

(For all students in the Program)

Undergraduate Minor Program in Bioengineering

The Minor Program in Bioengineering is designed for undergraduate students interested in applying engineering principles to biological problems. Any undergraduate students at HKUST with a minimum CGA of 2.15 or above may enroll in the Bioengineering Minor Program. Students must declare their intention to enroll in the minor program no earlier than the first regular term of their second year of study but no later than the last day of the add/drop period in the first regular term of their final year of study. Students who wish to withdraw from the minor program should apply before the last day of add/drop period in the last regular term of their study.

Minor Requirements

To graduate with a minor in Bioengineering, students must be enrolled in the minor program, complete a minimum total of 18 credits and all of the minor requirements, as well as the requirements of the major program of study; and have attained an average grade point of at least 2.15 in courses taken within the minor program.

For credit transfer, students can transfer a maximum total of 6 credits to the minor program. Courses accepted for transfer credits must normally be at a level equivalent to HKUST courses of 2000-level or above.

Out of the total credits required by the minor program, at least 9 credits should be single-counted within the minor and are not used to fulfill any other requirements for graduation except the 120-credit degree requirement.

Students may use no more than 6 credits earned from courses offered in pure online delivery mode to satisfy the graduation requirements of a degree program. This 6-credit limit does not apply to credits obtained through the credit transfer procedures of the University.

Required Course(s)

| | | | Credit(s) attained |
|--------------------|--------|---|-----------------------|
| BIEN/BMED/ CENG | | Note: (BIEN 1010 <u>OR</u> CENG 1600) <u>OR</u> BMED 1100 <u>OR</u> CENG 4620 <u>OR</u> CENG 4660 | 3 |
| BIEN | 1010 | Introduction to Biomedical Engineering | 3 |
| BMED | 1100** | Technologies and World Health | 3 |
| CENG | 1600 | Biotechnology and Its Business Opportunities | 3 |
| CENG | 4620 | Bioproducts and Processing | 3 |
| CENG | 4660 | Introduction to Biomicrosystem | 3 |
| BIEN/LIFS | | Note: BIEN 2610 <u>OR</u> LIFS 1020 <u>OR</u> LIFS 2030 <u>OR</u> LIFS 2040 <u>OR</u> LIFS 2210 | 3 |
| BIEN | 2610 | Chemical Biology for Engineers | 3 |
| LIFS | 1020 | Biology of Human Health | 3 |
| LIFS | 2030** | Nature of Biochemistry and Biotechnology | 3 |
| LIFS | 2040 | Cell Biology | 3 |
| LIFS | 2210 | Biochemistry I | 3 |

Elective(s)

| | | | Minimum credit(s) required |
|---|--------|---|---|
| SENG/SSCI/ IPO | | Elective for specialised study in Bioengineering (Courses from the specified elective list, of which at least 1 course should be at 4000-level. No more than one course within the same course group can be counted toward the elective requirements of this minor. Course(s) taken as required course(s) of the program may not be counted toward this elective requirement. Students may visit the program website for a summary of electives grouped by areas of concentration.) | 12 |
| Group 01 | | | |
| BIEN | 2610 | Chemical Biology for Engineers | 3 |
| LIFS | 1020 | Biology of Human Health | 3 |
| LIFS | 2030** | Nature of Biochemistry and Biotechnology | 3 |
| LIFS | 2040 | Cell Biology | 3 |
| LIFS | 2210 | Biochemistry I | 3 |
| LIFS | 2220 | Biochemistry II | 3 |
| Group 02 | | | |
| LIFS | 4060 | Immunobiology | 3 |
| LIFS | 4150 | Plant Biotechnology | 3 |
| LIFS | 4630 | Advanced Topics in Biotechnology | 3 |
| Group 03 | | | |
| COMP | 4331 | Data Mining | 3 |
| LIFS | 3150 | Biostatistics | 3 |
| LIFS | 4580 | Bioinformatics | 3 |
| Group 04 (Students may only use either BIEN 1010 or CENG 1600, but not both, to count towards the minor program) | | | |
| BIEN | 1010 | Introduction to Biomedical Engineering | 3 |
| BMED | 1100** | Technologies and World Health | 3 |
| CENG | 1600 | Biotechnology and Its Business Opportunities | 3 |
| CENG | 4620 | Bioproducts and Processing | 3 |
| CENG | 4630 | Food Processing Technology | 3 |
| CENG | 4660 | Introduction to Biomicrosystem | 3 |
| Group 05 | | | |
| CENG | 1500 | A First Course on Materials Science and Applications | 3 |
| CENG | 4520** | Electronic Materials Processing for Chemical Engineers | 3 |
| CENG | 4540 | Nanomaterials and Applications in Chemical Engineering | 3 |
| MECH | 2410 | Engineering Materials I | 3 |
| Group 06 | | | |
| CENG | 4670 | Pharmaceutical Engineering | 3 |
| LIFS | 4370 | Human Genetics and Personalized Medicine | 3 |
| LIFS | 4760 | Biochemistry of Diseases | 3 |
| LIFS | 4950 | Neurochemistry | 3 |

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| Group 07 | | | |
| COMP | 1001 | Exploring Multimedia and Internet Computing | 3 |
| COMP | 1002** | Computer and Programming Fundamentals I | 3 |
| COMP | 1004** | Programming Fundamentals and Methodology | 4 |
| COMP | 1022P | Introduction to Computing with Java | 3 |
| Group 08 | | | |
| COMP | 4421 | Image Processing | 3 |
| ELEC | 4130 | Digital Image Processing | 3 |
| Group 09 | | | |
| ELEC | 2400 | Electronic Circuits | 4 |
| ELEC | 2410** | Basic Electronics | 4 |
| ELEC | 2420 | Basic Electronics | 3 |
| Group 10 | | | |
| ELEC | 4810 | Introduction to Biosensors and Bioinstrumentation | 4 |
| Group 11 | | | |
| ELEC | 4820 | Medical Imaging | 3 |
| Group 12 | | | |
| IEDA | 2510 | Engineering Probability and Statistics | 4 |
| MECH | 4740 | Numerical Methods in Engineering | 3 |
| Group 13 | | | |
| MATH | 4333 | Mathematical Biology | 3 |
| Group 14 | | | |
| BIEN | 3010 | Biodesign: A Taste of Solving Real-Life Healthcare Problems | 3 |
| Group 15 | | | |
| BIEN | 3020 | Advanced Biological Physics | 3 |
| LIFS | 3040 | Animal Physiology | 3 |
| LIFS | 3070 | Biophysics and Physical Biochemistry | 3 |
| LIFS | 3240 | Introduction to Neurobiology | 3 |
| LIFS | 4140 | Cancer Biology | 3 |
| Group 16 | | | |
| MECH | 2210 | Fluid Mechanics | 3 |
| MATH | 4326 | Introduction to Fluid Dynamics | 3 |

****Remarks on course(s):**

- BMED 1100: The course was last offered in 2014-15 and was deleted subsequently.
- CENG 4520: The course was last offered in 2013-14 and was deleted subsequently.
- COMP 1002: The course was last offered in 2012-13 and was deleted subsequently.
- COMP 1004: The course was last offered in 2012-13 and was deleted subsequently.
- ELEC 2410: The course was last offered in 2012-13 and was deleted subsequently.
- LIFS 2030: The course was last offered in 2013-14 and was deleted subsequently.