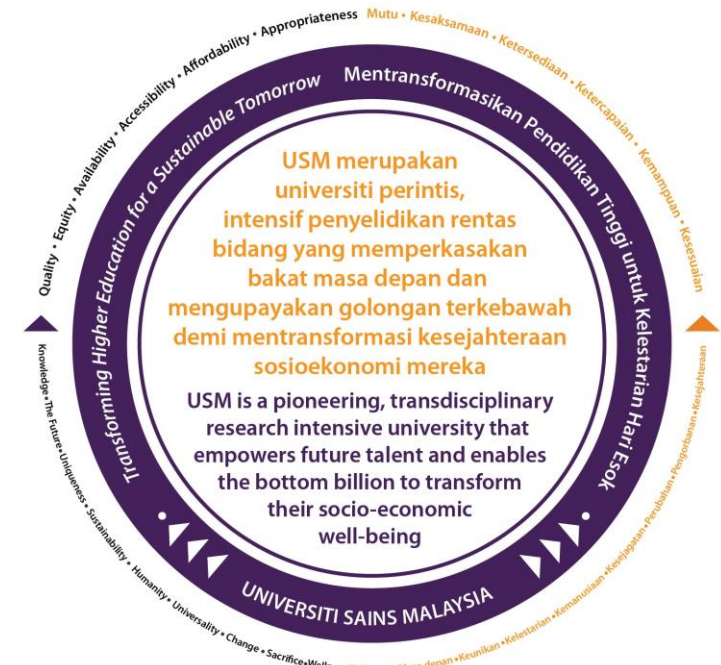


STUDENT BOOKLET



School of Mechanical Engineering
Engineering Campus
Universiti Sains Malaysia
14300 Nibong Tebal
Penang

<http://mechanical.eng.usm.my>

Tel: +604-5996301
Fax: +604-5996912
Email: mechanical@usm.my

<http://mechanical.eng.usm.my>

Accredited program by





OUR CAMPUS

Our campus is located in Nibong Tebal, Pulau Pinang, in close proximity with borders of Perak and Kedah. The campus is about 4km from Parit Buntar, Perak and 8.3km from Bandar Baharu, Kedah.

HOW TO GET HERE



By car

15 minutes driving from Bandar Baharu Toll Plaza and 10 minutes from Jawi Toll Plaza



By bus

Parit Buntar Bus Terminal is about 7km from our campus



By air

The Bayan Lepas International Airport is situated about 30km from Universiti Sains Malaysia Engineering campus

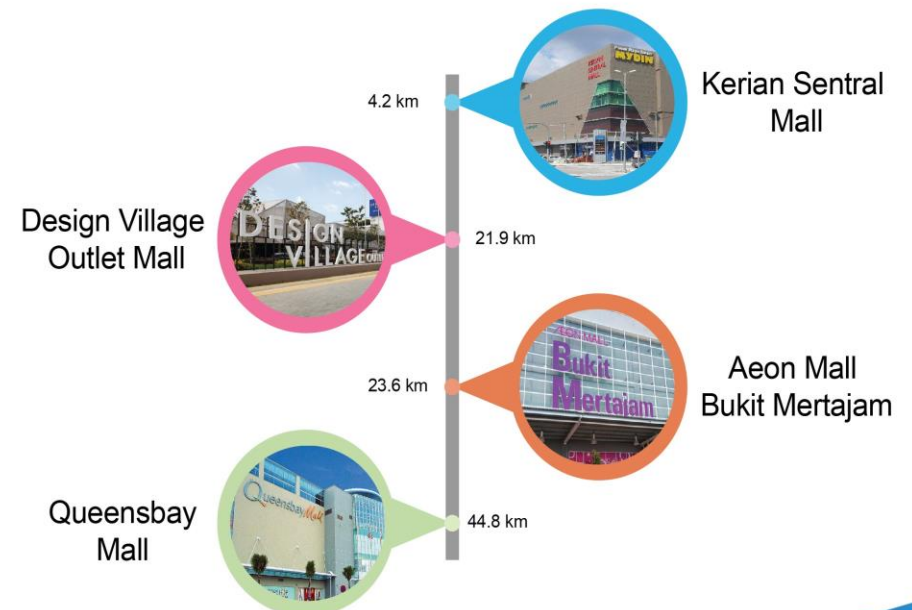


By train

ETS to Parit Buntar Train Station is available

No.	Items	Pages
1	Table of Content	2
2	Our Campus	3
3	School Introduction	4
4	Outcome Based Education (OBE)	5
5	Entry Requirement	6
6	Student's Activities and Awards	7
7	Mechanical Engineering Program	8-11
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Places of interest



Introduction

School Background

The USM School of Mechanical Engineering was established on January 1st, 1989. The initial objective of the establishment of the school was to produce high quality graduates in Mechanical Engineering and Manufacturing Engineering to fulfill the high demand for professional, specialized workers by the industries in Malaysia. These industries include design, development, manufacturing, production, service and maintenance industry, which are closely related to mechanical and mechatronics engineering involving development of various devices, tools, equipments, machines, components, support systems and infrastructure.

The development of the school is also aimed to be the centre for acquiring and dissipating knowledge in the field pertaining to mechanical and manufacturing engineering. The acquisition is through the activities of research, development, project works and professional networking. The dissemination is through consultancy work, workshops, seminars and professionals writing.

This philosophy is achieved through a curriculum and emphasis on various discipline involving studies on organization and manufacturing management, manufacturing technology and manufacturing systems. In summary, this program is aimed to educate and train an engineer as a technologist for the manufacturing industry. The application of engineering and manufacturing principles in solving industrial problems is the main theme in this program whilst the management aspect focuses on the study on human, financial and communication factors.

Located at the USM Engineering Campus at Nibong Tebal, the USM School of Mechanical Engineering offers engineering academic qualifications at both undergraduate and postgraduates level. All programmes offered by USM School of Mechanical Engineering are tailored to ensure high quality of the School's graduates, aimed towards the achievement of Universiti Sains Malaysia's vision.

For undergraduate level, the programmes offered are:

Bachelor in Mechanical Engineering (Honours)
Bachelor in Manufacturing Engineering with Management (Honours)

Vision

The School of Mechanical Engineering strive to be the best and leading provider of Mechanical Engineering and Manufacturing Engineering education and research in Malaysia

Mission

- To Achieve the Vision through the following
- To provide quality and innovative teaching and maintain accreditation for all its 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

Program Educational Objective (PEO)

(Career and professional accomplishment that the program is preparing graduates to achieve [Felder & Brent, 2005])

Our graduates are expected to achieve one or more of the following PEOs within five years of graduation from our program:

- 1 Excel in engineering practices in various industries.
- 2 Establish themselves as leaders in their professional careers.
- 3 Earn an advanced degree or professional certification.

Program Outcome (PO)

(Statement of knowledge, skills and behaviours that students are expected to acquire by the time they graduate [Felder & Brent, 2005])

PO1: Engineering Knowledge

Apply knowledge of mathematics, natural science and engineering fundamental to solve complex engineering problems particularly in mechanical and manufacturing engineering.

PO2: Problem Analysis

Identify, formulate and analyze complex engineering problems to an extent of obtaining meaningful conclusions using principles of mathematics, science and engineering.

PO3: Design/development of solutions

Design solutions for complex engineering problems and design systems, components or processes to within the prescribed specifications relevant to mechanical and manufacturing engineering with appropriate considerations for public health and safety, society and environmental impact.

PO4: Investigation

Investigate complex mechanical and manufacturing engineering problems using research-based knowledge and research methods to provide justified conclusions.

PO5: Modern Tool Usage

Create, select and apply appropriate techniques, resources, and modern engineering and computational tools to complex engineering problems with an understanding of the limitations.

PO6: The Engineer and Society

Apply appropriate reasoning to assess contemporary societal, health, safety and legal issues to establish responsibilities relevant to professional engineering practice and solutions to complex engineering problems.

PO7: Environment and Sustainability

Understand and evaluate the sustainability and impact of professional engineering work in the solutions of complex engineering problems in societal and environmental contexts.

PO8: Ethics

Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

PO9: Individual and Team Work

Function successfully and efficiently as an individual, and as a member or leader in multi-disciplinary teams.

PO10: Communication

Communicate effectively both orally and in writing on complex engineering activities with the engineering community and society.

PO11: Project Management and Finance

Apply knowledge and understanding of project management and finance to engineering projects.

PO12: Lifelong Learning

Recognize the need for, and is capable to undertake life-long learning in the broadest context of knowledge and technological change.



Chim Yi Shen
UEM Medal Award 2017

The School of Mechanical Engineering offers two Bachelor's Degree Programmes (4-year full time):

- Bachelor of Mechanical Engineering with Honours
- Bachelor of Manufacturing Engineering with Management with Honours

Entry Requirements

STPM

- Minimum CGPA of 2.75.
- AND**
- At least Grade B- (2.67) in Physics and Mathematics T.
- AND**
- Credit in Bahasa Melayu and History subjects in SPM.
- AND**
- At least Band 2 in MUET.

MATRICULATION/ FOUNDATION UM/ FOUNDATION Uitm

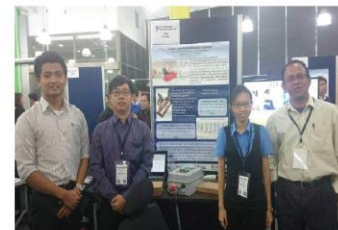
- Minimum CGPA of 2.75.
- AND**
- At least Grade B- (2.67) in Mathematics and Physics/Engineering Physics.
- AND**
- Credit in Bahasa Melayu and History subjects in SPM.
- AND**
- At least Band 2 in MUET.

DIPLOMA/ A-Level/ IB/ AUSMAT/SAM

- Minimum CGPA of 2.75 in Diploma in Mechanical Engineering.
- OR**
- Minimum score of 10 (Grade C) in Mathematics/Further Mathematics and Physics.
- OR**
- Pass the International Baccalaureate (IB) with minimum score of 28 and obtains at least score of 4 in High level or Standard level in Mathematics/Further Mathematics/Mathematical Studies/Mathematical Methods and Physics.
- OR**
- Pass in AUSMAT/SAM with minimum aggregate 68 and obtains at least Grade C in Mathematical Studies/Specialist Mathematics and Physics.
- OR**
- Any equivalent qualification recognized by the University Senate.
- AND**
- Credit in Bahasa Melayu and History subject in SPM.
- AND**
- At least Band 2 in MUET.

More details on admission info & entry requirements, please visit <https://pohon.usm.my>

First Prize Winning in Innovate
Malaysia Design Competition
2017 (National Instruments)



Innovate Malaysia 2016



Innovate Malaysia Design Challenge 2019 - USM Winners

SolidWorks student design &
Modeling Competition



Perodua Eco-challenge



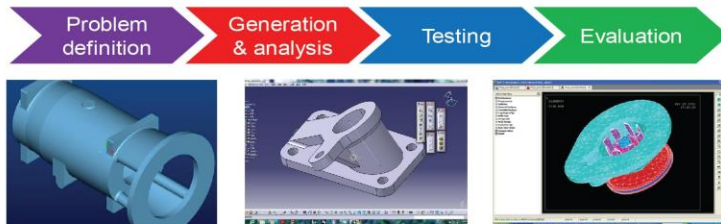


Mechanical Engineering Programme

Mechanical engineering core courses	108
Mechanical engineering elective courses	12
University requirement courses	15
Total credit hours	135

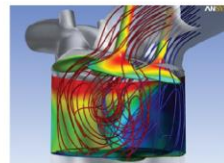
1 Emphasis on Design

- embedded in Engineering Drawing and in Conceptual Design and CAD courses.



2 Computer Experiences

- exposed to the programming languages like C++ and Matlab.
- Commercial softwares: Solid Works, CATIA, ABAQUS, ANSYS FLUENT, AutoCAD, Visual Basic, etc.



3 Laboratory Experiences

- expose the students on the laboratory experience



List of Lecturer (Mechanical Engineering)

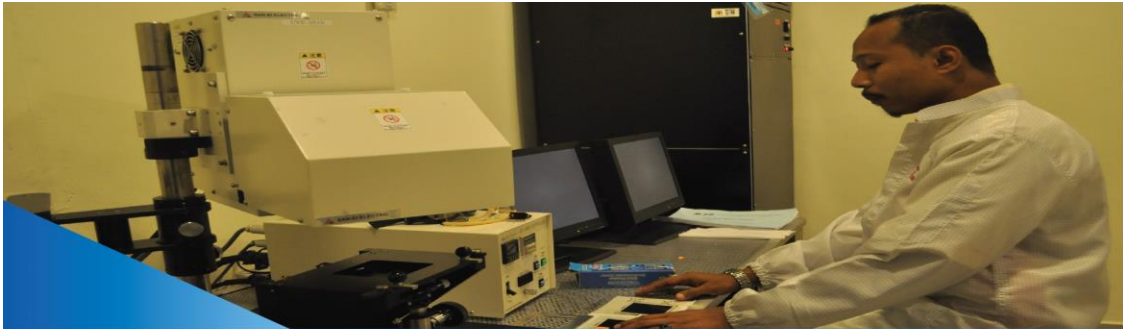
STRENGTH

Professor	Assoc. Professor	Senior Lecturer	Lecturer	PE/MIEM
2	4	20	1	4

No.	Name	Email	Tel no.
1	PROF. IR. DR. MOHD ZULKIFLY BIN ABDULLAH	mezul@usm.my	04-5996310
2	PROF. DR. ZAIDI BIN MOHD RIPIN	mezaidi@usm.my	04-5996359
3	ASSOC. PROF. IR. DR. ABDUS SAMAD BIN MAHMUD	abdus@usm.my	04-5996318
4	ASSOC. PROF. DR. ABDULLAH AZIZ BIN SAAD	azizsaad@usm.my	04-5996311
5	ASSOC. PROF. DR. LOH WEI PING	meloh@usm.my	04-5996397
6	ASSOC. PROF. DR. MOHAMAD AIZAT BIN ABAS	aizatabas@usm.my	04-5996390
7	DR. AHMAD ZHAFRAN BIN AHMAD MAZLAN	zhafran@usm.my	04-5996368
8	IR. DR. CHAN KENG WAI	kengwai.chan@usm.my	04-5996333
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12	DR. KHALED ALI MOHAMMAD AL-ATTAB	khaled@usm.my	04-5996389
13	DR. MOHAMAD IKHWAN ZAINI BIN RIDZWAN	mikhwanr@usm.my	04-5996354
14	DR. MOHAMAD YUSOF BIN IDROAS	meyusof@usm.my	04-5996381
15	DR. MOHD AZMI BIN ISMAIL	azmi.meche@usm.my	04-5996319
16	DR. MOHD SHARIZAL BIN ABDUL AZIZ	msharizal@usm.my	04-5996324
17	DR. MOHD SYAKIRIN BIN RUDDI	syakirin@usm.my	04-5996330
18	DR. MUHAMMAD FAUZINIZAM BIN RAZALI	mefauzinizam@usm.my	04-5996382
19	DR. MUHAMMAD IFTISHAH BIN RAMDAN	shahramdan@usm.my	04-5995948
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23	DR. NURUL FARHANA BINTI MOHD YUSOF	mefarhana@usm.my	04-5996382
24	DR. OOI LU EAN	ooiluean@usm.my	04-5996315
25	DR. TEOH YEW HENG	yewhengteoh@usm.my	04-5996340
26	DR. YU KOK HWA	yukokhwa@usm.my	04-5996380
27	EN. ABDUL YAMIN BIN SAAD	meyamin@usm.my	04-5996322

Programme for Bachelor of Mechanical Engineering with Honours

Type of course	Category	Level 100		Level 200		Level 300		Level 400			
C O R E	Thermofluids	Semester 1	Semester 2	Semester 1	Semester 2	Semester I	Semester 2	E M L 4 5 1 / 5 I n d u s t r i a l T r a i n i n g	Semester 1	Semester 2	Unit
	Applied Mechanics		EMM102/3 Statics	EMH102/3 Fluid Mechanics	EMH222/3 Fluids Dynamics	EMH341/3 Applied Thermodynamics	EMH342/3 Heat Transfer				
	Design	EMD111/2 Engineering Drawing & CAD	EMD231/3 Design of Machine Elements	EMM213/3 Strength of Materials	EMM252/3 Engineering Dynamics	EMM331/3 Solid Mechanics	EMM352/4 Noise and Vibrations		EMD431/4 Mechanical Engineering Integrated Design		
	Laboratory	EML101/2 Engineering Practice				EML351/2 Engineering Laboratory I	EML352/2 Engineering Laboratory II		EMD461/2 Final Year Project I	EMD462/4 Final Year Project II	
	Measurement/ Control	EEU104/3 Electrical Technology	EMT101/2 Numerical Computing		EPM212/3 Metrology and Quality Control	EMC301/3 Measurement and Instrumentation	EMC322/3 Automatic Control		EML451/5 Industrial Training		
	Manufacturing	EBB113/3 Engineering Materials		EPP201/3 Manufacturing Technology I		EMC311/3 Mechatronic				EPM432/3 Project Management	
	Mathematic/ Computing	EUM113/3 Engineering Calculus	EUM114/3 Advanced Engineering Calculus	EMT211/3 Engineering Probability & Statistics	EMT212/3 Computational Engineering	EPP331/4 Manufacturing Technology II	EMT302/3 Mathematical Modelling in Engineering			EUP222/3 Engineers in Society	
		13	11	15	12	18	18		11	10	108
University Requirement (Local Student)		LKM400/2 Malay Language IV	WUS101/2 Core Entrepreneurship	LSP300/2 Academic English	HFE224 /2 Appreciation of Ethics and Civilisations	LSP404/2 Technical and Engineering English					15
University Requirement (International Student)		LKM100/2 Malay Language I	LSP300/2 Academic English	HFF225/2 Philosophy and Current Issues	SEA205E/4 Malaysian Studies	LSP404/2 Technical and Engineering English					
Co-Curriculum/Optional/Skills			Co-curriculum/1					Co-curriculum/1	Co-curriculum/1		
E L E C T I V E	Thermofluids								EME431/3 Refrigeration and Air Conditioning	EME422/3 Energy Conversion System	12
									EME432/3 Internal Combustion Engines		
	Manufacturing/ Measurement Control							EPC451/3 Robotic & Smart Factory	EPE482/3 Optical and Surface Metrology		
								EPE461/3 Industrial Machine Vision	EME452/3 Tribology		
	Management & Finance							EPM201/2 Engineering Economy			
								EPM331/2 Management in Engineering			
	Design								EME462/3 Mechanical Product Design		
	Computational Methods							EME411/3 Numerical Methods for Engineers	EME412/3 Applied Finite Element Analysis		
							EME451/3 Computational Fluid Dynamics	EPE472/3 Artificial Intelligence and Data Mining			
	Applied Mechanics								EME442/3 Biomechanics		
Total Unit		15	14	19 (Local) 17 (Int.)	14 (Local) 16 (Int.)	20	18		18	17	
Grand Total Unit											135

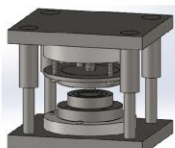
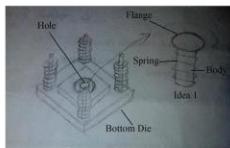


Manufacturing Engineering with Management Programme

Manufacturing engineering core courses	108
Manufacturing engineering elective courses	12
University requirement courses	15
Total credit hours	135

1 Emphasis on Design

Embedded in Engineering Drawing Conceptual Design and CAD, Product Design and Development, Design for Manufacturing and Tooling Design.



2 Management Element

Exposure to the project and production planning tools such as gantt chart and manufacturing system simulation such as WITNESS.



3 Industrial Exposure

Practical experience at factory such as flex, BOSE, Sandisk and many more



List of Lecturer (Manufacturing Engineering)

STRENGTH

Professor	Assoc. Professor	Senior Lecturer	Lecturer	PE/MIEM
1	6	6	3	2

No.	Name	Email	Tel no.
1	PROF. DR. MANI MARAN A/L RATNAM	mmaran@usm.my	04-5996325
2	ASSOC. PROF. IR. DR. AHMAD BAHARUDDIN BIN ABDULLAH	mebaha@usm.my	04-5996361
3	ASSOC. PROF. IR. DR. CHIN JENG FENG	chinjengfeng@usm.my	04-5996313
4	ASSOC. PROF. DR. JAMES LAENG @ JAMALUDDIN ABDULLAH	mejamal@usm.my	04-5996321
5	ASSOC. PROF. DR. KHAIRUDIN BIN MOHAMED	mekhairudin@usm.my	04-5996383
6	ASSOC. PROF. DR. MOHD SALMAN BIN ABU MANSOR	mesalman@usm.my	04-5996308
7	ASSOC. PROF. DR. ZAHURIN BIN SAMAD	zahurin@usm.my	04-5996312
8	DR. AMIE NORFREEDA BINTI AMIR	freeda_amir@usm.my	04-5996385
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11	DR. NUR AMALINA BINTI MUHAMMAD	nuramalinamuhammad@usm.my	04-5996365
12	DR. RAMDZIAH BINTI MD. NASIR	ramdziah@usm.my	04-5996317
13	DR. SAREH AIMA HILMI BIN ABU SEMAN	sarehaiman@usm.my	04-5996332
14	IR. DR. YEN KIN SAM	meyks@usm.my	04-5996387
15	EN. MOHZANI BIN MOKHTAR	mohzani@usm.my	04-5996335

Programme for Bachelor of Manufacturing Engineering with Management with Honours

Type of course	Category	Level 100		Level 200		Level 300		Level 400		Unit
		Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	
C O R E	Mathematics	EUM113/3 Engineering Calculus	EUM114/3 Advanced Engineering Calculus	EMT211/3 Engineering Probability & Statistics	EMM252/3 Engineering Dynamics					
	Applied Mechanics		EMM102/3 Statics	EMM213/3 Strength of Materials						
	Thermal			EMH211/3 Thermodynamics						
	Fluid		EMH102/3 Fluid Mechanics							
	Controls	EEU104/3 Electrical Technology	EMT101/2 Numerical Computing			EMC301/3 Measurement & Instrumentation	EMC322/3 Automatic Control	EPC451/3 Robotic & Smart Factory		
	Manufacturing Processes	EBB113/3 Engineering Material		EPP201/3 Manufacturing Technology 1	EPP212/3 Advanced Manufacturing Technology	EPP351/3 Advanced Manufacturing Process				
	Manufacturing Systems				EPM212/3 Metrology & Quality Control	EPM 321/3 Manufacturing System	EPM322/3 Industrial Engineering			
	Management			EPM201/2 Engineering Economy	EUP222/3 Engineers in Society	EPM331/2 Management in Engineering	EPM352/3 Computer Integrated Manufacturing			
	Design	EMD111/2 Engineering Drawing & CAD	EPD112/2 Computer Aided Conceptual Design		EPD212/2 Product Design & Development		EPD342/3 Design for Manufacturing and Tooling	EPD441/4 Manufacturing Eng. Integrated Design		
	Practical	EML101/2 Engineering Practice			EPL212/2 Manufacturing Laboratory I	EPL331/2 Manufacturing Laboratory II		EPD461/2 Final Year Project I		
	Core Unit	13	13	14	16	16	15	14	7	108
University Requirement (Local Student)		LKM400/2 Malay Language IV	WUS101/2 Core Entrepreneurship	LSP300/2 Academic English	HFE224 /2 Appreciation of Ethics and Civilisations	LSP404/2 Technical and Engineering English				15
University Requirement (International Student)		LKM100/2 Malay Language I	LSP300/2 Academic English	HFF225/2 Philosophy and Current Issues	SEA205E/4 Malaysian Studies	LSP404/2 Technical and Engineering English				
Co-Curriculum/Optional/Skills							Co-curriculum/1	Co-curriculum/1	Co-curriculum/1	
E L E C T I V E	Manufacturing Processes							EPE441/3 Micro and Nano-Manufacturing Engineering	EPE442/3 Advanced Semiconductor Manufacturing Technology	12
								EPE451/3 Additive Manufacturing	EPE482/3 Optical and Surface Metrology	
	Manufacturing Systems							EPE461/3 Industrial Machine Vision	EPE472/3 Artificial Intelligence and Data Mining	
	Management						EPE432/3 Lean Six Sigma Manufacturing Management	EPE481/3 Industrial Ergonomics		
	Total Unit	15	15	18 (Local) 16 (Int.)	18 (Local) 20 (Int.)	18	19	EPE411/3 Quality System Management	18	14
Grand Total Unit										135



Career Prospect

Career Opportunities

Graduates from Mechanical Engineering and Manufacturing Engineering with Management Programmes have wide job opportunities in all aspects of technology and management of various industries and organizations such as manufacturing industries, automotive industries, electrical and electronic industries, construction industries, research organization, consultants and research institution and universities.



Career of Manufacturing Engineering includes design engineer, process engineer, maintenance engineer, project engineer, plant engineer, quality control engineer, managers, researchers, teachers etc.



Public sectors & GLCs

Petronas
Sime-Darby
TNBR
UEM
JKR
JPS
etc.

Private sectors

Oil and gas
Manufacturing
Automation
Semi-conductor
Consulting
Management
Automotive
etc.

Human Resource Development

MSc & PhD studies
University Lecturer

List of companies that actively recruiting our graduates:

- Agilent
- Petronas
- Sime-Darby Plantation
- UEM
- TNB Research
- AMD
- Intel
- Agilent Technology
- Motorola
- Sony R & D
- Flextronics
- Seagate
- LKT automation
- B Braun Medical
- Industries
- Finisar Malaysia (Fiber Optic Manufacturer)
- Altera Semi-conductor
- Panasonic
- Bose
- Western Digital
- UMW Toyota
- Many more...

Khiew Chee Keong
Process Executive
Amsteel Mills



Aminudin Ahmad
Signalling Engineer
Global Rail Sdn Bhd



Wong Ooi Qun
Technical Services Engineer
Malindo Air



Pathmaprasad Ramachandiran
Project Engineer
Wood PLC