

# CHEMICAL ENGINEERING (B.S.CH.E.)

Required course work includes the university requirements (see regulation J-3 (<https://catalog.uidaho.edu/general-requirements-academic-procedures/j-general-requirements-baccalaureate-degrees/>)) and:

| Code   | Title  | Hours |
|--|--|-------|
| CHE 123  | Computations in Chemical Engineering         | 2     |
| CHE 220  | Programming for Chemical Engineers           | 3     |
| CHE 223  | Material and Energy Balances                 | 3     |
| CHE 326  | Chemical Engineering Thermodynamics          | 3     |
| CHE 330  | Separation Processes I                       | 3     |
| CHE 340  | Transport and Rate Processes I               | 4     |
| CHE 341  | Transport and Rate Processes II              | 4     |
| CHE 423  | Reactor Kinetics and Design                  | 3     |
| CHE 433  | Chemical Engineering Lab I                   | 1     |
| CHE 434  | Chemical Engineering Lab II                  | 1     |
| CHE 444  | Process Analysis and Control                 | 3     |
| CHE 453  | Process Analysis & Design I                  | 3     |
| CHE 454  | Process Analysis and Design II               | 3     |
| CHE 491  | Senior Seminar                               | 1     |
| CHEM 111   | General Chemistry I                          | 3     |
| CHEM 111L  | General Chemistry I Laboratory               | 1     |
| CHEM 112   | General Chemistry II                         | 4     |
| CHEM 112L  | General Chemistry II Laboratory              | 1     |
| CHEM 277   | Organic Chemistry I                          | 3     |
| CHEM 278   | Organic Chemistry I: Lab                     | 1     |
| CHEM 305   | Physical Chemistry                           | 3     |
| CHEM 307   | Physical Chemistry Lab                       | 1     |
| CHEM 372   | Organic Chemistry II                         | 3     |
| CHEM 374   | Organic Chemistry II: Lab                    | 1     |
| ENGR 123   | First Year Engineering                       | 2     |
| ENGR 210   | Engineering Statics                          | 3     |
| ENGR 320   | Engineering Thermodynamics and Heat Transfer | 3     |
| ENGR 335   | Engineering Fluid Mechanics                  | 3     |
| MATH 170   | Calculus I                                   | 4     |
| MATH 175   | Calculus II                                  | 4     |
| MATH 275   | Calculus III                                 | 3     |
| MATH 310   | Ordinary Differential Equations              | 3     |
| PHYS 211   | Engineering Physics I                        | 3     |
| PHYS 211L  | Laboratory Physics I                         | 1     |
| PHYS 212   | Engineering Physics II                       | 3     |
| Select one Chemical Engineering Technical Elective course numbered 390 or greater  |  | 3     |
| Select one Chemical (CHE), Biological (BE) or Material Science Engineering (MSE) Technical Elective course numbered 390 or greater |  | 3     |
| Select one Economics Elective  |  | 3     |
| Select three Humanities and Social Science Elective courses:   |  | 9     |
| Select one Communications Elective course  |  | 2     |

|   |            |
|---|------------|
| Select one Mathematics Elective numbered 300 or greater <sup>1</sup>  | 3          |
| Select 6 credits of Technical Electives in Math, Science, or Engineering numbered 300 or greater <sup>2</sup> | 6          |
| <b>Total Hours</b>  | <b>119</b> |

1

Must be numbered 300 or greater, excluding any 398, 498, or 598 Internship.

2

Technical Electives in Math, Science, or Engineering: must be numbered 300 or greater.

To be enrolled in upper-division CHE courses, a student majoring in chemical engineering must earn a grade of 'C' or better in each of the following courses:

| Code            | Title  | Hours |
|-----------------|--|-------|
| CHE 223         | Material and Energy Balances                             | 3     |
| CHEM 111 & 111L | General Chemistry I and General Chemistry I Laboratory   | 4     |
| CHEM 112 & 112L | General Chemistry II and General Chemistry II Laboratory | 5     |
| ENGR 210        | Engineering Statics                                      | 3     |
| ENGR 320        | Engineering Thermodynamics and Heat Transfer             | 3     |
| ENGR 335        | Engineering Fluid Mechanics                              | 3     |
| MATH 170        | Calculus I   | 4     |
| MATH 175        | Calculus II  | 4     |
| MATH 275        | Calculus III   | 3     |
| MATH 310        | Ordinary Differential Equations                          | 3     |

Students transferring CHE 223 or its equivalent from a university without an ABET accredited chemical engineering program must pass a test on the subject matter of this course before enrolling in upper-division CHE courses.

In addition, a passing grade is required in each of the following courses before enrolling in upper-division CHE courses:

| Code     | Title                                | Hours |
|----------|--------------------------------------|-------|
| CHE 123  | Computations in Chemical Engineering | 2     |
| CHE 220  | Programming for Chemical Engineers   | 3     |
| ENGL 102 | Writing and Rhetoric II              | 3     |
| PHYS 211 | Engineering Physics I                | 3     |
| PHYS 212 | Engineering Physics II               | 3     |

A GPA in CHE designated courses of at least 2.0 is required to graduate

**Courses to total 125 credits for this degree, not counting ENGL 101, any 398 (Internship), any 498 (Internship), any 598 (Internship), or mathematics courses numbered lower than MATH 170, and other courses that might be required to remove deficiencies.**

## Four-Year Plan

| Fall Term 1 | Hours                          |   |
|-------------|--------------------------------|---|
| CHEM 111    | General Chemistry I            | 3 |
| CHEM 111L   | General Chemistry I Laboratory | 1 |
| ENGL 102    | Writing and Rhetoric II        | 3 |
| ENGR 123    | First Year Engineering         | 2 |
| MATH 170    | Calculus I                     | 4 |

|   |            |
|---|------------|
| Humanistic and Artistic Ways of Knowing Course        | 3          |
| <b>Hours</b>  | <b>16</b>  |
| <b>Spring Term 1</b>                                  |            |
| CHE 123 Computations in Chemical Engineering          | 2          |
| CHEM 112 General Chemistry II                         | 4          |
| CHEM 112L General Chemistry II Laboratory             | 1          |
| MATH 175 Calculus II                                  | 4          |
| PHYS 211 Engineering Physics I                        | 3          |
| PHYS 211L Laboratory Physics I                        | 1          |
| <b>Hours</b>  | <b>15</b>  |
| <b>Fall Term 2</b>                                    |            |
| CHE 220 Programming for Chemical Engineers            | 3          |
| CHEM 277 Organic Chemistry I                          | 3          |
| CHEM 278 Organic Chemistry I: Lab                     | 1          |
| ENGR 210 Engineering Statics                          | 3          |
| MATH 275 Calculus III                                 | 3          |
| PHYS 212 Engineering Physics II                       | 3          |
| <b>Hours</b>  | <b>16</b>  |
| <b>Spring Term 2</b>                                  |            |
| CHE 223 Material and Energy Balances                  | 3          |
| CHEM 372 Organic Chemistry II                         | 3          |
| CHEM 374 Organic Chemistry II: Lab                    | 1          |
| ENGR 320 Engineering Thermodynamics and Heat Transfer | 3          |
| ENGR 335 Engineering Fluid Mechanics                  | 3          |
| MATH 310 Ordinary Differential Equations              | 3          |
| <b>Hours</b>  | <b>16</b>  |
| <b>Fall Term 3</b>                                    |            |
| CHE 326 Chemical Engineering Thermodynamics           | 3          |
| CHE 340 Transport and Rate Processes I                | 4          |
| CHEM 305 Physical Chemistry                           | 3          |
| CHEM 307 Physical Chemistry Lab                       | 1          |
| ECON 201 or ECON 202                                  | 3          |
| <b>Hours</b>  | <b>14</b>  |
| <b>Spring Term 3</b>                                  |            |
| CHE 330 Separation Processes I                        | 3          |
| CHE 341 Transport and Rate Processes II               | 4          |
| CHE 423 Reactor Kinetics and Design                   | 3          |
| UPDV Mathematics Elective Course                      | 3          |
| Oral Communication Course                             | 3          |
| American Diversity Course                             | 3          |
| <b>Hours</b>  | <b>19</b>  |
| <b>Fall Term 4</b>                                    |            |
| CHE 433 Chemical Engineering Lab I                    | 1          |
| CHE 444 Process Analysis and Control                  | 3          |
| CHE 453 Process Analysis & Design I                   | 3          |
| CHE 491 Senior Seminar                                | 1          |
| UPDV Technical Math, Sci, or Engr Elective Course     | 3          |
| 390 or higher CHE or BE, Elective Course              | 3          |
| Social & Behavioral Ways of Knowing Elective          | 3          |
| <b>Hours</b>  | <b>17</b>  |
| <b>Spring Term 4</b>                                  |            |
| CHE 434 Chemical Engineering Lab II                   | 1          |
| CHE 454 Process Analysis and Design II                | 3          |
| 390 or higher CHE Tech Elective Course                | 3          |
| UPDV Math, Sci, or Engr Tech Elective Course          | 3          |
| Humanistic Ways of Knowing Course                     | 3          |
| International Course                                  | 3          |
| <b>Hours</b>  | <b>16</b>  |
| <b>Total Hours</b>                                    | <b>129</b> |

## Five-Year Plan

|   |              |           |
|---|--------------|-----------|
| <b>Fall Term 1</b>                                    | <b>Hours</b> | <b>15</b> |
| ENGL 101 Writing and Rhetoric I                       | 3            |           |
| ENGR 123 First Year Engineering                       | 2            |           |
| MATH 143 College Algebra                              | 3            |           |
| MATH 144 Precalculus II: Trigonometry                 | 1            |           |
| Humanistic and Artistic Ways of Knowing Course        | 3            |           |
| Oral Communication Course                             | 3            |           |
| <b>Hours</b>  | <b>15</b>    |           |
| <b>Spring Term 1</b>                                  |              |           |
| CHE 123 Computations in Chemical Engineering          | 2            |           |
| ENGL 102 Writing and Rhetoric II                      | 3            |           |
| MATH 170 Calculus I                                   | 4            |           |
| ECON 201 OR ECON 202                                  | 3            |           |
| International Course                                  | 3            |           |
| <b>Hours</b>  | <b>15</b>    |           |
| <b>Fall Term 2</b>                                    |              |           |
| CHEM 111 General Chemistry I                          | 3            |           |
| CHEM 111L General Chemistry I Laboratory              | 1            |           |
| ENGR 210 Engineering Statics                          | 3            |           |
| Humanistic and Artistic Ways of Knowing Course        | 3            |           |
| Social and Behavioral Ways of Knowing Course          | 3            |           |
| <b>Hours</b>  | <b>13</b>    |           |
| <b>Spring Term 2</b>                                  |              |           |
| CHEM 112 General Chemistry II                         | 4            |           |
| CHEM 112L General Chemistry II Laboratory             | 1            |           |
| MATH 175 Calculus II                                  | 4            |           |
| PHYS 211 Engineering Physics I                        | 3            |           |
| PHYS 211L Laboratory Physics I                        | 1            |           |
| <b>Hours</b>  | <b>13</b>    |           |
| <b>Fall Term 3</b>                                    |              |           |
| CHE 220 Programming for Chemical Engineers            | 3            |           |
| CHEM 277 Organic Chemistry I                          | 3            |           |
| CHEM 278 Organic Chemistry I: Lab                     | 1            |           |
| ENGR 320 Engineering Thermodynamics and Heat Transfer | 3            |           |
| MATH 275 Calculus III                                 | 3            |           |
| PHYS 212 Engineering Physics II                       | 3            |           |
| <b>Hours</b>  | <b>16</b>    |           |
| <b>Spring Term 3</b>                                  |              |           |
| CHE 223 Material and Energy Balances                  | 3            |           |
| CHEM 372 Organic Chemistry II                         | 3            |           |
| CHEM 374 Organic Chemistry II: Lab                    | 1            |           |
| ENGR 335 Engineering Fluid Mechanics                  | 3            |           |
| MATH 310 Ordinary Differential Equations              | 3            |           |
| <b>Hours</b>  | <b>13</b>    |           |
| <b>Fall Term 4</b>                                    |              |           |
| CHE 326 Chemical Engineering Thermodynamics           | 3            |           |
| CHE 340 Transport and Rate Processes I                | 4            |           |
| CHEM 305 Physical Chemistry                           | 3            |           |
| CHEM 307 Physical Chemistry Lab                       | 1            |           |
| <b>Hours</b>  | <b>11</b>    |           |
| <b>Spring Term 4</b>                                  |              |           |
| CHE 330 Separation Processes I                        | 3            |           |
| CHE 341 Transport and Rate Processes II               | 4            |           |
| CHE 423 Reactor Kinetics and Design                   | 3            |           |
| UPDV Mathematics Elective Course                      | 3            |           |
| <b>Hours</b>  | <b>13</b>    |           |
| <b>Fall Term 5</b>                                    |              |           |
| CHE 433 Chemical Engineering Lab I                    | 1            |           |
| CHE 444 Process Analysis and Control                  | 3            |           |
| CHE 453 Process Analysis & Design I                   | 3            |           |

|   |                                |            |
|---|--------------------------------|------------|
| CHE 491   | Senior Seminar                 | 1          |
| 390 or higher CHE or BE, Major Elective Course    |                                | 3          |
| UPDV Math, Sci, or ENGR Technical Elective Course |                                | 3          |
| <b>Hours</b>                                      |                                | <b>14</b>  |
| <b>Spring Term 5</b>                              |                                |            |
| CHE 434   | Chemical Engineering Lab II    | 1          |
| CHE 454   | Process Analysis and Design II | 3          |
| 390 or higher CHE Elective Course                 |                                | 3          |
| UPDV Math, Sci, or ENGR Technical Elective Course |                                | 3          |
| American Diversity Course                         |                                | 3          |
| <b>Hours</b>                                      |                                | <b>13</b>  |
| <b>Total Hours</b>                                |                                | <b>136</b> |

The degree map is a guide for the timely completion of your curricular requirements. Your academic advisor or department may be contacted for assistance in interpreting this map. This map is not reflective of your academic history or transcript and it is not official notification of completion of degree or certificate requirements. Please contact the Registrar's Office regarding your official degree/certificate completion status.

1. The student will apply aspects of engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
2. The student will identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
3. The student will develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
4. The student will communicate effectively with a range of audiences.