition: Kaki Lima Short Film Competition 2015
Type of Award: Jury Award-Distinction
Receiver: Rizki Briandana (PhD student)
Competition: Flicks Fiesta
Type of Award: Best Film Editing

Administration

Acting Dean
Professor Dato’ Dr. Adnan Hussein
Deputy Dean (Academic, Students & Alumni)
Dr. Nik Norma Nik Hasan
Deputy Dean (Research, Postgraduate and Networking)
Dr. Bahiyah Omar
Chairperson (Undergraduate)
Dr. Nurzali Ismail.
Chairperson (Postgraduate)
Dr. Lee Yuen Beng
Coordinator of IMC Programme (USM@KL)
Assoc. Prof Dr Hjh Hasrina Mustafa

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communication.usm.my/
The School of Computer Sciences was officially established on the 1st of March 1995 after functioning for a period of 10 years as the Division of Computer Science, an independent and autonomous unit within the School of Mathematical and Computer Sciences.

Over the years, the School has been engaged in various developments, advances, and achievements in the computer science field pertaining to academic programmes, research and development, consultancy, and community services. Besides, the School has been actively participating in many local and international competitions to showcase the outcome of its research and development. It is gearing up its efforts to meet new challenges of research and development by introducing three clusters to support its research activities namely Service Computing, Data to Knowledge, and Infrastructure. These clusters reflect the School’s integrated approach in line with the emerging trend in multidisciplinary and transdisciplinary research.

The School maintains strong and strategic linkages with the industry. Formal and informal events take place to exchange ideas on benefiting the curriculum and the industry. The School is involved in various joint projects with all types of industries supported by national and international grants. It is also involved in consultancies, particularly in software system development.

In terms of global partners, the School maintains strong and strategic linkages with universities in North America, Europe, Australia, Japan, Singapore and the Middle East. These smart partnerships include long-standing research collaborations with several French universities on natural language processing, distributed computing and artificial intelligence. The joint supervision of postgraduate students is made possible through such linkages.

In tandem with the advances in Information and Communication Technology (ICT), the School of Computer Sciences continues its efforts to strengthen its curriculum and research in order to produce quality graduates towards the sustainable development of the nation.

Programmes Offered

Undergraduate:
Bachelor of Computer Science (Honours)

Postgraduate:
Mixed Mode Programme

- Master of Science (Computer Science)

Coursework Programme

- Master of Informatics

Research Mode Programme

- Master of Science (Computer Science)
- Doctor of Philosophy

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The School of Distance Education (SDE) has been providing academic programmes to enable working adults to enroll as students to obtain a bachelor degree since its establishment in 1971 as the Centre for Off Campus Studies. Its long history in distance education and lifelong learning has made it the pioneer institution in Malaysia for offering distance education programmes and has made it one of the earliest formal distance education institutions in the world, together with the Open University, UK. The innovative educational approach has been tried and tested to produce 20,000 graduates in various fields/specializations while remaining in full-time employment. This is a significant contribution to the human capital development of the country in its journey towards becoming a developed nation.

Currently, four undergraduate programmes are offered namely Social Sciences, Sciences, Arts and Management. A total of thirteen specializations/majors are available viz., Geography, History, Literature, Anthropology- Sociology, Economics, Political Science, Biology, Chemistry, Mathematics, Physics, Finance, Marketing and Organizational Management. The curriculum offered by SDE is equivalent to programmes offered by the on-campus Schools via the conventional face-to-face mode. Students spend a minimum of five years to complete their degrees gaining competency in their chosen areas of specialization through a rigorous academic training regime. All teaching materials are provided in the form of print material, e-modules, e-lectures, live video-conferencing, web-conferencing, e-learning portal and streaming media. Students are able to access teaching materials and even download recordings of lectures from the e-learning portal so that learning activities can be tailored according to students’ requirements. Over the years, this flexible student-centred mode of study has become the preferred choice of people in active employment.

SDE has 12 regional centres located throughout the country where teaching and learning activities take place and modern facilities are available at a convenience. In addition, face-to-face meetings are held during an annual residential session in the USM main campus, a unique and academically enriching feature of the programme. In addition, practical classes, lectures and continuous assessment are conducted during the intensive course. Students experience a unique aura of the only APEX university in the country.

SDE also offers postgraduate programmes via research in various areas of specialization. The degrees offered are Master of Arts, Master of Science, Master of Social Science and Doctor of Philosophy. These programmes are offered on either full-time or part-time basis. Candidates are required to undertake a research project under the supervision of a member of SDE’s full-time academic staff. The degree is awarded based on the examination of a thesis submitted after completing the research component.

The SDE has more than 80 full-time academic staff with 90% having doctoral qualifications. The presence of this large number of full-time core academic staff serving as subject matter experts is a major indication of SDE’s commitment to academic excellence and leadership in providing quality tertiary education via distance education. Apart from teaching undergraduate courses, all academic staff are actively engaged in research and are capable of providing quality supervision to postgraduate research students. Besides their involvement in academic programmes, lecturers actively publish their research via academic journals and publications and present academic work at conferences. Consequently, the vast professional experience of the academic staff is widely recognized both nationally and internationally. This is apparent from the various consultancy activities that have been undertaken including technology transfer and training for government agencies as well as the private sector.

SDE is in the midst of an exciting transformation that will make it a global powerhouse for Adult and Lifelong Learning. In line with USM’s vision of “a research intensive university” that empowers future talents and enables the bottom billion to transform their economic well being”, SDE is committed to upholding that vision by playing a key role especially in transformation of the bottom billion towards a better quality of life.

Experience lifelong learning the APEX way.

Enquiries and contact numbers:
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Experience lifelong learning the APEX way.
SCHOOL OF EDUCATIONAL STUDIES

The School of Educational Studies (SES) was established in 1970, a year after the inauguration of Universiti Sains Malaysia (USM). The initial aim of SES was to produce graduate science teachers. Subsequently, a pioneer group of 20 science teachers graduated in 1971/1972 session. From this humble beginning, the SES has emerged as one of the largest schools in USM in terms of student numbers. The number of academic staff too has steadily increased and today we have 63 highly qualified academic staff in diverse sub-fields of education and 24 dedicated support staff. The SES’s mission is to develop and dispense knowledge through innovative teaching and research and to nurture exceptional educationists through internationally acknowledged educational programmes.

At the undergraduate level, SES offers 4 main degree programmes; B.Sc. (Education), B.A. (Education), B.Ed. (TESOL) and B.Ed. (Special Ed.). SES has approximately 1000 (including PhD Research Mode, Master’s Research Mode, Ed.D Coursework Mode and Master’s Coursework Mode) postgraduate students. We offer taught courses as well as research mode programmes at the Masters and Ph.D. levels. We were the first university in Malaysia to offer the Doctor of Education (Ed.D) Programme. SES is continuously improving facilities for research postgraduate students, especially working space and labs for computing and multimedia, psychometric labs, teaching, and counseling. As for research, SES is also working towards a more diverse and high level research and data gathering in the field of education, using an assortment of tools and advanced methods of data storage and analysis. We also collaborate with other institutions (other schools in USM, nationally and internationally) in the field of pedagogy, research, supervision, publication, consultation, student exchange and community work.

Based on the experiences SES has accumulated in the field of educational research, SES has been frequently consulted by numerous institutions to develop their educational programmes. Among the more notable institutions are the Federal Government of Malaysia (through the Northern Corridor Economic Region, Ministry of Education and other ministries), State Governments of Terengganu, Johor, Penang and Sabah. Internationally, SES has been actively associated with UNESCO, Maldives, Qatar, Japan, African nations, Thailand, Germany and Indonesia. SES partnership with the Centre of International Cooperation in Education (CICE) at Hiroshima University is leading towards establishing a Bottom Billion Programme in line with our aspiration to establish the Sejahtera Corps, where our students and staff will be involved in local as well as international teaching practice and community service activities.

SES is often being called upon to assist in educational and training aspects by other Schools and Centres of Excellence, USM in projects such as; the Healthy Life Style, Healthy Campus, Road Safety, and Renewal Energy and Brain Network. It is also involved with USM’s APEX based programmes such as the Bottom Billion Team. We also have strong links with the public and private schools and other educational institutions through The Industry Community Network initiatives.

One thing is for certain and that is, SES does not rest on its laurels! It is continuously trying to improve educational delivery through research, collaborative work, networking and innovation. We are revisiting our teacher education programmes to align them to the future needs of teaching and teachers. We are working with local and international partners from diverse fields to improve the various aspects of education in order to be prepared for the future. Experts from the medical and health sciences, housing building and planning, engineering, management and other disciplines are working hand-in-hand to help develop a more sustainable development in education and education for a sustainable future.

Our motto: Be Seen, Be Heard and Be Counted will always take the forefront in USM, locally and abroad.

Continuous Publications

- Asia Pacific Journal of Educators and Education
- Malaysian Educational Deans Council Journal (MEDC)
- Educators’ Digest
- Research Monographs
- Special Education Bulletin

Programmes

Post-graduate programmes:

- Doctor of Education (Ed.D)
- Doctor of Philosophy (Ph.D)
- Master of Arts (Education) [M.A.(Ed.)]
- Master of Education (M.Ed.) by Mixed Mode
- Master of Education (M.Ed.) by Coursework (off-shore)

Graduate Diploma in Education (Dip. Ed.)

Undergraduate programmes

- Bachelor of Arts (Education) with Honours [B. A. (Ed.) (Hons.)]
- Bachelor of Science (Education) with Honours [B. Sc. (Ed.) (hons.)]
- Bachelor of Education [Special Education] with Honours
- Bachelor of Education [TESOL] with Honours

Short Courses

- Pre-school Teaching Certificates
- PITO (In-service Retooling Programme)

Contact:

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Transforming Higher Education for a Sustainable Tomorrow

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The School has now 80 full-time academic staff, including 10 professors and 24 associate professors, with more than 70% of the lecturers being Ph.D. holders. At present, the School offers seven disciplines at the undergraduate level. These are Urban & Regional Planning, Architecture, Building Technology, Construction Management, Interior Design, Quantity Surveying and Building Surveying.

Professional courses offered in the School such as Architecture and Quantity Surveying have received accreditations from respected national and international professional bodies such as the Malaysian Board of Architects (LAM), the Board of Quantity Surveyors (BQSM) and the Royal Institution of Chartered Surveyors (RICS).

On the postgraduate front, the M.Sc. Planning programme offered by the School is accredited with the Malaysian Institute of Planners (MIP), thus providing another avenue to increase the professional workforce within the construction industry.

In line with its aims of developing a strong research culture, the School offers Masters and Ph.D. programmes in construction related areas. Both instructional based and research based programmes have helped to boost the School’s reputation as being at the forefront of knowledge development and expansion.

The staff is also actively involved in several consultancy activities to assist in tackling actual industrial problems as well as to continually support innovative developments in the industry. With extensive industrial experience and close contacts with the industry, we can ensure that research products/outcomes and consultancy services provided are industry-relevant and market-oriented.

The School of Housing, Building and Planning has always been proactive and progressive in implementing academic courses and conducting research that serve to broaden existing knowledge and to generate new knowledge, a mission it aspires to uphold in future.
The School of Humanities is one of the earliest schools to be established in Universiti Sains Malaysia and is also one of the largest schools to offer arts courses. Since its inception in 1970, the school has gained a reputation for being one of the leading Humanities faculties in the country.

The school is committed to achieving academic excellence and producing well-rounded students. Therefore, the courses offered are designed with the aim of achieving these objectives. The curriculum is structured with the intention of producing graduates who are able to meet the manpower needs of the country and who are prepared to face various challenges particularly in the era of ICT and globalisation.

The School of Humanities has seven different programmes: Malay Language Studies, English Language Studies, Geography, History, Literature, Islamic Studies as well as Philosophy and Civilisation. The school offers three Bachelor of Arts degrees, namely, B.A. (in Malay Language Studies, English Language Studies, Geography, History or Literature), B.A. in Translation & Interpretation and B.A. in English Language and Literature Studies. The school also offers minor programmes in Islamic Studies, Philosophy and Civilisation, English Language Studies, Malay Language Studies, Geography, Literature, History and Translation & Interpreting.

In addition to the B.A. programmes, the school also offers Master of Arts and Doctoral degrees in any one of the field listed above. The former can be done through research or the mixed-mode programme whilst the latter is completely by research only. The Master mixed-mode programmes offered by the school are M.A. in Literature, Malay Language, Translation Studies, Southeast Asian History, Hadith, Linguistics and English Language Studies, as well as MSc in Geographical Information Science (GIS) and MSc in Sustainable Cities and Communities. Students can opt to follow the higher degree studies as full-time or part-time candidates.

The school is well-equipped with various facilities to help support the teaching and learning activities. They include tutorial rooms, computer labs (Language, Interpreting, Audio Visual, Literature and Media, Geographic Information System (GIS), Physical Labs (Hydrology, Physical Geography, Cartography)), a Resource Room, an Undergraduate Student Lounge, an Archive and Documentation room, a Postgraduate Room and a seminar/viva room.

The school has also been active in research and publication. Manned by experienced, dedicated and qualified academic and ancillary staff, the school has been actively involved in numerous research areas in order to fulfill the complex and specialised demands of contemporary society. Grants for research are obtained from within and outside the university while research collaborations are in place with various local and foreign institutions.

**Academic Staff**
- Dean
  - Assoc. Prof. Dr. Narimah Samat
- Deputy Dean (Academic)
  - Assoc. Prof. Dr. Hasuria Che Omar
- Deputy Dean (Research)
  - Assoc. Prof. Dr. Salasiah Che Lah

[https://humanities.usm.my](https://humanities.usm.my)
The School commenced with the establishment of the School of Applied Sciences, which offered the Bachelor of Applied Sciences (B.App.Sc.) programme in 1973. Three programmes were offered at its inception, i.e.: Electronic Science and Technology, Food Science and Technology and Polymer Science and Technology. During the 1974/1975 academic session, a fourth programme, i.e. Mineral Science and Technology was introduced. A fifth programme, i.e. Computer Science and Technology was introduced in the 1979/1980 academic session.

On 7th August 1984, the School of Applied Sciences was renamed as the School of Engineering Sciences and Industrial Technology. In line with this change, the curriculum was also modified to meet the requirement of engineering and industrial technology courses. Bachelor of Applied Science (B.App.Sc.) was replaced by Bachelor of Engineering (B.Eng.) and Bachelor of Technology (B.Tech).

During the 1986/1987 session, the School of Engineering Sciences and Industrial Technology were separated. The School of Electrical and Electronic Engineering and the School of Materials and Mineral Resources Engineering moved to the Perak Branch Campus while the School of Industrial Technology remained in the main campus, Penang, housing the Food Technology, Polymer Science and Technology, Quality Control & Instrumentation, and the Wood, Paper and Coatings Technology (changed to Bioresource, Paper and Coatings Technology Programme in 2002/2003) programmes.

Beginning with the 2001/2002 academic session, Polymer Technology Programme was transformed into Polymer Engineering Programme and was relocated to the School of Materials and Mineral Resources Engineering at the USM Branch Campus in Sri Ampangan, Nibong Tebal. The Quality Control & Instrumentation Programme was also upgraded into Mechatronic Engineering Programme and relocated to the School of Electrical and Electronic Engineering, Nibong Tebal.

The School of Industrial Technology continually progressed, with the introduction of Environmental Technology programme in 1999/2000 session, and Bioprocess Technology programme in 2008/2009 session.

First Degree Programmes

Beginning with the 2013/2014 Academic Session, the School of Industrial Technology offers four programmes in technology specialisation which cover a study period of three and half years (seven semesters) or four years (eight semesters), i.e.:-

- Bioprocess Technology (Four years programme)

Acceptance to any of the above programmes is subjected to selection and entry qualification. Most of the first year courses consist of basic science courses in Chemistry, Mathematics, Physics and Computer. From level 200, all students are required to enroll for courses relevant to their respective programmes up to level 300 or level 400 (Food and Bioprocess Technology) whereby they are required to conduct one mini research project.

Students also are required to undergo industrial training in various industries relevant to their study programme for at least twelve weeks. This training is aimed at exposing the students to actual practice and atmosphere of the industry.

Graduate Studies Programmes

The School of Industrial Technology offers M.Sc. and Ph.D. by research in the fields of Bioresource, Paper and Coatings Technology, Environmental Technology, Food Technology and Bioprocess Technology. One of the objectives of the programme is to provide candidates with the opportunity to further their studies and to achieve academic maturity via research that is beneficial and significant to the community at large. The academic staffs have active and well funded research programmes and students can associate themselves with these projects as research officers or as post graduate students attached to specific laboratories.

Research Thrust Areas:

Food Technology
- Food Sciences
- Food Processing & Preservation
- Food Biotechnology
- Food Biopolymers
- Food Analysis & Quality Control
- Postharvest Technology
- Nutrition
- Food Chemistry
- Food Safety
- Functional Food
- Food Microbiology

Bioresource, Paper and Coatings Technology
- Biomass Sciences
- Durability and Protection
- Wood Polymer Composites
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2016

- Paper Recycling / Paper Technology
- Natural Fiber Filled / Reinforced Polymer Composites
- Bioresource Based Products
- Chemical Modification of Bioresource
- Environment Friendly Pulping/ Alternative Pulping Technology
- Polymer Chemistry and Resin Technology
- Pigment and Dyes
- Surface Coatings Technology
- Adhesives Science and Technology
- Biomass Processing and Applications
- Nanofiber and Nanocellulose Sciences and Technologies
- Green Materials/ Composite
- Radiation Curing Technology
- Environmentally Sustainable Pulp Bleaching Technology
- Biomaterials
- Cellulose Derivatives
- Biocomposites/ Hybrid Biocomposites Bioprocess Technology
- Enzymology/Enzyme Technology/Biocatalysis
- Fermentation Technology
- Bioprocess Technology
- Waste Treatment via Bioprocess Technology
- Pharmaceutical Bioprocess Technology
- Biochemical/Metabolite Technology
- Process Control/Automation
- Food/Nutraceutical Bioprocess Technology

Environmental Technology
- Environmental Technology
- Chemical Process Technology
- Supercritical Fluid Technology
- Liquid Membrane Separations Technology
- Environmental Auditing
- Environmental Management
- Environmental Regulations and Compliance
- Environmental Modeling
- Environmental Engineering
- Operations Renewable & Sustainable
- Energy Technology
- Energy Recovery Technology
- Risk Assessment & Management
- Energy Audit & Management
- Fate of Pollutant in Environment
- Environmental Atmospheric Boundary Layer & Urban Air Pollution
- Wind Energy Technology
- Environmental Pollution Control

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Programme Chairperson:
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http://www.indtech.usm.my
The School of Languages, Literacies and Translation, which began as a Language Unit in 1972 under the auspices of the School of Educational Studies, was accorded the academic school status on the 19th of November 2008. The Language Unit, which was later upgraded to the Centre for Languages and Translation in 1985, provided the facilities and services for language teaching and learning for the campus community. Bahasa Malaysia and English were offered to enable students to fulfil graduation requirements. Other language courses such as Thai, Korean, Vietnamese and Tagalog were offered as optional or elective courses.

Currently, the School offers a number of language courses, namely Bahasa Malaysia, English Language and several foreign language courses namely, Arabic, Chinese, French, German, Japanese, Korean, Spanish, Tamil and Thai. Four minor programmes in foreign language studies, that is, Communicative Arabic, Chinese Language Studies, Japanese Language Studies and French Language, are also offered. These courses are taken mainly by local and international undergraduates and postgraduates of the university. The language courses and services are also offered to members of the university fraternity as well as the outside community.

**Bachelor of Arts (Honours) English for Professionals**

The Bachelor of Arts (Honours) English for Professionals was first offered in the 2009/2010 Academic Session. This is a three-year degree programme designed to meet the current demands for career-oriented degrees. Graduates of the programme will not only be competent in English but also be equipped with the necessary skills to excel in local and global workplaces. The programme is dedicated to educating tomorrow’s strategic leaders through a rigorous and challenging curriculum that is relevant to both career advancement and professional development. The programme curriculum is developed around interdisciplinary learning in English and offers courses in the major domains that include the theoretical, practical and professional perspectives. Students are also encouraged to explore a multidisciplinary experience across diverse domains even in connection with the Science disciplines as the programme allows them the opportunity to take up academic minor programmes in different Schools within the university. Independent and critical thinking, study and creativity form an integral part of the curriculum. The ultimate goal is to equip our graduates with marketable skills to help them succeed in the 21st century marketplace.

**Bahasa Malaysia Courses**

Bahasa Malaysia courses are offered to both academic staff members and students. The primary objective of the course for academic staff is to equip them with Bahasa Malaysia language skills so that they are able to conduct lectures and write academic papers proficiently in that language. The Bahasa Malaysia courses for students are offered to both local and foreign undergraduates and postgraduates to enable them to fulfil the Bahasa Malaysia requirement for graduation. Foreign students take Bahasa Malaysia as a foreign language from the beginner’s level to help them cope with the new environment and their studies.

In addition to servicing the university community, the School also offers Bahasa Malaysia courses to working adults with an emphasis on communication skills. Learners are taught effective conversational skills for the workplace and social purposes. On the international scene, the Malay Language and Culture Programme which has attracted participants from Japan, Thailand, Korea and Germany on a yearly basis, teaches basic Malay grammar and the four language skills of listening, speaking, reading and writing. Besides the lessons in class, there are also cultural activities which enable them to be immersed in the Malay culture. They also participate in a home-stay programme in which they are required to use the Malay language learnt in the classroom in an authentic traditional Malay setting.

**English Language Courses**

The English Language courses offered are designed to meet the English language needs of undergraduate and postgraduate students for academic, specific, social and occupational purposes. The elementary to intermediate level English language courses offered include Preparatory English, Academic English, General English, Scientific and Medical English, Business and Communication English and Technical and Engineering English. There are also higher level English language courses designed to help students develop specific skills in speaking, reading and writing which include Effective Reading, Business Writing, Creative Writing, Academic Writing, English Pronunciation Skills, Spoken English, Public Speaking and Speech Writing, English for Translation and English for Interpretation. Students are required to take at least two of these courses depending on their pre-university English qualifications and their programme of study as university courses to fulfil graduation requirements.

The School also offers a five-level Intensive English Programme to foreigners aspiring to take up undergraduate and/or postgraduate programmes at the university. Tailor-made courses for groups of learners from foreign universities, especially those from Asian countries, to learn English for specific language needs and purposes are also available. Like the Bahasa Malaysia courses, English language courses are also offered to academic and administrative staff and the community at large.

**Foreign Language Courses**

Foreign language courses can be taken either as optional or as elective courses by all USM students. The languages offered at different levels of proficiency from the beginner’s to the advanced levels are Arabic, Chinese, French, German, Japanese, Korean, Spanish, Tamil and Thai. In addition to these courses, students can also minor in a foreign language studies programme – Communicative Arabic, Chinese Language Studies, Japanese Language Studies and French Language – for the acquisition of a higher level of proficiency in the specific foreign language to enhance their marketability.
Postgraduate Programme

The School offers a postgraduate studies programme by research in the fields of Bahasa Malaysia, English Language, foreign languages, literacy and translation at the Master’s and Ph.D levels. The main objective of the postgraduate programme is to fulfill the nation’s aspirations of producing a knowledgeable society as well as increasing the number of intellectuals to meet the manpower needs of the nations. The specialised fields of study available at the School include Literary Studies, Professional English Studies, Professional Malay Studies, Discourse Analysis, Language Teaching, TESOL, Bilingualism, Lexicology and Terminology Studies, Teaching Reading at Secondary Schools and Tertiary Institutions, Reading in English as a Second Language (ESL), English for Specific Purposes, Computer-Assisted Language Learning, ESL Writing and other languages, literacy and translation-related areas.

Master of Arts Translation for Professionals

The Master of Arts in Translation for Professionals programme is designed specially for graduates who want to equip themselves with relevant skills and knowledge required for the diverse needs in the field of translation. This programme is suitable for graduates interested in a professional career in translation and for translators who need further specialized skills to enhance their professional knowledge. Besides theoretical knowledge, extensive translation and interpretation practice based on a variety of language combinations which are paired with English such as English-Malay, English-Arabic, English-Chinese, and English-Japanese will be provided.

Industry and Community Network (ICN) Section

The Industry and Community Network Section of the School was set up in December 2007 to coordinate activities organised by the School that are linked to industry, the USM community and society. There are at present 10 programmes under this section, namely, Short-term Language Courses, Translation, Editing and Interpretation Services, Intensive English Programme, Postgraduate English Programme, Malay Language and Culture Programme, Preparatory Courses for IELTS and TOEFL, Franchise Programme, Primary and Secondary School Programmes, In-service Programmes for the USM Community and Community Service Programmes for the Public. The School is constantly seeking to establish new partnerships with other educational organisations both at the local and international levels to enable the dissemination and sharing of knowledge and skills. Memorandums of Agreement have been signed with international counterparts including Nanzan University Japan, Kyoto University of Foreign Studies, Japan, Chikushi Jogakuen University, Japan, Saitama University, Japan, Gyeongju University, Korea and Rajamangala University of Technology Srinivajaya, Thailand, and Princess of Naradhiwas University, Thailand among others.

Services

The School provides language-related services to both students and staff of the University through its translation and editorial section, language clinic, resource centre, reading room, self-access language learning laboratory and computer-assisted language learning laboratory. The translation and editorial section provides translation, editing, terminology and language consultancy services to the USM community and the public. Translations from Malay into English, a foreign language into English or Malay and vice-versa are the most common translation services in demand. Both translation and editing services cover a wide range of written materials like certificates, manuscripts, articles, pamphlets, and theses. The School also works in an advisory-cum-secretarial capacity with terminology committees of other Schools to formulate suitable terminologies in Bahasa Malaysia.

Research & Innovation

The Research Division in the School has achieved notable progress in recent years. The research areas mainly include the field of translation studies as well as the teaching and learning of languages and literacy skills. The aim of the Research Division is to provide the necessary infrastructure for its academic staff to be actively involved in research-related activities, to foster knowledge contribution at conferences, meetings and workshops as well as to engage actively in publishing endeavour.

In taking the research agenda further, the School also actively organises many activities to provide a platform for academic staff members and postgraduate students to showcase their research. The School organises the biennial International Language Learning Conference (ILLC) and International Colloquium. Our International Literacy Research Unit (ILRU) too, provides opportunities for collaborative work among leading local and international researchers in literacy. The School also undertakes a leading role in the country to promote reading and is closely affiliated to the International Reading Association (IRA). Similar activities are organised to complement and promote the teaching, learning and research agenda at the School of Languages, Literacies and Translation in the Engineering and Health Campuses. We strive to provide a continuous support and strong commitment towards the University’s research agenda.

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The School of Management, Universiti Sains Malaysia was established on the 1st of December 1989. Since its inception, School of Management has embarked on offering undergraduate and postgraduate programmes. Initially, the Bachelor of Management degree offered four areas of specialisations namely: Finance, Marketing, Operations and Organisational Behaviour. Subsequently there was a growing need for the Accounting Programme coupled with the nation’s critical call for qualified accountants which persuaded School of Management to offer the Bachelor of Accounting degree effective Academic Session 1999/2000.

As quality education is School of Management’s ultimate objective, various professional bodies were invited to assess its curricula and instructional strategies. These efforts culminated in the accreditation of the Accountancy Programme by the MIA in October 2000. Later, other professional bodies (MICPA, ACCA, CIMA, CPA AUSTRALIA, and ICAEW) followed suit. In its effort to meet the expectations of the local and global stakeholders, School of Management also introduced another two new major programmes namely International Business in 2008 and Islamic Finance in 2011.

Efforts of the entire School of Management community were crowned with success when in 2003, the Ministry of Education bestowed the honour of the best School of Business Management and Accounting in the country. This recognition was based on an academic audit undertaken by professors from a consortium of the Institutes of Higher Learning New Zealand in collaboration with a local audit firm, Atarik Kamil and Company. The School of Management has also been accorded three Palmes, as an “Excellent Business School” by Eduniversal World Business School Ranking for three years in a row. As part of an Accelerated Programme for Excellence (APEX) university, the School of Management’s business and management studies was placed in the 101-150 rank bracket of the 2016 Quacquarelli Symonds (QS) World University Ranking by Subject. USM itself ranked 89 by 2015 QS World University Rankings by Faculty for Social Sciences and Management. This automatically acknowledges School of Management in the eye of the world.

Apart from undergraduate courses, School of Management also offers Masters by Research program and the Doctor of Philosophy. The research program clusters under the School of Management include Enterprise Management, Control, Operations Management, Human Capital Development, Technology Management, Financial Market Based Research, Consumer Market Based Research, International Finance and Inclusive Entrepreneurship.

With more than 6000 of its graduates currently in the workforce, School of Management has built strategic alliances with both the public and private enterprises. This is attained through the participation of its students in compulsory practical training and the involvement of its faculty in research and consultancy work with private agencies as well as public service. The school has rendered it services to institutions such as Siemens, Unico, PDC, Bank Rakyat, Perbadanan Nasional Berhad, The Urban Development Authority (UDA), Pentex Sdn. Bhd., Intel Penang Sdn. Bhd., Motorola and Dell Asia Pacific. Due to its expertise in various fields, the School has been chosen by several foreign universities as host for their international programmes.

Achievements 2015

1. Best Speaker, The ICAEW Regional Business Challenge 2015
2. Second Runner-up, CIMA Global Business Challenge 2015 Malaysia Final
3. Best Social Media Engagement, EdgeWiz Campus Investment Challenge 2015
4. Champion, Nescafe Business Plan
5. MICPA Excellence Awards for Best Accounting Graduate

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The School of Mathematical Sciences, USM, was established in 1974. The school currently has more than 43 lecturers, grouped into 3 main research areas, namely Pure Mathematics, Applied Mathematics and Statistics/Operations Research. There are also several Postdoctoral Fellows and Visiting Scientists present at any one time. Since its inception, the school has undergone rapid development and achieved significant progress in academic programmes, research and development, teaching and consultancy.

The school offers a Bachelor’s Degree in Pure Mathematics and in 4 areas of Applied Mathematics: Mathematical Modelling, Applied Statistics, Operation Research and Mathematics & Economics. The school is also involved in the Bachelor of Science (Education) programme. The inclusion of computing and application softwares in many of the school’s courses gives its programmes an edge besides helping its students to develop insights, foster creativity and be more marketable. As for postgraduate programmes, the school offers the Doctor of Philosophy (Ph.D.) and Master of Science (M.Sc.) by research; M.Sc. (Statistics) and M.Sc. (Mathematics) via mixed mode; and M.Sc. (Teaching of Mathematics) via coursework. The school also actively organizes numerous short courses, such as time series econometrics, statistical data analysis, statistical quality control and linear regression to industrial practitioners, college and university lecturers, and postgraduate students.

Since its establishment, the school has accomplished a number of significant achievements. The school has successfully organised numerous conferences, with the most recent being the National Mathematics Symposium. The school signed a Memorandum of Understanding (MoU) with the Department of Statistics, Malaysia. This will further enhance and increase research collaboration in the area of statistics.

The academic staff members at the school are involved in the publication of the Bulletin of the Malaysian Mathematical Sciences Society, an internationally renowned journal which is indexed together with other journals by the ISI database.

Currently, the school has a fellow of the Malaysian Academy of Science and 2 former staff whom are also fellows. Three of the school’s professors are fellows of the Malaysian Mathematical Sciences Society.

The school has produced many publications in high impact journals, books and conference proceedings. Its academicians have successfully secured numerous international and local research funding. The school has student exchange programmes with universities in Australia, Europe, Canada and USA, all aimed at giving students international academic exposure. A number of the school’s scholarship holders are currently pursuing their Ph.D. studies in reputable universities abroad and will return to serve the school as lecturers in the near future.

The academic staff members of the school are actively conducting joint research projects with distinguished researchers overseas. Some of the school’s academic staff have participated and acted as consultants for R&D projects in industries and government agencies. The school offers a conducive research environment and its experienced academicians have enabled it to attract many local and foreign postgraduate students over the years.

http://math.usm.my
The School of Pharmaceutical Sciences is the pioneer pharmacy school established in Malaysia in 1972 with excellent reputation and good track record in Malaysia and Asia in terms of pharmacy education and research. The school has since evolved along the changes taking place in the landscape of pharmacy education, from merely offering basic pharmaceutical sciences and dispensing courses into development of integrated and system-based courses. It is also the first school in the country to offer clinical pharmacy and social and administrative pharmacy education. This is in line with its vision of becoming a global centre of excellence for sustainable and innovative pharmaceutical education, research and practice for the wellness of the society. The School has current staff strength of 52 full-time lecturers. In the recent assessment by Times Higher Education–QS World University Rankings in 2014, the school was ranked as the top pharmacy school in Malaysia and placed among the top 51 to 100 best pharmacy schools in the world. To date the school has produced more than 3500 pharmacy graduates, which make up almost one third of the registered pharmacists in Malaysia. The school has been instrumental in the establishment of three research centres and an institute, namely the National Poison Centre, National Centre for Drug Research, National Doping Control Centre and Malaysian Institute of Pharmaceuticals and Nutraceuticals.

Since its establishment, the school is committed towards academic and research excellence to produce professional, innovative and competitive graduates. At present, the school accommodates over 500 local undergraduates and over 250 postgraduates from 18 different countries. The school offers a four-year unique undergraduate programme leading to the degree of Bachelor of Pharmacy with honours. The course covers fundamental and applied pharmaceutical sciences of relevance to drugs and pharmacy practice, encompassing six core disciplines, namely pharmacology, physiology, pharmaceutical technology, pharmaceutical chemistry, clinical pharmacy and social and administrative pharmacy. The course is designed to provide integrated pharmacy education and training in drug therapy, pharmaceutical services, policies and practice during the first three years. In the final year, the students are given an option to specialize in industrial pharmacy or clinical and community pharmacy.

The school has been very active in research and development activities. The school offers a coursework based postgraduate degree of Master in Clinical Pharmacy, besides research based postgraduate degrees covering a wide range of areas of pharmaceutical sciences fields including drug design and synthesis, medicinal chemistry, drug analysis, natural products, traditional medicines and pharmacognosy, physiology and pharmacology, molecular and behavioural biology, toxicology, pharmaceutical biotechnology, pharmaceutics, drug delivery systems, pharmacy practice, social pharmacy and public health.

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T
he School of Physics was set up when the University was established in 1969. The main objective is to produce competent, knowledgeable, creative, and innovative Physics graduates for the nation’s rapid growth and progress. To achieve this goal, the School of Physics is offering various relevant programmes and providing many state-of-the-art facilities and know-how for the study of physics and its related disciplines. Apart from lectures, the School of Physics holds regular scientific seminars presented by invited speakers (local and abroad), our own staffs and research students. Outside the campus, we maintain an astronomical observatory in Pantai Acheh, Pulau Pinang designed for applied astronomy research. After the completion of undergraduate study, the students can pursue their higher degrees in the School of Physics. Among the postgraduate research areas of thrust are:

- Condensed Matter Physics and X-ray Crystallography
- Applied and Engineering Physics
- Energy Studies
- Geophysics, Astronomy and Atmospheric Science
- Theoretical and Computational Physics
- Medical Physics and Radiation Science

Undergraduate Programmes
The School of Physics offers the following five major programmes:

- Pure Physics
- Applied Physics
- Geophysics
- Engineering Physics
- Medical Physics

The School of Physics also offers a minor program in astronomy where physics students can opt for a set of astronomy courses as a portion of their degree requirements.

Postgraduate Programmes
By Coursework:

- Master of Science (Solid State Physics)
- Master of Science (Medical Physics)

By Mixed Mode:

- Master of Science (Applied Geophysics)
- Master of Science (Radiation Science)
- Master of Science (Radiation Science) – Offshore Programme

By Research:

- Master of Science (M.Sc.)
- Doctor of Philosophy (Ph.D.)

Vision
Towards global excellence in transdisciplinary research and education in Physics.

Mission
To provide academic, research, educational and social programs for development of human capital, knowledge, and technology for sustainable nation.

Facilities
The School of Physics houses many scientific facilities and laboratories to support the ongoing teaching and research activities. Some of which are:

- First and Second Year Teaching laboratories
- Computer and CAI laboratories
- Microprocessor laboratory
- Engineering Physics laboratory
- Workshop for Engineering Physics
- Medical Physics laboratory
- Radiation Biophysics laboratory
- X-Ray Crystallography laboratory
- Geophysics laboratory
- Solid State laboratory
- Energy laboratory
- Theoretical Physics laboratory
- Nano laboratory (N.O.R Lab)
- The new Student Center at the School of Physics is a one-stop center with facilities for students

http://www.fizik.usm.my/

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The School of Social Sciences was established in 1970 and is one of the earliest schools in Universiti Sains Malaysia. Historically, it was the birthplace of School of Management, Women’s Development Research Centre, Centre for Global Archaeological Research and Centre for Islamic Development Management Studies. Over the years, the School has certainly enjoyed a wide range of success, both nationally and internationally, and it continues to strive for excellence. It is committed to provide quality teaching as well as to quality research and scholarship that will contribute towards nation building. The School adopts a trans-disciplinary approach in its curriculum to ensure that its graduates possess the necessary knowledge to understand society, societal issues and phenomena, as well as to be culturally and environmentally sensitive.

Since its inception, School of Social Sciences has been offering Bachelor of Social Sciences. Currently, students in this programme major in one of the following four disciplines: Anthropology and Sociology, Economics, Development Planning and Management, and Political Science. In 2011, the School began to offer Bachelor of Economics programme and Bachelor of Social Work programme. The Bachelor of Economics programme was designed to produce economic graduates competent in economic theories and quantitative and applied quantitative methods. On the other hand, social work which has been one of the majors in Bachelor of Social Sciences since 1975, embarked as a separate undergraduate programme in order to fulfill the needs of the nation for more professional social workers.

At the graduate level, School of Social Sciences offers Masters and Ph. D. by research in the areas of Anthropology, Sociology, Economics, Political Science, Social Work, Development Planning and Management, and Psychology. In addition to this, the School also offers Master of Public Administration (course work), Master of Economic Management (course work) and Master of Social Work (mixed mode) programmes.

Research is an integral part of the School. Academic staff conduct research either individually or as a team, while research projects are funded both by local as well as international agencies. The research topics and interests of the academic staff cover areas such as (but not limited to) finance and trade, environment, tourism, HIV/AIDS, poverty, public policy and management, crime and policing, urban issues, media, Orang Asli, gender studies, entrepreneurship, social psychology and family relationship.

The School of Social Sciences has collaborations with various agencies in the country. It has rendered its services through consultations, research projects and activities with, among others, Performance Management and Delivery Unit (PEMANDU), Rubber Industries Smallholders Development Authority (RISDA), Economic Planning Unit (EPU), Lembaga Kemajuan Wilayah Pulau Pinang (PERDA), Unit Perancang Ekonomi Negeri Pulau Pinang, Agensi Inovasi Malaysia (AIM), Malaysia Crime Prevention Foundation (MCPF), Jabatan Kebajikan Masyarakat Malaysia and Institut Sosial Malaysia. The School also has a wide network with foreign universities such as University of Fribourg (Switzerland), Bournemouth University, Higher Education Corporation of Poole House (UK), Humboldt University of Berlin (Germany), St. Cloud State University (USA), Prince of Songkla University (Thailand), Royal University of Phnom Penh (Cambodia) and Universitas Langlangbuana (Indonesia).

The School of Social Sciences is home to two research units, Research and Education for Peace (REPUSM) and AIDS Action and Research Group (AARG). REPUSM engages in research and activities pertaining to peace and conflict resolutions around the region, while AARG, which was founded in 1994, is active in providing workshops, trainings and outreach programmes to curb the spread of the HIV/AIDS epidemic. It has been at the forefront for education and harm reduction in the state of Penang.

2015 Highlights:
- Development Studies ranked no. 51 by QS World University Rankings by subject
- Economics and Econometrics ranked in Top 200 by QS World University Rankings by subject
- Consultancy projects for PEMANDU, RISDA and AIM
- USM International Conference on Social Sciences 2015 (ICOSS 2015)
- The Second International Social Work Conference 2015
- 4th International Industrial Security Seminar
- Seminar Wanita Anti Jenayah
- Anugerah Akademik Negara ke-9 Kategori Anugerah Penerbitan Makalah Jurnal (Bidang Sains Sosial dan Sastera)
- MoA with Universitas Jember, Indonesia
- MoU with Universitas Ahmad Dahlan, Indonesia
- Social Work’s Student exchange from Bournemouth University Higher Education Corporation of Poole House

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PROSPECTUS
2016
Transforming Higher Education for a Sustainable Tomorrow
The School of Aerospace Engineering provides a quality education in the field of aeronautics and astronautics through comprehensive learning and research activities to meet the nation’s aerospace demands. The school offers an accredited Bachelor of Engineering (B.Eng.) in Aerospace Engineering as part of building human capitals of aerospace engineers for the country. The postgraduate studies include the M.Sc. and Ph.D. in Aerospace Engineering programs which are tailored to fulfill the expectations of being a Research University (RU) with an APEX status where the focus is on research excellence.

The missions of the School of Aerospace Engineering are the following:

- To provide quality and innovative teaching and maintain accreditation for its entire degree program.
- To achieve research excellence.
- To establish and enhance the collaboration with industries for education input and research.
- To serve the society and country by providing the latest knowledge and technology.

The undergraduate (B.Eng.) program is designed to comply with the requirements of the aerospace industry today, consisting of 135 credit hours of education over a period of four years. The program thoroughly covers the principles and foundations of aerospace engineering spread out in multiple courses. These courses include Aerodynamics, Structural Mechanics, Flight Mechanics and Control, Propulsion, Composite Materials, Orbital Mechanics, Aircraft and Spacecraft Subsystems and Design, Engineering Laboratories, Engineering Design (CATIA), Computational Fluid Dynamics (CFD), Finite Element Analysis (FEA) and Aircraft Policy and Management. In addition, the undergraduate students are also exposed to industrial training at the end of the third year where they will be placed at selected local aerospace or relevant industries for ten weeks as an effort in preparing them to face the real life challenges in this profession. During the final year, each student is required to complete a final year project (FYP) which will be examined through a viva and thesis. This FYP is done so that the students will also be ready for postgraduate research work should they decide to pursue postgraduate education.

The school has very strong ties with the local aerospace industries which not only serve as industrial training placements for the students but more importantly as one of the stakeholders which are constantly providing feedback to improve our curriculum. One of the aerospace companies is Spirit Aerosystems, a global aerospace company which manufactures aircraft components and a major supplier for Airbus and Boeing. As a result of having a close collaboration with Spirit Aerosystems, the school has made composite materials to be one of its niche areas. On the other hand, being the only local university that has collaboration with Spirit Aerosystems merits a unique privilege. Currently, the School of Aerospace Engineering provides a special opportunity for talented students to go for internships at this aerospace establishment under the Undergraduate Attachment Program (UGAP). Spirit Aerosystems has an operation plant in Subang, in which the selected students (beginning from first year) will undergo training in between each semester break every year during the four year period. This provides the students with valuable hands-on knowledge and working experience which cannot be taught in the classroom. The school is also actively involved in an outreach program to promote and enhance secondary school student’s interests toward the fields of science, technology, engineering and mathematics (STEM). The outreach program is funded by Penang Education Council.

At present, the postgraduate education offers only M.Sc and PhD programs via research mode. Usually, the M.Sc. program is about 2 years while the Ph.D. program takes about 3 years to be completed. The main areas of research include Algorithm Development and Engineering Application in CFD, Vibration, Aerospace Structures, Aeroelasticity, Experimental Fluid Dynamics, Control Systems, Spacecraft Subsystem Elements, Aircraft Design and Composite Materials and Design. Students can choose any of abovementioned areas but with a specific topic and will be supervised and guided by qualified faculty members of the school. Financial assistance is also available to the students in the form of either fellowships, teaching assistantships, or through research grants.

The School of Aerospace Engineering is equipped with facilities to support both teaching and research work. The laboratories include the Aerodynamics Lab, Rocket and Propulsion Lab, Computer Aided Design and Engineering (CAD/CAE) Lab, Control Systems Lab, Composite Materials Lab, The school also owns an aircraft hangar for Maintenance, Repair and Overhaul (MRO) of an aircraft and a wind tunnel. Presently, the school is involved in assembling a single engine CH-750 aircraft at the hangar which is under the supervision of DCA. In addition, aerospace students have access to the facilities owned by the School of Mechanical Engineering which consist of the Vibration Lab, Heat Transfer and Combustion Lab, Computer Numerical Control (CNC) Lab, Manufacturing Process Lab, Automotive Lab and Engineering Workshops (Welding, Casting and Milling). The latest acquisition is a closed-loop subsonic wind tunnel with a 1 x 1 x 3 m test section which is able to run at speeds of 80 m/s.

Our graduates have become successful engineers in the aerospace and non-aerospace industries, including aircraft composite manufacturing and aircraft maintenance, automotive and petroleum industries. Some of them have also become distinguished academicians.

For further information, please visit http://aerospace.eng.usm.my/
The School of Chemical Engineering is one of the most active players, in both research and teaching, within USM community. The undergraduate curriculum for the Bachelor of Engineering (B.Eng.) degree is specifically designed to provide a comprehensive training for future chemical engineers, such that they are well-equipped with the current practices of chemical engineering technologies. The undergraduate programme offered by the School of Chemical Engineering is recognized by the Board of Engineers, Malaysia (BEM).

For the past 24 years, the school has thrived to become one of the best engineering faculties within the university as well as worldwide. School of Chemical Engineering is ranked 46 in the world (2016 QS World University Ranking) and top 50 in the world for scientific papers performance (2015 NTU Ranking). This achievement is driven by the cohesive learning environment, up-to-date research activities and consultancy provided to private and government agencies. The faculty members also collaborate closely with other institutions and industrial partners in petrochemicals, oleo-chemicals and chemical processing industries. This ensures that all of our teaching and research is relevant to industry and on the cutting edge.

The active involvement of the School in innovative research is reflected by the growing numbers of domestic and foreign postgraduate students. The registered number of postgraduates has increased drastically in the last 10 years especially after the university obtained its APEX status. In order to fulfill the country vision to be a developed nation in the year 2020, most of the research areas undertaken by postgraduate researchers are relevant to the industrial and national needs. The School has a wide range of expertise covering various chemical engineering research areas, namely; Chemical Reaction Engineering, Zeolite Catalysis, Environmental Engineering, Membrane Separation Processes, Biochemical Engineering, Modelling, Simulation and Optimisation, Plant Safety and Risk Assessment Studies, Process System Engineering, Product and Process Development and Nano-Technology.

In order to cater for such a vast research area, the school is well-equipped with the state-of-the-art analytical facilities. A number of measurements can be carried out including catalyst characterisation, environmental monitoring and complete analysis of industrial chemicals and related products. The process control laboratory within the school is also equipped with a Distributed Control System (DCS) connected to pilot-scale equipment for training in process instrumentation, process dynamics and control system. In addition, the school has also equipped the Unit Operations, Petroleum and Gas Engineering; Separation Processes, Environmental Engineering, Chemical Reaction Engineering and Bioprocess Engineering laboratories with modern equipment to support teaching and research activities.

Apart from engaging actively in academic and research activities, the School of Chemical Engineering also participated in various kinds of community services and outreach programs. For example, the short courses on specialised areas have been continuously organised by the school, with the target participants from the government and private agencies. In order to promote the scientific interest and facilitate academic excellence of both primary and secondary students within the local community, series of well-planned motivation talks and workshops on a wide variety of topics has been organized by the school. This will indirectly contribute to nation-building as part to fulfill the objectives of a sustainability-led university.

The School of Chemical Engineering will continue its tradition to give full commitment in nurturing well-rounded chemical engineers, who will lead the nation for a better and sustainable tomorrow!

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SCHOOL OF CIVIL ENGINEERING

The School of Civil Engineering was founded in 1989 and was one of the earliest engineering schools established in the northern region of Peninsular Malaysia. Classes began in July 1989 in the old Engineering Campus in Tronoh, Perak. From its humble beginnings with only 11 undergraduates for its inaugural intake, the school has now stabilized to around ninety new undergraduate students annually. On the postgraduate front, the school is now hosting postgraduates from more than ten countries, numbering around 100 PhD and MSc students at any one time.

Presently, the school is located at the Universiti Sains Malaysia’s Engineering Campus in Nibong Tebal, Pulau Pinang which is located about 50 km from the main campus on the island of Pulau Pinang. The school is widely recognized for its active industrial and community engagements, and for its highly employable graduates.

PROFESSIONAL RECOGNITION

In 2006, the School began to embrace the Outcome Based Education (OBE) for its undergraduate program. As a result, from 2009 onwards, its Bachelor of Engineering (Civil Engineering)(Hons) programme has become fully accredited by the Engineering Accreditation Council (EAC) of the Board of Engineers, Malaysia, and the Washington Accord. Recently, the Bachelor of Engineering (Honours) (Civil Engineering) programme has been awarded 5 years full accreditation by the Board of Engineers Malaysia (BEM) from 2014 to 2018. Thus international companies throughout the world have employed many of its alumnae.

POSTGRADUATE STUDIES

Since the beginning of the century, the reputation of the school as a place of choice for postgraduate studies in all areas of civil engineering has increased. Basic and applied research studies carried out in the school have attracted students at both Master and PhD levels. Projects aimed at solving sustainability issues such as water supply, pollution, slope stability, drainage, mobility, and alternative pavement and construction materials have been actively pursued. Positioned as the only university in the country enjoying the prestigious APEX status, Universiti Sains Malaysia has received preferential funding, thus benefiting the school in terms of its capability to carry out research projects. The faculty members have also been able to garner grants from central government agencies, international bodies, and local communities.

OUR FACILITIES

The School of Civil Engineering provides complete laboratory facilities to produce civil engineers that are highly knowledgeable and innovative. Besides academic staffs who are experts in their respective fields of specialization, this school has fully equipped engineering laboratories. These include; Heavy structures laboratory, Concrete laboratory, Lightweight structures laboratory, Geotechnical laboratory, Environmental laboratory, Geomatics instrument portal, Drawing room/studio, Computer laboratory, and Fabrication workshop.

CONSULTANCY, LABORATORY TESTING SERVICES AND COMMUNITY PROJECTS

The School actively serves the industry and reaches out to communities through consultancy, laboratory testing services and community engagements projects. Many academic staffs of the school have been appointed by government agencies and industries to help solve the problems of the country and the people. These engagements with industry and community have eventually culminated into a wealth of practical experience for the academic staffs. Such invaluable practical experience has also enhanced the quality of teaching. The research output and products have been made to benefit the communities, especially the deprived ones. As testimony to the impact of these out-reach-projects by the school, one of its many research inventions has been applied in a water supply project for a native aboriginal community in Kampung...
Langkor, Sungai Siput, Perak. In this project, treated water which is otherwise out of reach by the community due to its remote location, has been made available via an engineered delivery system involving local water resource, a small dam, a filtration plant, and a network of piping. The result is a community now empowered by the newly earned self-sufficiency in having free and abundant supply of clean water. There are also many other examples of collaboration between the school with the community, the industry and the authority.

The School of Civil Engineering, USM; where the problems of community, industry and authorities are solved, and where we nurture the future engineering talent for nations and humanity.

► Bachelor of Engineering (Hons.) Civil Engineering | 4 years | Full time
► Master of Science in Structural Engineering (Mixed Mode) | 1 year | Full time
► Master of Science in Environmental Engineering (Mixed Mode) | 1 year | Full time
► Master of Science by Research | 2 years (minimum) | Full time / Part time
► Doctor of Philosophy (PhD) | 3 years (minimum) | Full time / Part time

Contact Details:
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www.facebook.com/sce.usm
The academic staff of the School of Electrical and Electronic Engineering have specialisations in broad areas of Microelectronics, Computer, Communication, Power, Control and Mechatronics. Our staff are also actively engaging their respective industrial partners in research activities. Generally, the research fields of the School includes: RF/Microwave System Design; Image Processing and Pattern Recognition; Visual Guided Robot; Computer Vision and Speech Recognition Systems; Parallel Processing and Networking; Software Engineering; Communication Systems; Propagations; Integrated Circuit Design, Devices, Analog – Mixed Signal, Power Systems; Power Electronics; Expert Systems and Control Systems.

The School is well equipped with modern and state-of-the-art equipment for teaching and research activities. Some of these facilities are: Network of PCs; Image Processing Workstations; Articulated Robot Arms; Logic Analyzers; Spectrum Analyzers; Network Analyzers; Radar Tomography; Microwave Test Benches; Calibration Equipment and PCB Design Tools; IC Design Software and Fabrication Laboratory; Electrical Machines; Power Electronics.

The synergistic cooperation between teaching and research facilities have enabled the School to produce graduates with excellent traits and also producing novel research output. Academic Program offered by the school are as follows:

The Bachelor’s Degree in Electronic Engineering comprises four sub-areas and are as follows:


c. Communications- This package covers the Theory of Communication Systems, Antenna and Propagation, Microwave Engineering, Radar and Satellite Communications.

d. Control and Automation - This package covers the Analysis and Design of Control Systems, Robotics and Automation, exposure to the FMS systems and the industrial sector.

The Bachelor’s Degree in Electrical Engineering package covers the following: Power Generation (both conventional and unconventional methods); Transmission, Distribution and Consumption; Power Systems Stability; Electrical Machines Analysis, Design and Applications; Electric Energy Conversion; Power Electronics and Drive System.

The Bachelor’s Degree in Mechatronics Engineering, this package covers area of Design and Control of Robot Drives; Sensors and Robotic Transducers and Manufacturing Systems.

As for postgraduate programme, our research disciplines are as follows:-

<table>
<thead>
<tr>
<th>Code</th>
<th>Research Programme</th>
<th>Code/Research Field</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEE01</td>
<td>Communication</td>
<td>01 - RF Systems &amp; Electromagnetic Compatibility (EMC)</td>
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<tr>
<td></td>
<td></td>
<td>02 – Wireless &amp; Mobile Systems</td>
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<tr>
<td></td>
<td></td>
<td>03 – Antenna &amp; Propagation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>04 – Microwaves&amp; Satellite Systems</td>
</tr>
<tr>
<td>EEE02</td>
<td>Computer Engineering</td>
<td>01 – Imaging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>02 – Digital Signal Processing</td>
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<td></td>
<td></td>
<td>03 – Distributed Computing</td>
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<td>04 – Software Engineering</td>
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<tr>
<td>EEE03</td>
<td>Control &amp; Automation</td>
<td>01 – Robotics</td>
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<tr>
<td></td>
<td></td>
<td>02 – Sensors &amp;Instrumentation</td>
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<tr>
<td></td>
<td></td>
<td>03 – Computational Intelligence</td>
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<td></td>
<td></td>
<td>04 – Industrial Automation &amp; Control</td>
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<tr>
<td>EEE04</td>
<td>Microelectronics</td>
<td>01 – Advanced Digital Systems</td>
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<tr>
<td></td>
<td></td>
<td>02 – Integrated Circuit Design</td>
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<tr>
<td></td>
<td></td>
<td>03 – Device Modelling &amp; Characterisation</td>
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<tr>
<td></td>
<td></td>
<td>04 – Microelectromechanical Systems</td>
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<tr>
<td></td>
<td></td>
<td>05 – Analog &amp; Digital IC Design</td>
</tr>
<tr>
<td>EEE05</td>
<td>Power Systems &amp; Electrical Machine</td>
<td>01 – Power Electronics and Devices</td>
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<tr>
<td></td>
<td></td>
<td>02 – Power Systems &amp; Energy Conversion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>03 – Electrical Machine &amp; Drives</td>
</tr>
</tbody>
</table>
To further enhance the Post Graduate programmes, a Master in Science Degree Programme by coursework has been introduced. This degree is known as Master of Science (Electronic Systems Design Engineering) starting from the Academic Session 2003/2004 and Master of Science (Microelectronic Engineering) starting from the Academic Session 2013/2014.

**Master of Science (Electronic Systems Design Engineering)-Coursework / Mixed Mode**

This programme exposes candidates to up-to-date theoretical and practical aspects of Electronic System Design as well as advanced computing technologies and their applications. Candidates will also be equipped with the capability of addressing engineering related problems of the industry.

**Master of Science (Microelectronic Engineering)-Mixed Mode**

This programme exposes candidates to up-to-date theoretical and practical aspects of Microelectronic Design as well as advanced computing technologies and their applications. Candidates will also be equipped with the capability of addressing engineering related problems of the industry.

**For further enquiries, please contact:**

http://ee.eng.usm.my/v4/
SCHOOL OF MATERIALS AND MINERAL RESOURCES ENGINEERING

School of Materials and Mineral Resources Engineering started its programme since 1984 in USM, Penang under the School of Industrial Technology and Engineering Sciences. With the advancement of technology and market demand for skilled engineers in the country, USM took the initiative to fulfill the requirement by having its own engineering school separated from other disciplines of applied sciences.

In March 1986, the engineering disciplines under the School of Industrial Technology were separated to form their own schools, which include the formation of the School of Materials and Mineral Resources Engineering. USM had then housed the new campus at Ipoh before moving to Seri Iskandar, Perak. However, a lapsed of 15 years, in May 2001, the campus was moved to the new site situated at Seberang Perai Selatan, Penang.

Compared to other schools or faculty in other Institutes of Higher Learning in Malaysia, the School of Materials and Mineral Resources Engineering is unique because it offers three programmes, these are Materials Engineering, Mineral Resources Engineering and Polymer Engineering at bachelor degree (honours) level for each programme. Polymer Engineering programme is the latest addition to the school that commenced in April 2002. The programme is an upgrading of polymer technology that was originally under the School of Industrial Technology in USM Penang.

UNDERGRADUATES

In general, the three programmes include specialization as follows:

- Materials Engineering emphasizes research on materials such as metal, ceramic, composite, polymer and semiconductor and electronic materials. These involve design and production of materials, quality control and the materials properties.

- Mineral Resources Engineering focuses on areas of mining, processing and management of mineral resources and the environment.

- Polymer Engineering focuses on polymeric materials such as plastics, rubber, latex and composites. These involve synthesis, processing, design and production of polymer products, quality control and the properties of polymers.

A minimum of four years or 8 semesters are required to complete for each programme. Graduates who have completed the programme of study successfully will be awarded B.Eng (Honours) (Materials Engineering) or B.Eng (Honours) (Mineral Resources Engineering) or B.Eng (Honours) (Polymer Engineering) accordingly, which is recognized locally and internationally.

The existing curriculum is moulded with the following quality:

- recognized by professional bodies including Board of Engineers Malaysia, Institution of Engineers Malaysia and Washington Accord.
- Balanced integration of teaching based on theory with practical according to outcome based education (OBE).
- global in identifying various specialization in tandem with the needs and development of local and international market.
- to develop and generate graduates with knowledge, ethics, quality, skill, innovative and committed.

POSTGRADUATES

The School of Materials and Mineral Resources Engineering, Universiti Sains Malaysia offers programmes for higher studies leading to the Master of Science (MSc) Mixed Mode or Research Mode program as well as Doctor of Philosophy (PhD) degrees by research. Research and Development in Materials Engineering concentrate on the design, production and use of engineering materials as well as selection of appropriate materials for related used involving ceramics, metals, polymers, semiconductors, composites and nanomaterials. The current research activities in Mineral Resources Engineering are on exploration/geology, economic assessment, mining, mineral processing, extractive metallurgy and environment as well as application into ceramics and metallurgy. R&D in Polymer engineering concentrates on the selection and testing of polymeric materials, quality control of raw materials, processing and products, design of recipe and products, plastics, rubber and latex, composites and advance materials, fiber and textiles, surface coatings, resins and electronic.

M.Sc. Mixed Mode

The MSc mixed mode Programme is a combination of coursework and research project (dissertation). The coursework component contributed to 40% of the final grade, while the research project contributes to the remaining 60%. The Mixed Mode programme covers in-depth topics related to materials development, processes, and properties; at the same time, it provides a platform to develop students’ the research skills. The course is run as full-time programme only with minimum 2 semesters (12 months) or maximum 4 semesters (24 months) which only be taught in English.

The entry requirements for this programmes is a Bachelor’s degree in Materials Engineering (USM) with a minimum CGPA of 2.75 or equivalent or a Bachelor’s degree in Materials Engineering (non-USM) and other Bachelor degrees such as Polymer Engineering, Mechanical Engineering, Chemical Engineering, Mineral Resources Engineering, Physics, Chemistry, etc. with minimum CGPA of 3.00 or equivalent. For International Applicants, the language requirement is a minimum score of 550 in Test of English as a Foreign Language (TOEFL), or a minimum score of 6.0 in International English Language Testing System (IELTS).
M.Sc. and Ph.D. Programme (Research Mode)

For MSc Programme by research, the full time students involved a minimum 2 semesters and maximum 6 semesters whereas the Part time students involved minimum 4 semesters and maximum 12 semesters. The entry requirements for this programmes is a Bachelor’s degree in Materials Engineering (USM) with a minimum CGPA of 2.75 or equivalent or a Bachelor’s degree in Materials Engineering (non-USM) and other Bachelor degrees such as Polymer Engineering, Mechanical Engineering, Chemical Engineering, Mineral Resources Engineering, Physics, Chemistry, etc. with minimum CGPA of 3.00 or equivalent. For International Applicants, the language requirement is a minimum score of 550 in Test of English as a Foreign Language (TOEFL), or a minimum score of 6.0 in International English Language Testing System (IELTS).

For PhD Programme by research, the full time students involved a minimum 4 semesters and maximum 10 semesters whereas the Part time students involved minimum 6 semesters and maximum 15 semesters. The entry requirements for this programmes is a Bachelor’s degree in Materials Engineering or Minerals Resources Engineering or Polymer Engineering (First Class Honours / minimum CGPA of 3.67); or a Master’s degree in Materials Engineering or Minerals Resources Engineering or Polymer Engineering or in a related field with a minimum CGPA of 3.00 or equivalent. For International Applicants, the language requirement is a minimum score of 550 in Test of English as a Foreign Language (TOEFL), or a minimum score of 6.0 in International English Language Testing System (IELTS).

FACILITIES

The School has a wide range of state-of-the-art teaching and research facilities that contribute to a high-quality training environment. The School is very well equipped with excellent facilities for testing services, as well as for undergraduates, postgraduates and research programmes. A team of skilled and qualified technicians, excellent computer facilities, library services and an excellent mechanical workshop for the construction and maintenance of research equipment to support them. Most of the laboratories house a range of specialized equipment related to particular research and project areas.

The state-of-the-art equipments are computer-controlled and equipped with the most advanced software for analysis. These include the Field Emission Scanning Electron Microscopy (FESEM) with Energy Dispersive X-Ray Analysis (EDX) for morphological, micro structure and quantitative analysis of elements with minimal sample preparation, the X-Ray Diffractometer (XRD) for identification studies of minerals and materials phases as well as the X-Ray Fluorescence (XRF) for quantitative analysis of elements. The Universal Testing Machine (UTM) is used for tensile, bending and compression test for materials, and the Servo Hydraulic Testing Machine for static and dynamic tests. It can perform tensile, bending compression and fatigue tests of room temperature as well as of high temperature. Particle Size Analyzer is also available, besides range of thermal analyzer such as DSC, TG/DTA and DMA.

For further enquiries, please contact:

http://material.eng.usm.my/index.php/ms/

For consultation / facilities: http://material.eng.usm.my/index.php/ms/info-gateway/consultancy2

Further Enquiries: smmreinfo@usm.my
SCHOOL OF MECHANICAL ENGINEERING

School of Mechanical Engineering was formed in 1989 offering a programme in Bachelor of Engineering (Mechanical Engineering) with Honours. In 1999, the School started to offer another programme, Bachelor of Engineering (Manufacturing with Management) with Honours.

Our graduates are employed in multi-national, national and local companies as well as government agencies covering wide range of industries including automotive, manufacturing, electrical and electronics, maintenance, semi-conductor, constructions, consulting and engineering services, research and academic institutions.

Bachelor of Engineering With Honours (Mechanical Engineering)

Mechanical Engineering is a profession involving design, management, production, maintenance and infrastructure development to fulfill the needs of modern living. A mechanical engineer involves with the manufacturing of product that function efficiently, reliable and economically using the limited resources effectively. Mechanical engineer also involves in industries such as power plant, heavy machinery, electronics, construction, product development, medical equipment and food processing. Hence, mechanical engineers are important in the infrastructure development and wealth creation.

Mechanical Engineering Programme at USM was designed to prepare the student to fulfill the needs in engineering as a career in a wide spectrum of field in Mechanical Engineering. The programme also emphasis on inter disciplines involving various field of engineering, i.e. Electrical & Electronic Engineering, Material & Mineral Resources Engineering, Chemical Engineering, Civil Engineering and Aerospace Engineering. The students are also exposed to the non-technical subjects such as management, accounting and communication skills that needed for engineers.

This programme emphasize on practical aspects of the training relevant for the professional engineers. This is obtained through subjects in engineering laboratories, workshop practice and industrial training. The programme prepares the graduates for membership in various professional organisation. Generally, the programme can be classified into five main sub areas:

- Applied Mechanics
- Thermofluids
- Control, Measurement & Manufacturing Technology
- Mathematics & Numerical Analysis
- Design and Laboratory

Bachelor of Engineering With Honours (Manufacturing With Management Engineering)

The programme aspires to produce manufacturing engineers who can apply scientific principles to the production of goods and function as key team members in production of a wide range of products - automobiles, airplanes, tractors, electronics, surgical instruments, toys, building products, foodstuffs, sports and recreational equipment and etc. In addition, it also aims to nurture manufacturing engineers who can design and manage the processes and systems to make products with the required functionality, to high quality standards, available when and where customers prefer, at the best possible price and in ways that are environmentally-friendly.

To achieve these goals, the curriculum of Manufacturing Engineering with Management Programme at USM is designed to include activities in design, product development, processing of materials and manufacturing of added value goods. An emphasis is also given on the management of production chain to fulfill the needs of clients within the constraint of cost, quality, delivery period and flexibility required of the products. All these aspects are taught through a series of production management, engineering economic and ergonomic courses. With the combination of technical skills and managerial knowledge required of a modern manufacturing system, the this programme aspires to produce engineers who are able to manage effectively and efficiently the limited resources, equipment and manpower for the manufacture of high value goods and provision of professional services. This philosophy is achieved through a balanced curriculum emphasizing on various disciplines involving studies on product design and development, organisation and manufacturing management, manufacturing technology and manufacturing systems. In general, the emphasis of this programme can be classified into four main sub areas:

- Manufacturing Technology, Process and System
- Industrial Engineering and Management
- Control and Measurement
- Design and Laboratory

Research & Graduate Studies Programme

School of Mechanical Engineering offers Postgraduate Studies by Research in various fields of Mechanical Engineering and Manufacturing Engineering for the Degree of M.Sc. and Ph.D. Both programmes are offered in the mode of full time or part time. The School of Mechanical Engineering has formed five research groups as research thrusts to spear head research in the field of Mechanical Engineering and Manufacturing Engineering including:

- Bioenergy and Energy Efficient System
- Nanofabrication and Functional Materials
- Advanced Packaging and SMT
- Structural Dynamics
- Industrial and Manufacturing Engineering
Laboratory Facilities
In addition to the facilities for the basic and general teaching of engineering, the School of Mechanical Engineering has also been equipped with modern and sophisticated laboratory equipments for teaching as well as research. A comprehensive engineering education that is significant to the industries, is inclusively provided for the students. The main laboratory facilities are as per following:

- Fluid Dynamic Laboratory
- Energy Conversion Laboratory
- Thermodynamic Laboratory
- Heat Transfer Laboratory
- Laser Dopler Analyser (LDA) Laboratory
- Wind Tunnel Laboratory
- Microscopy & Micro-analysis Laboratory
- Metrology & Precision Engineering Laboratory
- Computer Numerical Control (CNC) Machining
- Manufacturing Process Laboratory
- Tribology & Failure Analysis Laboratory
- Applied Mechanics Laboratory
- Dynamic & Instrumentation Laboratory
- Automatic Control Laboratory
- Computer Aided Design (CAD) Laboratory
- Design Laboratory
- Engineering Drawing Laboratory
- Flexible Manufacturing System (FMS)

Student Achievements

- Perodua Eco-Challenge
  2009 - Champion longest distance
  2010 - Champion longest distance
  2011 - 2nd place Design & Engineering Presentation
  2012 - 3rd place longest distance

- BOSE
  USM-BOSE Lean Enterprise Yellow Belt certification

- Innovate Malaysia
  2013 - First (Agilent Track)
  2014 - Consolation (Intel Track)
  2015 – First (National Instruments Track)
The School of Dental Sciences was established in 1998. It is the third dental school in the country. The vision of the school is ‘to be the centre of excellence in academia, innovations and research, and be the catalyst and leader for new knowledge in teaching, learning and research for Malaysian higher education and the world’. And the mission is ‘committed to the pursuit of excellence and innovations in academia, services, research and development of human resources, by fostering a conducive educational environment and promoting holistic development programmes to meet national needs through exploring new frontiers of technology, and remain globally competitive to fulfil our community responsibility’.

The main activities of the School are:
1. Teaching undergraduate and post graduate students
2. Research, publications and innovation
3. Community and networking
4. Clinical services and consultation
5. Quality control

Teaching undergraduate and post graduate students

The School offers only one undergraduate program which is Doctor of Dental Surgery (DDS), a five year program. It adopts stomatology approach as the main philosophy for undergraduate curriculum. The training is geared towards nurturing oral physician. The first intake of undergraduate student was in 1999. So far, twelve batches of students with the total number of 570 have graduated. Current intake is at 50 students per year. The program is fully accredited by the Malaysian Qualification Agency (MQA) until 2019. Other body such as the South East Asian Association for Dental Education (SEAADE) had also evaluated the program and acknowledged it for several best practices.

Post graduate programs were started just after the first undergraduate intake. The program started with research modes which are PhD and MSc. After that, Master of Community Medicine (Oral Health) was offered in collaboration with the School of Medical Sciences. At present, the program is replaced by Master of Dental Public Health (MDPH) and Doctor of Dental Public Health (DrDPH). MDPH is a one year program, while DrDPH is a three year program.

In 2008, five clinical specialist training programs in the course work mode were started in collaboration with the Royal Australasian College of Dental Surgeons (RACDS). In 2015, four programs are offered which are Master of Oral and Maxillofacial Surgery and Master of Restorative Dentistry (Periodontics or Conservative or Prosthodontics). The Master of Paediatric Dentistry is still on hold for 2016 due to academic staffs’ constraint. Upon graduation from the programs, graduate will have two degrees which are USM’s degree and fellowship with the RACDS.

In general, post graduate programs offered in 2016 are:
1. PhD (research mode)
2. MSc (research mode)
3. MDPH (mixed mode)
4. DrDPH (course work)
5. Master of Oral and Maxillofacial Surgery (course work)
6. Master of Restorative Dentistry (Periodontics) (course work)
7. Master of Restorative Dentistry (Conservative) (course work)
8. Master of Restorative Dentistry (Prosthodontics) (course work)

Research, publications and innovation

In line with the status of USM as the APEX and research university, the School of Dental Sciences is committed in carrying out quality research that will generate new knowledge and innovations. Restructuring of the research activities of the School was carried out in 2013. All research activities were grouped under one cluster which is Craniofacial Sciences Cluster. Under the main cluster, smaller research groups were created which are Craniofacial Biology, Craniofacial Medical Imaging, Biomaterial, Stem Cell & Tissue Engineering and Oral Health & Oral Diseases. All academic staffs of the School are given a target to achieve every year in term of the amount of grant to be obtained and number of publications to be met. Since 2007, there has been an increased in the number of publications attained by the School until 2013 which later dropped a little. In 2013, the School made a headline with the innovation of composite resin from the rice husk.

In order to support research activities, the School is continuously trying to upgrade the necessary facilities. Among the facilities that the School has at present are:
- Micro CT
- Table top SEM (up to 50,000 magnification)
- Atomic force microscope (AFM)
- Fourier Transform Infrared Spectroscopy (FTIR)
- Cone beam CT
- Instron universal testing machine (Shimadzu)
- Cold room for stem cell research
- Thermocycler
- Flowcytometer
transforming higher education for a sustainable tomorrow

Prospectus

2016

- 3D digital scanner
- Real Time PCR

Other laboratory facilities to support research activities are available in other Schools in the Health, Main and Engineering campuses. Facilities are also available throughout Malaysia and overseas as well. There are researchers who sent their sample testing overseas for specific methods. The School is also publishing its own journal (Figure 3) to support publications. The journal is now indexed in Directory of Open Access Journals (DOAJ), Malaysian Abstracting and Indexing System (MyAIS), Google Scholar, Index Copernicus, Western Pacific Region Index Medicus and Genamics Journal Seek. Efforts are being made to make it indexed in Scopus.

Community and networking

Community and networking is a main feature of USM as an APEX university. Continuous efforts are being made to carry out activities that will benefit the community and forge closer linkages. Together with clinical services, many programs are carried out in the community. The program also goes beyond Malaysia. Programs to help cleft lip and palate patients in the form of surgical intervention had been carried out in many selected places of Indonesia. This activity fits very well with the long term vision of USM to help the bottom billion through the transfer of knowledge and expertise. In 2014, the School of Dental Sciences was awarded the certificate of excellence in community activities.

Quality

School of Dental Sciences together with others in the Health Campus and USM is active in carrying out quality activities to improve services and delivery. At present there are several activities such as MS ISO 15189:2015, in which Oral Pathology Laboratory is being certified since 2015, Innovative and Creative Circle (ICC) and 5S are being carried out and implemented in order to improve the quality indicators of various services.

Conclusion

The School is now 18 years old since its inception in 1998. There has been tremendous development in term of staff number (academic and non academic), academic programs (undergraduate and post graduate), facilities and infrastructure. Moving forward, there should be more development in those aspects in future.

More information about the School can be accessed at its website http://www.dental.usm.my/

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Dean
School of Dental Sciences
USM Health Campus
16150 Kubang Kerian
Kelantan, MALAYSIA
Phone: +609-767 5500/5555
E-mail: adamkck@usm.my

School of dental sciences
we provide education for oral health professionals of tomorrow
Vision

We are committed to be a centre of excellence in health sciences towards the wellness of society through intellectual inquiry, creativity, innovation and dissemination of knowledge.

Mission

We aim to achieve and maintain excellence in health sciences by:

- Producing graduates with a high level of intellectual inquiry and professionalism.
- Developing graduates with a strong sense of ethics and commitment to humanity.
- Transforming knowledge into an instrument for sustainable development and wellness of society.

About Us

The diagnosis, treatment and control of diseases have long been the foundation of conventional thoughts in matters related to health. These views have undergone changes towards the concept of a more holistic management of health, based not only on the biology of diseases but also the incorporation of sociological, behavioural and environmental aspects of diseases. This concept of health gives cognisance to patients as well as healthy individuals.

Rapid advancement in technology has helped to hasten these changes in concepts, methodologies and the way health services are disbursed. These facts are taken into account during the development of programmes at the School of Health Sciences with the expressed intention of producing graduates who would be able to compete in the job market both locally and at the international level.

This coming 2016/2017 academic session marks the sixteenth anniversary of the school, in which twelve batches of students have successfully graduated. The school offers 10 different bachelor degree programmes, in which each requires a period of four years (eight semesters) to complete. At the end of the study period, graduates will be conferred the Bachelor of Health Sciences (B.Sc.) Degree with the respective programme in parenthesis. Forensic Science graduates will be conferred the Bachelor of Science, B.Sc. (Forensic Science) Degree. Meanwhile, graduates from the Diploma in Nursing Programme will be conferred a Diploma in Nursing.

Current research activities in School of Health Sciences

### Undergraduate and Postgraduate Programmes

<table>
<thead>
<tr>
<th>Degree</th>
<th>Programme</th>
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<tbody>
<tr>
<td>Bachelor of Health Sciences</td>
<td>Audiology</td>
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<td></td>
<td>Biomedicine</td>
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<td>Dietetics</td>
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<td>Environmental and Occupational Health</td>
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<td>Exercise and Sports Science</td>
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<td>Medical Radiation</td>
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<td>Nursing</td>
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<td>Nutrition</td>
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<td></td>
<td>Speech Pathology</td>
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<tr>
<td>Bachelor of Science</td>
<td>Forensic Science</td>
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<tr>
<td>Diploma</td>
<td>Nursing</td>
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<tr>
<td>Master of Science (Biomedicine)</td>
<td>Biomedicine</td>
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<tr>
<td>Master of Science (Forensic Science)</td>
<td>Forensic Science</td>
</tr>
<tr>
<td>Master of Science (Nutrition) (Health)</td>
<td>Nutrition</td>
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</tbody>
</table>

PROSPECTUS 2016
Transforming Higher Education for a Sustainable Tomorrow
Degree Programme

<table>
<thead>
<tr>
<th>Degree</th>
<th>Programme</th>
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<tbody>
<tr>
<td>Master of Science (Medical Radiation) (Health)</td>
<td>Medical Radiation</td>
</tr>
<tr>
<td>Master of Science (Nursing)</td>
<td>Nursing</td>
</tr>
<tr>
<td>Master of Science (Health Sciences)</td>
<td>Environmental and Occupational Health Health Informatics Interdisciplinary Health</td>
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<tr>
<td>Master of Science Mixed-Mode (Biomedicine)</td>
<td>Biomedicine</td>
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<td>Master of Science Mixed-Mode (Forensic Science)</td>
<td>Forensic Science</td>
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<tr>
<td>Master of Science (Sports Science)</td>
<td>Exercise and Sports Science</td>
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<tr>
<td>Doctor of Philosophy</td>
<td>Biomedicine Forensic Science Nutrition Medical Radiation Nursing Health Sciences</td>
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mainly focus on the areas of human investigative sciences, wellness for the disabled and strategies in disease control. PPSK aims to be key players in health-related researches that benefit local communities, the nation and also the international community at large. This aspiration is well supported by the availability of experienced and passionate researchers in the school with vibrant research culture.

Achievements

1. Tier-5 (Excellent) in Health Sciences (2012) rated by MQA Discipline-Based Rating System (D-SETARA).

2. High quality research articles published in cited peer-reviewed journals in addition to the establishment of various international networking in research and community engagement in 2015.

3. More than 80% of undergraduate students achieved CGPA 3.00 and above in 2015.

4. One hundred percent of Master of Science Mix-Mode students graduated with CGPA of more than 3.00 in 2015.

5. ISO 17025 Certification (2013) on Human Identification and DNA Analysis of HID/DNA Unit of the school by Standards Malaysia.

For more information, kindly log on to www.ppsk.usm.my
School of Medical Sciences provides conducive environment for achieving academic, services and research excellence. It is striving progressively to consolidate and improve training and development in human resource in the field of medical sciences. The main focus is to meet the health service requirement of the nation. In order to achieve this, curriculum reviews and facilities improvement were done from time to time.

Since Doctor of Medicine (MD) program started in 1981, the school has successfully produced 4154 doctors, serving the country in government and private institutions, as well as becoming academicians.

Since 1988, the School Of Medical Sciences has embarked on postgraduate medical training and has so far produced specialists in various clinical specialties to meet the need of the country. Currently 20 postgraduate specialists training programmes are offered and all are conducted by coursework. The courses lead to the specialist degree of Masters of Medicine. Postgraduate Medical training also offer non-specialist training programmes that focus on medical sciences and technology. Six mix mode programs have been introduced stage by stage since 1998. Currently, the School of Medical Sciences has enrolled 1240 post-graduate students, and 2024 has graduated in various post-graduate studies.

Achievement in ISO Certification

Quality agenda in the Health Campus was officially launched by the Vice Chancellor on 2nd September 2007 in order to ensure quality and continuous improvement of the management of our teaching and learning (T & L). Quality Management System (QMS) has been established since 2006 and MS ISO9001:2000 certification was awarded by SIRIM QAS International Sdn. Bhd in March 2007.

Since then, Quality Management System (QMS) of the School was monitored through surveillance and re-certification audits by SIRIM QAS International Sdn. Bhd every year to ensure compliance to the standard requirements.

Since 2009, as a Research and APEX University, the School has expanded the scope of QMS to include the management of research. This is to ensure that the APEX university KPI can be achieved with the assistance of the quality policy and objectives of our MS ISO9001:2008.

In compliance with the regulations in force, Bank Tissue Unit of the school also obtained MS ISO 13485:2006 (Medical Device Quality Management System-Requirement for Regulatory Purpose) and MS 1900:2014 (Syariah-Based Quality Management System-Requirement With Guidance).

Postgraduate Section

Wide ranges of postgraduate programmes are offered in the School of Medical Sciences. The programmes are focused mainly to cater for the need of the medical and health related disciplines. Apart from ordinary research and mixedmode programme, the School have the unique four-year coursework Masters of Medicine/Surgery /Pathology/Public Health programmes which aimed at producing adequate capable and competent specialists to cater for the needs of the country. Programmes are also designed to produce graduates in medical and health related field with a strong capacity to work effectively as key members of collaborative team to investigate medical and health related problems. Successful graduates are expected to have a career in public and private hospitals, academic institutions, research institutions and pharmaceutical industries. The Postgraduate Section in the School of Medical Sciences is given the responsibilities in helping the school to strategize, manage and monitor all matters pertaining to the postgraduate programmes as well as the postgraduate students. This section work closely with the Institute of Postgraduate Studies (IPS) in order to ensure the smooth running of the postgraduate activities and the goals of the postgraduate programme in USM are achieved. The postgraduate programmes that are offered at our medical school are as follow:

Coursework Programmes

- Master of Medicine (Obstetrics &Gynaecology, Anesthesiology, Pediatrics, Internal Medicine, Psychiatry, Radiology, Surgery, Ophthalmology, Orthopedics, Otorhinolaryngology-Head and Neck Surgery, Family Medicine and Emergency Medicine)
- Master of Surgery (Neurosurgery and Plastic Surgery)
- Master of Pathology (Anatomic Pathology, Chemical Pathology, Hematology, Medical Microbiology, Clinical Immunology and Medical Genetics)
- Advanced Master of Medicine (Neurology)
- Master of Science (Sports Science)
- Master of Public Health

Mixed Mode Programmes

- Master of Science (Medical Education)
- Master of Science (Clinical Anatomy)
- Master of Science (Medical Statistics)
- Master of Neuroscience (Integrated Neuroscience Programme)
- Doctor of Neuroscience (Integrated Neuroscience Programme)
- Doctor of Public Health

Research Programmes

- Master of Science
- Doctor of Philosophy
The Universiti Sains Malaysia-Kartanaka Lingayat Education Collaboration, USM-KLE International Medical Program

The School of Medical Sciences USM has become the first medical school in Malaysia to provide a medical curriculum to the Kartanaka Lingayat Education (KLE) University, Belgaum, India, that houses the prestigious Jawaharlal Nehru Medical College (JNMC). USM’s more systems-based approach in teaching medicine, as compared to the more linear approach of JNMC, was one of the key factors in solidifying the collaboration as it will contribute to the richness of the medical curriculum offered at KLE University. USM will benefit immensely not only from the KLE University’s commitment to provide the infrastructure and educational resources, but also from the opportunity to promote its medical programme at the international level. Through this collaboration, USM will now be able to send more of its medical students to study in India alongside world renowned physicians and be exposed to different medical environments and cultural diversity that will enhance their development in becoming global physicians. Students in this programme will be awarded with a medical degree from USM.

The USM-KLE University collaboration was officially established in November 2009 with the signing of a Memorandum of Agreement (MoA) between the two parties. Under the MoA, KLE University will provide the infrastructure and educational resources for the delivery of a medical undergraduate programme in Belgaum, India, utilising USM medical curriculum. USM’s key motivation in this collaboration is to increase the quality and number of its graduates in medicine to fulfill the current and future needs of Malaysia. Unlike the JNMC medical programme, no quota will be imposed on foreign students under the USM-KLE programme, hence allowing more Malaysians to study in India, tap into the enormous educational resources and benefit from vastly experienced teachers at one of the top medical colleges in India. In this programme, medical students will have access to some of the best medical facilities and resources in the world. For instance, students in this programme will be able to practice their medical skills on human cadavers, a rare opportunity for medical students anywhere else in the world. USM is also looking forward to the opportunities for collaborations in research and exchange of staff and students in the future.

The inaugural class was commenced with the intake of 44 medical students from Malaysia in September 2010. Students were selected through the existing process practiced by the School of Medical Sciences, USM. Selection was based on both their academic and non-academic achievements and an interview. The programme adopted the system of governance of the School. A Deputy Dean has been appointed to organize and monitor the medical programme in KLE University and all academic matters will be subjected to the deliberations and approval of the Faculty Board of the School of Medical Sciences USM and the USM senate.

The USM-KLE University collaboration signifies an achievement for the School of Medical Sciences in marking its name at the global level. In line with USM’s vision to transform education for a sustainable tomorrow, one of the future goals of the USM-KLE medical programme is to recruit students from less developed countries, such as Bangladesh and the Maldives, to allow them to obtain superior medical training at affordable fees.

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