BACHELOR OF ENGINEERING IN

NUCLEAR AND RISK ENGINEERING (BEngNRE)

Student Handbook (2018-2019)

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August 2018

1. AIMS OF MAJOR

This major aims to educate and produce graduates who will:

1. be equipped with practical knowledge in nuclear engineering and risk engineering disciplines.
2. be able to contribute with their specialist skills, competencies and multi-disciplinary knowledge to a broad spectrum of related industrial sectors or areas such as nuclear engineering, risk engineering, safety engineering, radiation protection and dosimetry, power generation, medical equipment industry or insurance industry.
3. be able to evaluate engineering problems quantitatively and analyse them critically.
4. be able to communicate proficiently in a range of disciplines and skills.
5. be able to recognise that protection of society is the highest priority in any operation.
6. be able to take responsibility for their own personal and professional development.

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.	Describe the major sub-systems and waste management of nuclear reactor.		√	
2.	Apply the principles, analytical skills, computational techniques, modelling tools, experimental practices in the subject domain to serve the nuclear engineering, risk engineering and related sectors.	√		
3.	Demonstrate multi-disciplinary knowledge and skills in engineering and science to meet the technical needs of the related industrial sectors.		√	
4.	Integrate their problem solving, interpersonal, critical thinking and teamwork skills to cope with the dynamic nature of the related industries.			√
5.	Generate a positive and flexible approach to continuous professional and career development.		√	
6.	Meet the academic requirements for corporate membership of professional bodies, such as the Hong Kong Institution 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	81 or 84** credit units (Core: 72 or 75** Elective: 9)	72 or 75 or 78 credit units+^ (Core: 66 or 69 or 72^ Elective: 6)	66 credit units+ (Core: 63 Elective: 3)
Free electives / Minor (if applicable)	3 or 0** credit units	0 credit unit	0 credit unit
Minimum number of credit units required for the award	**120 credit units**	**93 or 96 or 99 credit units^**	**78 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 PHY1201 if it is not taken towards fulfilling the College Requirement.

^ Up to 6 credit units of core courses are to be waived for students admitted with Advanced Standing I.

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)
University requirements			
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
Distributional requirements Area 1: Arts and Humanities Area 2: Study of Societies, Social and Business Organisations Area 3: Science and Technology	12 credit units *(At least one course from each of the three areas)*	6 credit units *(From two different areas)*	3 credit units
College/School-specified courses ^	9 credit units	6 credit units	6 credit units
Total	**30 credit units**	**21 credit units**	**12 credit units**

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.

^ 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 M.E. and NRE)

- Students who have not passed the MA placement test arranged by the Mathematics department should take *MA1200 Calculus and Basic Linear Algebra I* (3 credit units) and *MA1201 Calculus and Basic Linear Algebra II* (3 credit units) as College-specified courses.
- Students who have passed the MA placement test arranged by the Mathematics department should take *MA1201 Calculus and Basic Linear Algebra II* (3 credit units) and *CS1102 Introduction to Computer Studies* or *CS1302 Introduction to Computer Programming** (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)

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, EL0200A English for Academic Purposes 1 and EL0200B 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 EL0200A 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 EL0200B. The credit units of EL0200A and EL0200B 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.

In addition to the above requirement, Colleges/Schools also have the discretion to specify other Chinese language courses for their students, including students who do not possess the above qualifications (Senate/70/MM27-28 refers). Please indicate if there are such requirements.

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)				
*Choose **two** from the following three subject areas:*				
Physics				
PHY1201	General Physics I	B1	3	
Chemistry				
BCH1100	Chemistry	B1	3	
Biology				
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 (72 or 75** credit units)

- **Advanced Standing I students: 66 or 69 or 72 credit units^**
- **Advanced Standing II students: 63 credit units[§]**

Course Code	Course Title	Level	Credit Units	Remarks
PHY1201	General Physics I	B1	3	**If not taken under College requirement. Note: Waived for students admitted with Advanced Standing (subject to PHY's final decision)
MA2177 / MA2172	Engineering Mathematics and Statistics / Applied Statistics for Sciences and Engineering	B2	3	Note: MA2172 for students admitted with Advanced Standing II
MBE2016	Engineering Graphics	B2	3	
MBE2020	Engineering Workshop Practice	B2	0	
MBE2029	Electrical and Electronic Principles I	B2	3	
MBE2036	Engineering Computing	B2	3	
MBE2101	Thermo and Fluid Dynamics	B2	3	
MBE2109	Engineering Mechanics	B2	3	
MBE2110	Engineering Materials	B2	3	
MBE3049	Control Principles	B3	3	
MBE3106	Advanced Thermofluids	B3	3	
MBE3107	Principles of Nuclear Engineering	B3	3	
MBE3111	Introduction to Nuclear Power Plant	B3	3	
MBE3118	Mechanics of Materials	B3	3	
MBE3119	Manufacturing Technology	B3	3	
PHY3210	Modern Physics for Nuclear Technology	B3	3	
PHY3230	Nuclear Radiation and Measurements	B3	3	
PHY3275	Radiation Protection and Dosimetry	B3	3	
SEEM3101	Basic Methodologies and Tools for Risk Engineering	B3	3	
JC4231	Nuclear Reactor Physics	B4	3	
MBE4010	Dynamics and Control	B4	3	
MBE4066	Professional Engineering Practice	B4	3	

MBE4105	Nuclear Reactor Safety	B4	3	
MBE4112	Nuclear Materials	B4	3	
MBE4118	Project (Individual)	B4	6	

^ Up to 6 credit units of core courses are to be waived for students admitted with Advanced Standing I from the B2 level courses: MA2177, MBE2016, MBE2020, MBE2029, MBE2036, MBE2101, MBE2109 and MBE2110 based on the academic background of students.

§ 9 credit units of core courses are to be waived for students admitted with Advanced Standing II from the B2 level courses: MA2172, MBE2016, MBE2020, MBE2029, MBE2036, MBE2101, MBE2109 and MBE2110 based on the academic background of students.

2.72. Electives (9 credit units)

- **Advanced Standing I 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**
- **Advanced Standing II students are required to complete at least 3 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
FS2001	Workshop-based Study in Science and Engineering	B2	3	
BCH3038A	Environmental Sampling and Risk Assessment	B3	3	Students are advised to take the course BCH1200 Discovery in Biology before taking this course
MBE3007@	CAD/CAM	B3	3	
MBE3046♦	Automation Technology	B3	3	
MBE3108	Nuclear Power System	B3	3	
MBE3109	Hazard Effect Management Process	B3	3	
MBE3110	Safety Engineering Design	B3	3	
MSE3169	Materials Testing Techniques	B3	3	
MSE3171	Materials Characterization Techniques	B3	3	
SEEM3102	Quality Engineering	B3	3	
CA4644	Wind and Earthquake Engineering	B4	3	Pre-cursor waiver given by ACE Dept.
CA4737	Fire Science and Modelling	B4	3	Pre-cursor waiver given by ACE Dept.
MBE4005♣	Finite Element Analysis	B4	3	
MBE4108	Nuclear Reactor Engineering	B4	3	
MBE4109	Risk Engineering for Applications Related to Nuclear Engineering	B4	3	
PHY4230	Radiation Safety	B4	3	
PHY4232	Radiotherapy Physics	B4	3	
PHY4233	Imaging Physics	B4	3	
PHY4274	Radiation Biophysics	B4	3	
PHY4275	Radiological Physics and Dosimetry	B4	3	
PHY4283	Physics in Medicine	B4	3	
SEEM4064	Reliability Engineering	B4	3	

SEEM4101	Disaster and Crisis Management	B4	3	
SEEM4103	Decision Analysis and Risk Management	B4	3	

@ Course that would contribute towards the area of 'Design and Manufacturing' for Mechanical Engineering discipline of Scheme A training of HKIE.

♦ Course that would contribute towards the area of 'Automatic & Control Systems' for Mechanical Engineering discipline of Scheme A training of HKIE.

♣ Course that would contribute towards the area of 'Solid Mechanics' for Mechanical Engineering discipline of Scheme A training of HKIE.

3. 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

Award Classification	**CGPA**
First Class Honours	CGPA 3.5 or above
Upper Second Class Honours	CGPA 3.00 – 3.49
Lower Second Class Honours	CGPA 2.50 – 2.99
Third Class Honours	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. As part of the University's efforts to educate students about academic honesty, all students are required to complete an online tutorial, take on online quiz and fill out an online declaration by **30 November 2018** in order to access their course grades online.
For details, please refer to Office of the Provost's website:
http://www.cityu.edu.hk/provost/academic_honesty/university_requirment_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

Position	**Staff Name**	**Tel/Email**
Major Leader/ Chair:	Prof. J. J. KAI	3442-8071/ jijkai@cityu.edu.hk
Co-chairs:	Dr. Alice HU	3442-9469/ alicehu@cityu.edu.hk
	Prof. Peter K N YU	3442-7812 / appknyu@cityu.edu.hk
Year Tutors (By Cohort and Programme Code):		
2015 BENGU4	Dr. B. L. LUK	3442-8673/ meblluk@cityu.edu.hk
2016 BENGU4 & 2017 BENGU3/ ASI & 2017 BENGU2/ ASII	Dr. Jiyun ZHAO	3442-9395 / jiyuzhao@cityu.edu.hk
2017 BENGU4 & 2018 BENGU3/ ASI	Dr. Wenzhong ZHOU/ Dr. Shijun ZHAO	3442-2316/ wenzzhou@cityu.edu.hk TBA

7. INFORMATION FOR 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 2018/19 is available from 31 July 2018 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 2018-2019

For Semester A 2018-2019, 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 **31 July 2018**. 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 **20 August 2018** but you need to check your time ticket first from "AIMS".
iv) All add/drops end on **10 September 2018**.

v) Detailed arrangements on Course Registration for Semester A 2018-2019 will be posted by **31 July 2018**. For details, please refer to ARRO website: *http://www.cityu.edu.hk/arro/crsreg/*

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-ID**" 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 2018-2019, the application period is from **16 July to 1 September 2018.** 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 2018-19 for interested students. Details of the session will be sent to you by e-mail.

7.8 Administrative Support from General Office

Office Hours

Mon to Fri	8:30 am to 5:30 pm
Lunch Break	*12:30 pm to 1:45 pm*
Sat	Closed

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