

**BACHELOR OF ENGINEERING IN
MANUFACTURING SYSTEMS ENGINEERING (BENG MFSE)
Student Handbook (2016-2017)**

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1. AIMS OF MAJOR

This major aims to produce graduates who will

1. be engineers and managers in globalized manufacturing and engineering enterprises, or other relevant career paths, including industry, academe, government, and non-governmental organizations.
2. be able to undertake and manage challenging projects that require knowledge of the fundamentals, manufacturing technologies and systems, information technologies and management in manufacturing.
3. be able to meet the needs of analysis, design, and development in industry in the context of manufacturing systems engineering and other closely related engineering disciplines.
4. be able to effectively identify new problems and develop innovative solutions, including new manufacturing and fabrication technologies.
5. be innovators and leaders who have a positive economic and social impact on their communities, the nation, and society as a whole.
6. be adaptive learners who actively pursue life-long learning and continue to grow professionally by obtaining professional registration or certification, or by earning post-graduate degrees.

Intended Learning Outcomes of Major (MILOs)

Upon successful completion of this Major, students should be able to:

| No. | MILOs | Discovery-enriched curriculum related learning outcomes (please tick where appropriate) | | |
|-----|---|---|----|----|
| | | A1 | A2 | A3 |
| 1. | Organize and utilize information for the interactions between diverse manufacturing resources to meet specified manufacturing objectives. | | √ | √ |
| 2. | Conceptualize, analyze, select and apply mechanical entities and manufacturing processes in the manufacture of discrete products. | √ | √ | √ |
| 3. | Plan the implementation and utilization of electrical/electronic devices, computer hardware and software and communication and control systems for the automation of manufacturing and engineering enterprises. | √ | √ | √ |
| 4. | Identify and solve system-level issues concerning manufacturing productivity, quality and competitiveness with emphasis on Computer Integrated Manufacturing Systems. | | √ | √ |
| 5. | Develop and implement effective procedures to manage manufacturing activities in industries. | | √ | √ |
| 6. | Develop and implement efficient “process engineering” and innovative “design for manufacture” solutions in discrete products manufacturing. | | √ | √ |
| 7. | Demonstrate the creativity, analytical and problem solving skills in the context of manufacturing engineering. | √ | √ | √ |
| 8. | Meet the core competency required for corporate membership of professional bodies, such as the Hong Kong Institute of Engineers (HKIE). | | √ | √ |

A1: *Attitude*

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: *Ability*

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: *Accomplishments*

Demonstrate accomplishments of discovery/innovation/creativity through producing/constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

2. DEGREE REQUIREMENTS

2.1 Normal and Maximum Period of Study

| | Normative 4-year Degree | Advanced Standing I (Note 1) | Advanced Standing II (Senior-year Entry) (Note 2) |
|-------------------------|------------------------------------|---|--|
| Normal period of study | 4 years | 3 years | 2 years |
| Maximum period of study | 8 years | 6 years | 5 years |

Note 1: For students with recognised Advanced Level Examination or equivalent qualifications.

Note 2: For Associate Degree/Higher Diploma graduates admitted as senior-year intake students.

2.2 Minimum Number of Credit Units Required for the Award and Maximum Number of Credit Units Permitted

| Degree Requirements | Normative 4-year Degree | Advanced Standing I | Advanced Standing II (Senior-year Entry) |
|--|--|---|---|
| Gateway Education requirement * | 30 credit units | 21 credit units | 12 credit units |
| College/School requirement * | 6 credit units | waived | waived |
| Major requirement | 78 or 81** credit units (Core: 60 or 63** Elective: 18) | 69 credit units ⁺ (Core: 60 Elective: 9) | 63 credit units ⁺ (Core: 57 Elective: 6) |
| Free electives / Minor (if applicable) | 6 or 3** credit units | 0 credit unit | 0 credit unit |
| Minimum number of credit units required for the award | 120 credit units | 90 credit units | 75 credit units |
| Maximum number of credit units permitted | 144 credit units | 114 credit units | 84 credit units |

* For details, please refer to the Curriculum Information Record for Common Requirements.

⁺ Course exemptions granted to individual students should be made up within electives in the Major Requirement.

**Students under the Normative Four-Year Degree should complete AP1201 or BCH1100 whichever is not taken towards fulfilling the College Requirement.

2.3 Gateway Education

(The catalogue term of the Gateway Education requirement that students will follow will be the same as their admission term.)

| Curriculum Catalogue Term | Semester A 2016/17 onwards | | |
|---|--|---|---|
| | Normative 4-year Degree | Advanced Standing I (Note 1) | Advanced Standing II (Senior-year Entry) (Note 2) |
| <u>University requirements</u> | | | |
| English | | | |
| • GE1401 University English | 3 credit units | 3 credit units | Not a compulsory requirement |
| • Discipline-specific English: GE2410 English for Engineering | 3 credit units | 3 credit units | 3 credit units |
| GE1501 Chinese Civilisation – History and Philosophy | 3 credit units | 3 credit units | Not a compulsory requirement |
| <u>Distributional requirements</u> Area 1: Arts and Humanities Area 2: Study of Societies, Social and Business Organisations Area 3: Science and Technology | 12 credit units <i>(At least one course from each of the three areas)</i> | 6 credit units <i>(From two different areas)</i> | 3 credit units |
| <u>College/School-specified courses</u> ^ | 9 credit units | 6 credit units | 6 credit units |
| Total | 30 credit units | 21 credit units | 12 credit units |

^ College/School-specified courses for fulfilling the Gateway Education requirement

| Course Code | Course Title | Level | Credit Units | Remarks |
|--|--|-------|--------------|-------------------------------------|
| Normative 4-year Degree | | | | |
| MA1200/ MA1300 | Calculus and Basic Linear Algebra I/ Enhanced Calculus and Linear Algebra I | B1 | 3 | |
| MA1201/ MA1301 | Calculus and Basic Linear Algebra II/ Enhanced Calculus and Linear Algebra II | B1 | 3 | |
| CS1102/ CS1302 | Introduction to Computer Studies/ Introduction to Computer Programming* | B1 | 3 | *Subject to sufficient enrollments. |
| Advanced Standing I (for MFSE, MTE and NRE) | | | | |
| <ul style="list-style-type: none"> Students who have <u>not</u> passed the MA placement test arranged by the Mathematics department should take <i>MA1200 Calculus and Basic Linear Algebra I</i> (3 credit units) and <i>MA1201 Calculus and Basic Linear Algebra II</i> (3 credit units) as College-specified courses. Students who have passed the MA placement test arranged by the Mathematics department should take <i>MA1201 Calculus and Basic Linear Algebra II</i> (3 credit units) and <i>CS1102 Introduction to Computer Studies</i> <u>or</u> <i>CS1302 Introduction to Computer Programming*</i> (3 credit units) as College-specified courses. *Subject to sufficient enrollments. | | | | |
| Advanced Standing II (Senior-year Entry) | | | | |
| Take any courses not within the Major requirements (including Core Courses and Electives) | | | | |

Note 1: For students with recognised Advanced Level Examination or equivalent qualifications.

Note 2: For Associate Degree/Higher Diploma graduates admitted to the senior year.

2.4 English Language Requirement

Normative 4-year degree students and Advanced Standing I students who passed the 6 credit units of specified GE English courses, and Advanced Standing II students who passed the 3 credit units of discipline-specific GE English course are recognized as fulfilling the University's English Language Requirement.

Students scoring below Level 4 in HKDSE English Language or Grade D in HKALE AS-level Use of English or students who do not possess an equivalent qualification are required to complete two 3-credit unit courses, ELO200A English for Academic Purposes 1 and ELO200B English for Academic Purposes 2, prior to taking the GE English courses. Students who demonstrate that they have achieved a grade B or above in their overall course results for ELO200A will achieve 3 credits and also be considered to have satisfied the pre-requisite for entry to the GE English courses without needing to take ELO200B. The credit units of ELO200A and ELO200B will not be counted towards the minimum credit units required for graduation and will not be included in the calculation of the cumulative grade point average (CGPA). However, they will be counted towards the maximum credit units permitted.

2.5 Chinese Language Requirement

Students scoring below Level 4 in HKDSE Chinese Language, or below Grade D in HKALE AS-level Chinese Language and Culture will be required to complete a 3-credit unit course CHIN1001 University Chinese I. The 3 credit units will not be counted towards the minimum credit units required for graduation and will not be included in the calculation of the cumulative grade point average (CGPA). However, they will be counted towards the maximum credit units permitted.

2.6 College/School Requirement, if any

(The catalogue term of the College/School requirement that students will follow will be the same as their admission term.)

| Course Code | Course Title | Level | Credit Units | Remarks |
|--|----------------------|-------|--------------|---------|
| Normative 4-year Degree (6 credit units) | | | | |
| <i>Choose two from the following three subject areas:</i> | | | | |
| <i>Physics</i> | | | | |
| AP1201 | General Physics I | B1 | 3 | |
| <i>Chemistry</i> | | | | |
| BCH1100 | Chemistry | B1 | 3 | |
| <i>Biology</i> | | | | |
| BCH1200 | Discovery in Biology | B1 | 3 | |
| Advanced Standing I (0 credit unit) | | | | |
| College Requirement waived. | | | | |
| Advanced Standing II (Senior-year Entry) (0 credit unit) | | | | |
| College Requirement waived. | | | | |

2.7 Major Requirement

(The catalogue term of the major requirement that students will follow will be the effective term of the declared/allocated major.

For normative 4-year degree students who will join the majors allocation exercise, the catalogue term of major requirement will be one year after admission.

For advanced standing students and 4-year degree students who already have a major at the time of admission, the catalogue term of major requirement will be the same as their admission term.)

2.7.1 Core Courses (60 or 63[#] credit units)

- **Advanced Standing I students: 60 credit units**
- **Advanced Standing II students: 57 credit units[@]**

| Course Code | Course Title | Level | Credit Units | Remarks |
|------------------------------------|---|-------|--------------|--|
| AP1201 / BCH1100 | General Physics I / Chemistry | B1 | 3 | # Students under the Normative Four-Year Degree should complete AP1201 or BCH1100 whichever is not taken towards fulfilling the College Requirement. Waived for students admitted with Advanced Standing |
| MA2172 / MA2177 | Applied Statistics for Sciences and Engineering / Engineering Mathematics and Statistics | B2 | 3 | Note: MA2172 for students admitted with Advanced Standing II |
| MBE2003 | Mechanics | B2 | 3 | |
| MBE2016 | Engineering Graphics | B2 | 3 | |
| MBE2020 | Engineering Workshop Practice | B2 | 0 | |
| MBE2029 | Electrical and Electronic Principles I | B2 | 3 | |
| MBE2034 | Engineering Materials and Processing | B2 | 3 | |
| MBE2036 | Engineering Computing | B2 | 3 | |
| MBE2101 | Thermo and Fluid Dynamics | B2 | 3 | |
| MBE3006 | Plastics Engineering | B3 | 3 | |
| MBE3007 | CAD/CAM | B3 | 3 | |
| MBE3010 | Mechanical Design | B3 | 3 | |
| MBE3019 | Metrology and Applications | B3 | 3 | |
| MBE3046 | Automation Technology | B3 | 3 | |
| MBE3050 | Design for Manufacturing and Manufacturing Systems | B3 | 3 | |
| SEEM3032 | Production and Operations Planning | B3 | 3 | |
| SEEM3062 | Quality Engineering I | B3 | 3 | |
| MBE4005 | Finite Element Analysis | B4 | 3 | |
| MBE4066 | Professional Engineering Practice | B4 | 3 | |
| MBE4068 / MBE4116 / FS4004 + | Project (Individual) / Capstone Project II / Overseas Research Internship Scheme | B4 | 9 | |

+ Students who have opted for FS4001 cannot register for FS4004.

@ 3 credit units of core courses are to be waived for students admitted with Advanced Standing II from the B2 level courses: MA2172, MBE2003, MBE2016, MBE2020, MBE2029, MBE2034, MBE2036 and MBE2101 based on the academic background of students.

2.7.2 Electives (18 credit units)

- **Advanced Standing I students are required to complete at least 9 credit units of electives, in addition to credit units required to make up for exempted core courses**
- **Advanced Standing II students are required to complete at least 6 credit units of electives, in addition to credit units required to make up for exempted core courses**

| Course Code | Course Title | Level | Credit Units | Remarks | |
|----------------------|---|-------|--------------|--|---|
| MBE3024 | Ergonomics in Workplace Design | B3 | 3 | Group 1: (Design, Manufacture and Automation) • <i>Normative 4-year degree students must earn at least 9 credit units from Group 1</i> • <i>ASI students must earn at least 6 credit units from Group 1</i> • <i>ASII students must earn at least 3 credit units from Group 1</i> | |
| MBE3034 | Work Design | B3 | 3 | | |
| MBE3049 | Control Principles | B3 | 3 | | |
| MBE4001 | Mold and Die Design | B4 | 3 | | |
| MBE4002 | Computer Aided Process Planning | B4 | 3 | | |
| MBE4032 | Robotics and Machine Vision | B4 | 3 | | |
| MBE4046 | Green Industrial Systems | B4 | 3 | | |
| MBE4048 | Advanced Manufacturing Technologies | B4 | 3 | | |
| MBE4067 | Virtual Prototyping and Manufacturing | B4 | 3 | | |
| SEEM3020 | Engineering Economic Analysis | B3 | 3 | Group 2: (System and Technology Management) | |
| SEEM3027 | Logistics and Materials Management | B3 | 3 | | |
| SEEM3040 | Engineering Database and Systems | B3 | 3 | | |
| SEEM3053 | Quality Improvement Methodologies | B3 | 3 | | |
| SEEM3056 | Engineering Management Principle and Practice | B3 | 3 | | |
| SEEM3057 | Industrial Marketing for Engineers | B3 | 3 | | |
| MBE4031 | Management of Technological Innovation | B4 | 3 | | |
| MBE4034 | Product Development: Managerial Approach | B4 | 3 | | |
| SEEM4020 | Enterprise Information Systems | B4 | 3 | | |
| SEEM4024 | Project Management | B4 | 3 | | |
| SEEM4026 | Systems Modelling and Simulation | B4 | 3 | | |
| FS2001 | Workshop-based Study in Science and Engineering | B2 | 3 | | Group 1 or Group 2: To be decided by the Course Leader depending on the nature of the project or coursework |
| MBE3116 | Capstone Project I | B3 | 3 | | |
| MBE4047 [#] | Directed Studies | B4 | 3 | | |

[#] Only for special occasions

Note: Elective courses will be updated from time to time

2.8 Optional Courses

| Course Code | Course Title | Credit Units | Remarks |
|-------------|-------------------------------------|--------------|----------------------------|
| FS4001 | Co-operative Education Scheme (CES) | 8 | Internship (8 months) |
| FS4002 | Industrial Attachment Scheme (IAS) | 3 | Internship (9 to 12 weeks) |

2.9 Classification of Award

| Classification | CGPA |
|-----------------------|-------------------|
| 1 st Class | CGPA 3.5 or above |
| 2 nd Upper | CGPA 3.00 – 3.49 |
| 2 nd Lower | CGPA 2.50 – 2.99 |
| 3 rd Class | CGPA 2.00 – 2.49 |
| Pass | CGPA 1.70 – 1.99 |

3. ACADEMIC REGULATIONS AND GUIDELINES

Students should observe the University's academic regulations and guidelines at all times. More information can be available by referring to the following website maintained by the Academic Regulations and Records Office (ARRO).

ARRO Homepage: <http://www.cityu.edu.hk/arro>

4. ACADEMIC HONESTY

Academic honesty is central to the conduct of academic work. Students are responsible for knowing and understanding the Rules on Academic Honesty. To enhance students' understanding on academic honesty, all students are required to complete a tutorial on academic honesty and make a declaration on their understanding of this core academic principle online on or before **30 November 2016** in order to access their course grades.

For details, please refer to Office of the Provost's website:

http://www.cityu.edu.hk/provost/academic_honesty/university_requirement_on_academic_honesty.htm

5. COMMUNICATIONS

Listed below are the normal channels of communication between students and courses / major / department :

- a) Students having difficulties in a course of study should first talk to the course teacher concerned.
- b) A student who wishes to discuss the overall organization of the major should speak to the Major Leader.
- c) A student who wishes to discuss issues on a particular part of the major should speak to the relevant Year Tutor.
- d) The major's Joint Staff & Student Consultative Committee helps to facilitate consultation and communication. A student from each entry cohort will be elected to sit in the Committee.
- e) In addition, a student from each entry cohort will be elected to sit in the Major Programme Committee which meets every semester to discuss major-related matters.
- f) Students should feel free to approach their respective academic advisors for advice regarding their study plan or personal and career development.

6. MAJOR LEADER AND YEAR TUTORS

| <u>Position</u> | <u>Staff Name</u> | <u>Tel/Email</u> |
|--|------------------------|-----------------------------------|
| Major Leader | Dr. Weiyin MA | 3442-9548 / mewma@cityu.edu.hk |
| Deputy Major Leader | Dr. Meng HUA | 3442-8443 / memnghua@cityu.edu.hk |
| Year Tutors (By Cohort and Programme Code): | | |
| 2013 BENG4/DSE, 2014 BENG3/ASI & 2015 BENGU2/ASII | Dr. Meng HUA | 3442-8443 / memnghua@cityu.edu.hk |
| 2014 BENG4/DSE, 2015 BENGU3/ASI & 2016 BENGU2/ASII | Dr. Zuankai WANG | 3442-2170 / zuanwang@cityu.edu.hk |
| 2015 BENGU4/DSE & 2016 BENGU3/ASI | Dr. Patrick P. L. WONG | 3442-8427 / meplwong@cityu.edu.hk |

7. INFORMATION TO NEW STUDENTS

7.1 How to access your Personal Class Schedule

- i) Go to CityU home page (www.cityu.edu.hk) from any terminal on campus or off campus.
- ii) Log onto “Portal” under “Quick Links”.
If you have problems in logging in, please follow the instructions in “Having problems logging?”.
- iii) Under the tab “Student”, you can find a quick link “Student Schedule” to view your timetable for current semester. Timetable for Semester A 2016/17 is available from 26 July 2016 onwards.

7.2 How to get Instructors’ handouts through Canvas

- i) Log onto Canvas (<https://canvas.cityu.edu.hk>) from any terminal on campus or off campus
- ii) Click “Courses” to see all courses you have registered in current and previous semesters.

7.3 How to check Major Requirement and Course Syllabuses

Log onto the CityU home page and click “Academic Programmes”.

To access DegreeWorks, please go to the “Study Plan” tab in AIMS. For details, please refer to ARRO website: www6.cityu.edu.hk/arro/content.asp?cid=482

7.4 Course Registration for Semester A 2016-2017

For Semester A 2016-2017, students will be pre-registered in required courses and major electives in most cases if possible.

- i) The date for release of your class schedule is **26 July 2016**. Please check your curriculum requirements, review your study plan and then make appropriate adjustments to your pre-registered courses.
- ii) Add/Drop of courses can be made through AIMS for web-enabled courses during the web registration period. For non-web-enabled courses, approval is required from the major department and you can submit your change request by using the Add/Drop Form.

How to do the Add/ Drop:

- Go to <http://www.cityu.edu.hk> from any terminal on campus or off campus and click “Students”.
- Log onto “AIMS” and then click “Course Registration”.
- Choose “Add or Drop Classes”.

- iii) Web registration begins on **15 August 2016** but you need to check your time ticket first from “AIMS”.
- iv) All add/drops end on **5 September 2016**.
- v) Detailed arrangements on Course Registration for Semester A 2016-2017 will be posted by **26 July 2016**. For details, please refer to ARRO website: www6.cityu.edu.hk/arro/content.asp?cid=163

7.5 How to access your Student Email Account

- i) Go to <http://www.cityu.edu.hk> from any terminal on campus or off campus, then point to “Quick Links” at the top and click “Email”.
- ii) In the Email Services homepage, click “**my.cityu.edu.hk**” under “Student” to go to the CityU “Office 365” sign in page.
- iii) At the “**Account:**” field in the sign in screen, enter your Office 365 account in the form of “*YourEID-c*”, where *YourEID* is your CityU Electronic ID.
- iv) At the “**Password:**” field, enter your Office 365 Account password, then click “Log On”.

Important note:

*For email communication, please state your **name in full**, **student number** and **contact telephone number**.*

7.6 Course Exemption/Credit Transfer

Applications for course exemption or credit transfer must be made before the first semester of the student's admission. Students granted course exemption are required to take other courses to make up the credits required for fulfilling the award requirements. For Semester A 2016-2017, the application period is from **15 July 2016 to 27 August 2016**. For details, please refer to ARRO website:
<http://www6.cityu.edu.hk/arro/content.asp?cid=10>

7.7 Laboratory Safety Orientation

All students are REQUIRED to complete the on-line Laboratory Safety Orientation through the Departmental On-line Information System (IntraMEL). A Lab Tour session will be held by the Laboratory Office in week 1 of Semester A 2016-17 for interested students. Details of the session will be sent to you by e-mail.

7.8 Administrative Support from General Office

Normal

| | |
|--------------------|----------------------------|
| Mon to Fri | 8:30 am to 5:30 pm |
| <i>Lunch Break</i> | <i>12:30 pm to 1:45 pm</i> |
| Sat | Closed |

| | |
|----------|--------------------|
| Inquiry: | 3442-8420 |
| Fax: | 3442-0172 |
| Email: | mbego@cityu.edu.hk |