

**Course Sequence**  
**Chemical Engineering and Computing Technology**

**1<sup>st</sup> YEAR (33 credits)**

|         |                                   | <b><u>Session</u></b> | <b><u>Prerequisite</u></b>  |
|---------|-----------------------------------|-----------------------|---|
| CHM1311 | Principles of Chemistry           | Fall                  | 4U chemistry or OAC Chemistry or equivalent.                              |
| ENG1112 | Technical Report Writing          | Fall                  |   |
| GNG1105 | Engineering Mechanics             | Fall                  | Physics 4U, advanced functions and Introductory Calculus 4U or equivalent |
| ITI1120 | Introduction to computing I       | Fall                  |   |
| MAT1320 | Calculus I                        | Fall                  | One of MAT1339, Ontario 4U Calculus and Vectors (MCV4U) or an equivalent. |
| CHG1125 | Chemical Engineering Fundamentals | Winter                | CHM1301 or CHM1311  |
| CHM1321 | Organic Chemistry I               | Winter                | CHM1301 or CHM1311 or 4U chemistry or OAC Chemistry or equivalent.        |
| ITI1121 | Introduction to computing II      | Winter                | ITI1120   |
| MAT1322 | Calculus II                       | Winter                | MAT1320   |
| MAT1341 | Introduction to Linear Algebra    | Winter                | MAT1339 or Ontario 4U Calculus and Vectors (MCV4U), or an equivalent.     |
| PHY1122 | Fundamentals of Physics II        | Winter                | OAC or 4U Physics; corequisite: MAT1320 (preferred) or MAT1330.           |

**2<sup>nd</sup> YEAR (36 credits)**

|                    |  | <b><u>Session</u></b>              | <b><u>Prerequisite</u></b>   |
|--------------------|--|------------------------------------|--|
| CHG2312            | Fluid Flow   | Fall                               | CHG1125  |
| CHG2317            | Introduction to Chemical Process Analysis and Design                                 | Fall                               | CHG1125  |
| CHM2120            | Organic Chemistry II   | Fall                               | CHM1321  |
| ECO1192            | Engineering Economics  | Fall                               |  |
| MAT2322            | Calculus III for Engineers   | Fall                               | (MAT1322 or MAT1325 or MAT1332), (MAT1341 or CEGEP linear algebra)                     |
| MAT2384            | Ordinary Differential Equations and Numerical Methods                                | Fall                               | MAT1341, (MAT1322 or MAT1325 or MAT1322)   |
| CHG2314            | Heat Transfer Operations   | Winter                             | CHG2312, CHG2317, MAT2384  |
| CHM2330            | Physical Chemistry: Introduction to the Molecular Properties of Matter               | Winter                             | (CHM1301 or CHM1311), (MAT1322 or MAT1332), (PHY1121 or PHY1321 or PHY1122 or PHY1331) |
| HIS2129 or PHI2394 | Technology, Society and Environment since 1800 / Scientific Thought and Social Value | Winter (HIS2129)<br>Fall (PHI2394) |  |
| ITI1100            | Digital systems I  | Winter                             |  |
| MAT1348            | Discrete Mathematics for Computing   | Winter                             |  |
| MAT2377            | Probability and Statistics for Engineers   | Winter                             | MAT1320 or MAT1330; corequisite: MAT1322 or MAT1325 or MAT1332                         |

### **3<sup>rd</sup> YEAR (33 credits)**

|         |  | <b><u>Session</u></b> | <b><u>Prerequisite</u></b>   |
|---------|--|-----------------------|--|
| CEG2136 | Computer architecture I  | Fall                  | ITI1100  |
| CHG3316 | Transport phenomena  | Fall                  | Prerequisites for CHG: CHG2312, CHG2314, CHG2317, MAT2322, MAT2384. Prerequisites for CVG: CHG2317, CVG3132, MAT2322, MAT2384) CHG2317 |
| CHG3324 | Fundamentals and Applications of Chemical Engineering Thermodynamics | Fall                  |  |
| CHG3331 | Application of Mathematical Methods to Chemical Engineering          | Fall                  | CHG2312, CHG2314, CHG2317, MAT2322, MAT2384  |
| CHG3335 | Process control  | Fall                  | CHG2312, CHG2314, CHG2317, MAT2384. Prerequisite or corequisite: CHG3331   |
| CSI2110 | Data Structures and Algorithms                                       | Fall                  | ITI1121, MAT1348   |
| CHG3111 | Unit operations  | Winter                | CHG3316  |
| CHG3112 | Process Synthesis, Design and Economics                              | Winter                | CHG3316, CHG3324. Prerequisite or corequisite: CHG3111   |
| CHG3122 | Chemical engineering practice  | Winter                | CHG2312, CHG2314, CHG3324  |
| CHG3127 | Chemical reaction engineering  | Winter                | CHG3316, CHG3331   |
| CHG3326 | Principles of Phase Equilibria and Chemical Reaction Equilibria      | Winter                | CHG3316, CHG3324   |

### **4<sup>th</sup> YEAR (30 credits)**

|                                 |   | <b><u>Session</u></b> | <b><u>Prerequisite</u></b>  |
|---------------------------------|---|-----------------------|---|
| CHG3337                         | Data Collection and Interpretation                        | Fall                  | MAT2377   |
| CHG4116                         | Chemical Engineering Laboratory                           | Fall                  | CHG3122, CHG3111, CHG3127, CHG3326, CHG3335. Prerequisite or corequisite: CHG3337 |
| CHG4343                         | Computer-Aided Design in Chemical Engineering             | Fall                  | 81 university credits including CHG3111, CHG3127, CHG3331, CHG3335                |
| Technical elective              |   | Fall/Winter           |   |
| Complementary elective          |   | Fall/Winter           |   |
| CHG4307                         | Clean Processes and Sustainable                           | Winter                | 81 university credits   |
| CSI2120                         | Programming Paradigms                                     | Winter                | CSI2110 Development   |
| ELG2336                         | Electric Circuits and Machines for Mechanical Engineering | Winter                | PHY1122; corequisite: MAT2384   |
| EECS elective 2000 <sup>1</sup> |   | Fall/Winter           |   |
| Technical elective              |   | Fall/Winter           |   |

<sup>1</sup> Three credits of CSI, SEG, CEG or ELG courses, 2000 level or above

### **5<sup>th</sup> YEAR (30 credits)**

|   |  | <b><u>Session</u></b> | <b><u>Prerequisite</u></b>   |
|---|--|-----------------------|--|
| ADM1100   | Introduction to Business Management        | Fall                  |  |
| CHG4305   | Advanced Materials in Chemical Engineering | Fall                  | 81 university credits  |
| CHG4183   | Biochemical Engineering                    | Fall                  | 81 university credits including CHG3111, CHG3127   |
| CHG4900 or Two Technical electives <sup>3</sup> |  | Fall/Winter           |  |
| CHG4244   | Plant design Project                       | Winter                | 81 university credits including CHG3111, CHG3112, CHG3122, CHG3127, CHG3316, CHG3324, CHG3326, CHG3331, CHG3335, CHG3337 |
| GNG4170   | Engineering Law                            | Winter                |  |
| EECS elective 3000 <sup>1</sup>                 |  | Fall/Winter           |  |
| Technical elective                              |  | Fall/Winter           |  |

<sup>2</sup> Three credits of CSI, SEG or ELG courses, 3000 level or above