**Engineering Core (30.5 credits)**

See [§71.20.5](http://www.concordia.ca/academics/undergraduate/calendar/current/sec71/71-10.html#b71.20.5)

|  |  |  |
| --- | --- | --- |
| **Engineering Core** | | *Credits* |
| ELEC 275 | Principles of Electrical Engineering | 3.50 (2) |
| ENCS 282 | Technical Writing and Communication | 3.00 |
| ENGR 201 | Professional Practice and Responsibility | 1.50 |
| ENGR 202 | Sustainable Development and Environmental Stewardship | 1.50 (1) |
| ENGR 213 | Applied Ordinary Differential Equations | 3.00 |
| ENGR 233 | Applied Advanced Calculus | 3.00 |
| ENGR 301 | Engineering Management Principles and Economics | 3.00 |
| ENGR 371 | Probability and Statistics in Engineering | 3.00 |
| ENGR 391 | Numerical Methods in Engineering | 3.00 (3) |
| ENGR 392 | Impact of Technology on Society | 3.00 (4) |
|  | General Education elective | 3.00 (5) |
|  |  | \_\_\_\_\_ |
|  |  | 30.50 |

|  |  |  |
| --- | --- | --- |
| **Software Engineering Core** | | *Credits* |
|  |  |  |
| SOEN 228 | System Hardware | 4.00 |
| SOEN 287 | Web Programming | 3.00 |
| SOEN 321 | Information Systems Security | 3.00 |
| SOEN 331 | Introduction to Formal Methods for Software Engineering | 3.00 |
| SOEN 341 | Software Process | 3.00 |
| SOEN 342 | Software Requirements and Specifications | 3.00 |
| SOEN 343 | Software Architecture and Design I | 3.00 |
| SOEN 344 | Software Architecture and Design II | 3.00 |
| SOEN 345 | Software Testing, Verification and Quality Assurance | 3.00 |
| SOEN 357 | User Interface Design | 3.00 |
| SOEN 384 | Management, Measurement and Quality Control | 3.00 |
| SOEN 385 | Control Systems and Applications | 3.00 |
| SOEN 390 | Software Engineering Team Design Project | 3.50 |
| SOEN 490 | Capstone Software Engineering Design Project | 4.00 |
|  | Computer Science Group | 23.00 |
|  | Two Basic and Natural Science courses | 6.00 |
|  |  | \_\_\_\_\_ |
|  |  | 73.50 |
|  |  |  |
| **Computer Science Group** | | *Credits* |
|  |  |  |
| COMP 232 | Mathematics for Computer Science | 3.00 |
| COMP 248 | Object‑Oriented Programming I | 3.50 |
| COMP 249 | Object‑Oriented Programming II | 3.50 |
| COMP 335 | Introduction to Theoretical Computer Science | 3.00 |
| COMP 346 | Operating Systems | 4.00 |
| COMP 348 | Principles of Programming Languages | 3.00 |
| COMP 352 | Data Structures and Algorithms | 3.00 |
|  |  | \_\_\_\_\_ |
|  |  | 23.00 |
|  |  |  |
| **Basic and Natural Science Courses**  Two Basic and Natural Science courses must be selected from the following including at least one course marked \*: | |  |
|  |  |  |
|  |  | *Credits* |
|  |  |  |
| BIOL 206\* | Elementary Genetics | 3.00 |
| BIOL 261\* | Molecular and General Genetics | 3.00 |
| CHEM 217\* | Introductory Analytical Chemistry I | 3.00 |
| CHEM 221\* | Introductory Organic Chemistry I | 3.00 |
| CIVI 231 | Geology for Civil Engineers | 3.00 |
| ELEC 321 | Introduction to Semiconductor Materials and Devices | 3.50 |
| ENGR 242 | Statics | 3.00 |
| ENGR 243 | Dynamics | 3.00 |
| ENGR 251 | Thermodynamics I | 3.00 |
| ENGR 361 | Fluid Mechanics I | 3.00 |
| MECH 221\* | Materials Science | 3.00 |
| PHYS 252\* | Optics | 3.00 |
| PHYS 384\* | Introduction to Astronomy | 3.00 |
| PHYS 385\* | Astrophysics | 3.00 |

**General Program**

Students must complete at least 16 credits chosen from the electives list.

**Options**

Students must complete at least 16 credits with a minimum of 15 credits from one of the options listed below, including all the courses marked \*, and at least one course marked \*\*, and the remainder chosen from the electives list.

|  |  |  |
| --- | --- | --- |
| **Computer Games (CG) Option** | | *Credits* |
|  |  |  |
| COMP 345 | Advanced Program Design with C++ | 4.00 |
| COMP 371\* | Computer Graphics | 4.00 |
| COMP 376\* | Introduction to Game Development | 4.00 |
| COMP 472 | Artificial Intelligence | 4.00 |
| COMP 476\*\* | Advanced Game Development | 4.00 |
| COMP 477\*\* | Animation for Computer Games | 4.00 |
|  |  |  |
| **Web Services and Applications (WSA) Option** | | *Credits* |
|  |  |  |
| COMP 353\* | Databases | 4.00 |
| COMP 445 | Data Communication and Computer Networks | 4.00 |
| COMP 479\*\* | Information Retrieval and Web Search | 4.00 |
| SOEN 387\* | Web‑Based Enterprise Application Design | 3.00 |
| SOEN 487\*\* | Web Services and Applications | 4.00 |
|  |  |  |
| **Real‑Time, Embedded, and Avionics Software (REA) Option** | | *Credits* |
|  |  |  |
| AERO 480\*\* | Flight Control Systems | 3.50 |
| AERO 482\*\* | Avionic Navigation Systems | 3.00 |
| COEN 320 | Introduction to Real‑Time Systems | 3.00 |
| COMP 345 | Advanced Program Design with C++ | 4.00 |
| COMP 444 | System Software Design | 4.00 |
| SOEN 422\* | Embedded Systems and Software | 4.00 |
| SOEN 423\* | Distributed Systems | 4.00 |
|  |  |  |
| **Electives** | | *Credits* |
|  |  |  |
| COMP 345 | Advanced Program Design with C++ | 4.00 |
| COMP 353 | Databases | 4.00 |
| COMP 371 | Computer Graphics | 4.00 |
| COMP 426 | Multicore Programming | 4.00 |
| COMP 428 | Parallel Programming | 4.00 |
| COMP 442 | Compiler Design | 4.00 |
| COMP 445 | Data Communication and Computer Networks | 4.00 |
| COMP 451 | Database Design | 4.00 |
| COMP 465 | Design and Analysis of Algorithms | 3.00 |
| COMP 472 | Artificial Intelligence | 4.00 |
| COMP 473 | Pattern Recognition | 4.00 |
| COMP 474 | Intelligent Systems | 4.00 |
| COMP 478 | Image Processing | 4.00 |
| COMP 479 | Information Retrieval and Web Search | 4.00 |
| SOEN 298 | System Hardware Lab | 1.00 |
| SOEN 422 | Embedded Systems and Software | 4.00 |
| SOEN 423 | Distributed Systems | 4.00 |
| SOEN 448 | Management of Evolving Systems | 3.00 |
| SOEN 491 | Software Engineering Project | 1.00 |
| ENGR 411 | Special Technical Report | 1.00 |

**71.20.6 General Education Elective**

All Engineering students must complete three credits of General Education. This course may be chosen from courses in the Social Sciences and Humanities listed in [§71.20.2](http://www.concordia.ca/academics/undergraduate/calendar/current/sec71/71-10.html#b71.20.2) or the list below.

ADMI 201 – Introduction to Administration

ADMI 202 – Perspective on Canadian Business

ENCS 484 – Development and Global Engineering

MANA 201 – Introduction to Business and Management

MANA 202 – Human Behaviour in Organizations

MANA 300 – Entrepreneurship: Launching Your Business

MARK 201 – Introduction to Marketing

URBS 230 – Urban Development

**Social Sciences**

AHSC 242 – Recreation and Leisure in Canada

ANTH 202 – Introduction to Culture

ECON 201 – Introduction to Microeconomics

ECON 203 – Introduction to Macroeconomics

EDUC 230 – Introduction to Philosophy of Education

ENCS 483 – Creativity, Innovation and Critical Thinking in Science and Technology

GEOG 203 – Canadian Environmental Issues

GEOG 204 – Global Environmental Issues

GEOG 210 – Geography of Global Change

GEOG 220 – The Human Environment: Place, Space, and Identity

INST 250 – Introduction to Library Research Practices

LING 222 – Language and Mind: The Chomskyan Program

LING 300 – Sociolinguistics

POLI 202 – Introduction to Political Science

POLI 213 – Contemporary Issues in Global Politics

POLI 390 – Ethics and Competing Political Perspectives

RELI 214 – Religions of the West

RELI 215 – Religions of Asia

RELI 216 – Encountering Religions

RELI 218 – Wisdom, Traditions, and Enlightenment

RELI 310 – Self and Other: Exploring Value Choices in Personal and Interpersonal Relations

RELI 312 – Justice and Social Conflict in a Globalized World

RELI 374 – Religion and Science

SCPA 201 – Introduction to Public Policy and the Public Interest

SCPA 215 – Economics for Public Policy and Community Development

SOCI 203 – Introduction to Society

WSDB 290 – Introduction to Women’s Studies I

WSDB 291 – Introduction to Women’s Studies II

**Humanities**

ARTH 353 – Technology and Contemporary Art

ARTH 354 – Studies in Interdisciplinarity in the Visual Arts

CLAS 266 – An Introduction to Classical Archaeology

COMS 360 – Mass Communication

ENGL 224 – The Creative Process

ENGL 233 – Critical Reading

FLIT 230 – Introduction à la culture francophone

FLIT 240 – Introduction à la littérature francophone

FMST 214 – English-Canadian Film

FMST 215 – Le cinéma québécois

HIST 201 – Introduction to European History to 1789

HIST 202 – Introduction to European History, from 1789 to the Present

HIST 205 – History of Canada, Post-Confederation

HIST 281 – Film in History

HIST 283 – The 20th Century: A Global History

LBCL 201 – Great Books: Western History and Thought from Antiquity through the Renaissance

LBCL 202 – Great Books: Western Culture and Expression from Antiquity through the Renaissance

LBCL 203 – Great Books: Western History and Thought from the Reformation through Modernity

LBCL 204 – Great Books: Western Culture and Expression from the Reformation through Modernity

PHIL 201 – Problems of Philosophy

PHIL 210 – Critical Thinking

PHIL 232 – Introduction to Ethics

PHIL 233 – Applied Ethics: Moral Sensitivity and Human Well-Being

PHIL 235 – Biomedical Ethics

PHIL 275 – From Modern to Postmodern: Philosophical Thought and Cultural Critique

PHIL 330 – Contemporary Ethical Theory

THEO 202 – Introduction to Biblical Studies

THEO 204 – Introduction to Christian Ethics

THEO 233 – Religious Pluralism in a Secular Culture