

(For students admitted in 2023-24 under the 4-year degree)

BSc in Integrative Systems and Design

In addition to the requirements of their major programs, students are required to complete the University requirements for graduation. For details please refer to the respective section on this website.

Students may use no more than 6 credits earned from courses offered in self-paced 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.

For students graduating with an additional major, they must take all the requirements specified for that major, within which they must complete at least 20 single-counted credits. These 20 credits cannot be used to fulfill any other requirements for graduation except for the 120-credit degree requirement.

Under the new 30-credit Common Core Program which is applicable to students admitted to the University in 2022-23 and thereafter, courses that have been counted towards Major Requirements are not allowed to be reused for fulfilment of the University Common Core Requirements. Students should look up the details of the Common Core Program including the general and School-/program-specific distributional requirements posted on the Common Core website where the link to it is available on this website.

Major Requirements

Required Course(s)

| | | | Credit(s) attained |
|------|------|--|-----------------------|
| ISDN | 1001 | Introduction to Integrative Systems and Design | 3 |
| ISDN | 1002 | Redefining Problems for the Real Needs | 3 |
| ISDN | 1004 | Sketching | 1 |
| ISDN | 1006 | Human-centered Innovation | 3 |
| ISDN | 1010 | Academic and Professional Development I | 0 |
| ISDN | 1011 | Industrial Training | 0 |
| ISDN | 2001 | Second Year Design Project I | 1 |
| ISDN | 2002 | Second Year Design Project II | 3 |
| ISDN | 2010 | Academic and Professional Development II | 0 |
| ISDN | 2200 | Systems Thinking and Design | 3 |
| ISDN | 2300 | Introduction to 3D Design | 3 |
| ISDN | 2400 | Physical Prototyping | 3 |
| ISDN | 2601 | Exploring the World through Smart Mechatronics | 3 |
| ISDN | 2602 | Internet of Things: Integrative System Design | 3 |
| ISDN | 2603 | Materials, Shape and Design | 3 |
| ISDN | 3001 | Third Year Design Project I | 3 |
| ISDN | 3002 | Third Year Design Project II | 3 |
| ISDN | 3010 | Academic and Professional Development III | 0 |
| ISDN | 3200 | Graphic Communication | 2 |
| ISDN | 4001 | Final Year Design Project I | 4 |
| ISDN | 4002 | Final Year Design Project II | 4 |

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|------|-------|---|-----|
| ISDN | 4010 | Academic and Professional Development IV | 0 |
| COMP | | Note: COMP 1021 <u>OR</u> COMP 1022P <u>OR</u> COMP 2011 <u>OR</u> COMP 2012H | 3-5 |
| COMP | 1021 | Introduction to Computer Science | 3 |
| COMP | 1022P | Introduction to Computing with Java | 3 |
| COMP | 2011 | Programming with C++ | 4 |
| COMP | 2012H | Honors Object-Oriented Programming and Data Structures | 5 |
| LANG | 2030 | Technical Communication I | 3 |
| LANG | | Note: LANG 4030 <u>OR</u> LANG 4031 <u>OR</u> LANG 4032 <u>OR</u> LANG 4034 | 3 |
| LANG | 4030 | Technical Communication II for CSE, CPEG & DSCT | 3 |
| LANG | 4031 | Technical Communication II for ECE & CPEG | 3 |
| LANG | 4032 | Technical Communication II for IEDA and ISDN | 3 |
| LANG | 4034 | Technical Communication II for Mechanical and Aerospace Engineering | 3 |
| MATH | | Note: [MATH 1012 <u>OR</u> MATH 1013 <u>OR</u> MATH 1023 <u>AND</u> (MATH 1014 <u>OR</u> MATH 1024)] <u>OR</u> [MATH 1020] (Subject to approval of the program office, MATH 1014/1024 may be replaced by a COMP course) | 4-7 |
| MATH | 1012 | Calculus IA | 4 |
| MATH | 1013 | Calculus IB | 3 |
| MATH | 1014 | Calculus II | 3 |
| MATH | 1020 | Accelerated Calculus | 4 |
| MATH | 1023 | Honors Calculus I | 3 |
| MATH | 1024 | Honors Calculus II | 3 |
| PHYS | | Note: PHYS 1101 <u>OR</u> PHYS 1111 <u>OR</u> PHYS 1112 <u>OR</u> PHYS 1312 | 3-4 |
| PHYS | 1101 | Introductory Physics | 4 |
| PHYS | 1111 | General Physics I | 3 |
| PHYS | 1112 | General Physics I with Calculus | 3 |
| PHYS | 1312 | Honors General Physics I | 3 |

Elective(s)

| | | | Minimum credit(s) required |
|------------------------|------|--|-----------------------------------|
| ISDN/ENTR/ TEMG/SBM | | Product Management and Entrepreneurship Electives (Courses from the specified elective list, of which at least 1 course must be at 3000-level or above.) | 6 |
| ISDN | 3350 | Global Product Development | 3 |
| ISDN | 3360 | From Product Innovations to Successful Technology Startups | 3 |
| ISDN | 4200 | Product Management | 3 |
| ENTR | 3100 | Industrial Landscape: Understanding the Elements to Start a Business | 3 |
| TEMG | 3950 | T&M Case Analysis and Product Innovation | 3 |
| TEMG | 4940 | T&M Prototyping and Research Project | 3-5 |
| TEMG | 4950 | T&M Corporate Consulting Project | 3-5 |

| | | | |
|--------------------|--------|--|-----|
| TEMG | 4970 | T&M IBPC Startup Project | 1-5 |
| FINA | 2203 | Fundamentals of Business Finance | 3 |
| ISOM | 2030 | Business Protections for Innovations | 3 |
| ISOM | 2700 | Operations Management | 3 |
| ISOM | 4020 | Innovation Management and Technology Entrepreneurship | 3 |
| MARK | 2120 | Marketing Management | 3 |
| ISDN/SENG/ MATH | | Project-related Electives (Courses from the specified elective list, of which at least 12 credits should be at 3000-level or above and no more than 3 credits at 1000-level. Students should seek approval of their advisor for the choices of courses.) | 18 |
| ISDN | 3300 | Interaction Design | 3 |
| ISDN | 4000J | Introduction to EcoDesign | 3 |
| ISDN | 4000L | Advanced Sketching | 2 |
| ISDN | 4000O | Extended Reality Technology and Applications | 3 |
| ISDN | 4000P | Brand Design | 3 |
| ISDN | 4000Q | Designing the Metaverse with Immersive Technologies | 3 |
| ISDN | 4000R | Introduction to soft robotics | 3 |
| ISDN | 4000S | Applied Generative AI for Interdisciplinary Projects | 3 |
| BIEN | 3320 | Data Science for Biology and Medicine | 3 |
| COMP | 1022P | Introduction to Computing with Java | 3 |
| COMP | 2011 | Programming with C++ | 4 |
| COMP | 2012 | Object-Oriented Programming and Data Structures | 4 |
| COMP | 2211 | Exploring Artificial Intelligence | 3 |
| COMP | 2611 | Computer Organization | 4 |
| COMP | 3111 | Software Engineering | 4 |
| COMP | 3211 | Fundamentals of Artificial Intelligence | 3 |
| COMP | 3311 | Database Management Systems | 3 |
| COMP | 3711 | Design and Analysis of Algorithms | 3 |
| COMP | 4021 | Internet Computing | 3 |
| COMP | 4221 | Introduction to Natural Language Processing | 3 |
| COMP | 4331 | Data Mining | 3 |
| COMP | 4411 | Computer Graphics | 3 |
| COMP | 4421 | Image Processing | 3 |
| COMP | 4461 | Human-Computer Interaction | 3 |
| COMP | 4462 | Data Visualization | 3 |
| COMP | 4521 | Mobile Application Development | 3 |
| COMP | 4632 | Practicing Cybersecurity: Attacks and Counter-measures | 3 |
| COMP | 4641 | Social Information Network Analysis and Engineering | 3 |
| COMP | 4651 | Cloud Computing and Big Data Systems | 3 |
| COMP | 4901 | Special Topics in Computer Science | 0-4 |
| ELEC | | Any ELEC courses at 3000-level | 0-4 |
| ELEC | | Any ELEC courses at 4000-level | 0-4 |
| ELEC | 2100 | Signals and Systems | 4 |
| ELEC | 2200** | Digital Circuits and Systems | 4 |
| ELEC | 2300** | Computer Organization | 4 |

| | | | |
|------|--------|--|---|
| ELEC | 2350 | Introduction to Computer Organization and Design | 4 |
| ELEC | 2400 | Electronic Circuits | 4 |
| ELEC | 2600 | Probability and Random Processes in Engineering | 4 |
| ENGG | 1100 | First Year Cornerstone Engineering Design Project Course | 3 |
| IEDA | 2520 | Probability for Engineers | 3 |
| MECH | 2020 | Statics and Dynamics | 3 |
| MECH | 2040 | Solid Mechanics I | 3 |
| MECH | 2210 | Fluid Mechanics | 3 |
| MECH | 2310 | Thermodynamics | 3 |
| MECH | 2410 | Engineering Materials I | 3 |
| MECH | 2520 | Design and Manufacturing I | 3 |
| MECH | 3030 | Mechanisms of Machinery | 3 |
| MECH | 3300 | Energy Conversion | 3 |
| MECH | 3310 | Heat Transfer | 3 |
| MECH | 3420 | Engineering Materials II | 3 |
| MECH | 3510 | Computer-Aided Design and Manufacturing | 3 |
| MECH | 3520** | Design and Manufacturing II | 3 |
| MECH | 3610 | Control Principles | 3 |
| MECH | 3907 | Mechatronic Design and Prototyping | 3 |
| MECH | 4450 | Introduction to Finite Element Analysis | 3 |
| MECH | 4710 | Introduction to Robotics | 3 |
| MECH | 4740 | Numerical Methods in Engineering | 3 |
| MATH | 2011 | Introduction to Multivariable Calculus | 3 |
| MATH | 2111 | Matrix Algebra and Applications | 3 |
| MATH | 2343 | Discrete Structures | 4 |
| MATH | 2350 | Applied Linear Algebra and Differential Equations | 3 |
| MATH | 2411 | Applied Statistics | 4 |

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

- ELEC 2200: The course was last offered in 2019-20 and was deleted subsequently.
- ELEC 2300: The course was last offered in 2019-20 and was deleted subsequently.
- MECH 3520: The course was last offered in 2019-20 and was deleted subsequently.