

# Chemistry / Secondary Education

## Bachelor of Arts (BS.CHEM(SEC))

| Core Requirements                   |                            |   |  | Credits   | Notes/Instructions  |
|-------------------------------------|----------------------------|---|--|-----------|---|
| College Sem.                        | Quest for Meaning          | CSEM 100  |  | 3         | †A student may be required to take ENGL 105 and/or MATH 100 based on placement exams administered prior to their first semester at King's College. ENGL 105 and MATH 100 are 3-credit courses and will count as free electives.<br>†† The Intercultural Competence requirement can be satisfied by taking a 100-level language class for 3 credits or participating in an approved Study Abroad experience. (See college catalog for more information)<br><b>SBM</b> = Satisfied By Major requirement and credits listed below. |
| Communication & Creative Expression | Writing                    | ENGL 110†   |  | 3         |   |
|                                     | Oral Communication         | COMM 101  |  | 3         |   |
|                                     | Literature                 | ENGL 140-149  |  | 3         |   |
|                                     | The Arts                   | ARTS 100-149  |  | 3         |   |
| Citizenship                         | History                    | HIST 100-149  |  | 3         |   |
|                                     | Intercultural              | FREN/GERM/SPAN 100-level or Study Abroad††                        |  | 3         |   |
|                                     | Global Connections         | ECON 150-199; GEOG 150-199; HIST 150-199; PS 150-199; SOC 150-199 |  | 3         |   |
| Quantitative & Scientific Reasoning | SBM Quantitative Reasoning | MATH 120+ or higher level   |  | -         |   |
|                                     | SBM Scientific Endeavor    | NSCI 100  |  | -         |   |
|                                     | SBM Science in Context     | NSCI 171-199  |  | -         |   |
|                                     | Human Beh. & Soc. Inst     | ECON 111, 112; GEOG 101, 102; PS 101, PSYC 101, SOC 101           |  | 3         |   |
| Wisdom, Faith, & the Good Life      | Introduction to Phil.      | PHIL 101  |  | 3         |   |
|                                     | Phil. Investigations       | PHIL 170-199  |  | 3         |   |
|                                     | Theology & Wisdom          | THEO 150-159  |  | 3         |   |
|                                     | Theology & the Good Life   | THEO 160-169  |  | 3         |   |
| <b>Total Core Credits</b>           |                            |   |  | <b>39</b> |   |

| Major Requirements         | Credits | Major Requirements                   | Credits | Secondary Education Requirements         | Credits |
|----------------------------|---------|--------------------------------------|---------|--|---------|
| CHEM 113 <sup>2</sup>      | 3       | MATH 129 <sup>2</sup>                | 4       | EDUC 202                                 | 3       |
| CHEM 113L                  | 1       | MATH 130 <sup>PR</sup>               | 4       | EDUC 231                                 | 1       |
| CHEM 114 <sup>2,PR</sup>   | 3       | MATH 238 <sup>PR,**</sup>            | 3       | EDUC 232                                 | 1       |
| CHEM 114L <sup>PR</sup>    | 1       | PHYS 113 <sup>CR</sup>               | 3       | EDUC 235 <sup>3</sup>                    | 3       |
| CHEM 241 <sup>PR</sup>     | 3       | PHYS 113L                            | 3       | EDUC 240 <sup>3</sup>                    | 3       |
| CHEM 241L <sup>PR</sup>    | 1       | PHYS 114 <sup>PR</sup>               | 1       | EDUC 270 <sup>3</sup>                    | 3       |
| CHEM 242 <sup>PR</sup>     | 3       | PHYS 114L <sup>PR</sup>              | 3       | EDUC 302 <sup>3,4</sup>                  | 3       |
| CHEM 242L <sup>PR</sup>    | 1       | Free Elective <sup>***</sup>         | 1       | EDUC 305 <sup>3,4</sup>                  | 3       |
| CHEM 243 <sup>PR</sup>     | 3       |                                      |         | EDUC 350 <sup>3,4</sup>                  | 3       |
| CHEM 243L <sup>PR</sup>    | 2       |                                      |         | EDUC 366 <sup>3,4</sup>                  | 3       |
| CHEM 244 <sup>PR</sup>     | 3       |                                      |         | EDUC 440 <sup>4</sup>                    | 3       |
| CHEM 244L <sup>PR</sup>    | 2       |                                      |         | EDUC 467 <sup>3,4</sup>                  | 10      |
| CHEM 351 <sup>PR</sup>     | 1       |                                      |         | EDUC 468 <sup>3,4</sup>                  | 2       |
| CHEM 357 <sup>PR</sup>     | 3       |                                      |         |  |         |
| CHEM 357L <sup>PR</sup>    | 2       |                                      |         |  |         |
| CHEM 358 <sup>PR</sup>     | 3       |                                      |         |  |         |
| CHEM 358L <sup>PR,*</sup>  | 2       |                                      |         |  |         |
| CHEM 471 <sup>PR</sup>     | 3       |                                      |         |  |         |
| CHEM 493 <sup>PR</sup>     | 1       |                                      |         |  |         |
| CHEM 494 <sup>PR</sup>     | 1       |                                      |         |  |         |
|                            |         | <b>Other Requirements</b>            |         |  |         |
|                            |         | HCE 101 Holy Cross Exp.              | 1       |  |         |
| <b>Total Major Credits</b> |         | <b>Total Major and Other Credits</b> |         | <b>Total Secondary Education Credits</b> |         |
| <b>42</b>                  |         | <b>23</b>                            |         | <b>41</b>                                |         |

**Total Credits Required for Graduation = 145**

\* CHEM 358L may be replaced by a semester of research (CHEM 396, CHEM 397, CHEM 496, CHEM 497)

\*\* Students may take either MATH 231, MATH 237, MATH 238, or MATH 361 to fulfill the MATH requirement

\*\*\* A programming course such as ENGR300/L is highly recommended as an elective course

**NOTE:** All Secondary Teacher Certification candidates must complete six credits of college level mathematics and six credits of college level English:

|                        |          |                |
|------------------------|----------|----------------|
| <b>Math Courses</b>    | MATH 129 | MATH 130       |
| <b>English Courses</b> | ENGL 110 | ENGL 140 - 149 |

The Pennsylvania Department of Education requires secondary teachers to complete a program of study the same as the academic content area courses and required electives of a major in the degree content area for certification. Students seeking secondary certification must meet with his/her specific content area department for content area courses required for the degree. The Education Division is not responsible for content area or Core courses for secondary certification candidates.

See reverse side for a suggested sequence

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## Suggested Sequence

A suggested course sequence of degree requirements is listed below. Refer to the college catalog for course titles, descriptions, and prerequisites. Always consult your Academic Advisor when planning and scheduling your classes.

| Fall  | Credits   | Spring  | Credits   |
|---|-----------|---|-----------|
| CHEM 113 <sup>2</sup> General Chemistry I   | 3         | CHEM 114 <sup>PR</sup> General Chemistry II                     | 3         |
| CHEM 113L General Chemistry I Lab   | 1         | CHEM 114L <sup>PR</sup> General Chemistry II Lab                | 1         |
| MATH 129 <sup>2</sup> Analytic Geometry & Calculus I  | 4         | MATH 130 <sup>PR</sup> Analytic Geometry & Calculus II          | 4         |
| PHYS 113 <sup>2,CR</sup> Physics for Scientists & Engineers I   | 3         | PHYS 114 <sup>PR</sup> Physics for Scientists & Engineers II    | 3         |
| PHYS 113L Physics for Sci. & Eng. I Lab   | 1         | PHYS 114L Physics for Sci. & Eng. II Lab                        | 1         |
| Core Course <sup>1</sup>  | 3         | EDUC 202 Educ. Philos., Ethics, Issues & Trends                 | 3         |
| HCE 101 Holy Cross Experience   | 1         | Core Course <sup>1</sup>  | 3         |
|   | <b>16</b> |   | <b>18</b> |
| <b>Summer **</b>  |           | <b>Credits</b>  |           |
| Fall  | Credits   | Spring  | Credits   |
| CHEM 241 <sup>PR</sup> Organic Chemistry I  | 3         | CHEM 242 <sup>PR</sup> Organic Chemistry II                     | 3         |
| CHEM 241L <sup>PR</sup> Organic Chemistry I Lab   | 1         | CHEM 242L <sup>PR</sup> Organic Chemistry II Lab                | 1         |
| MATH 238 <sup>PR***</sup> Differential Equations  | 3         | EDUC 240 <sup>3</sup> Sec. Multicult., Linguistic & Inst. Meth. | 3         |
| EDUC 235 <sup>3</sup> Sec. Development, Cognition, & Learn  | 3         | Core Course <sup>1</sup>  | 3         |
| Core Course <sup>1</sup>  | 3         | Core Course <sup>1</sup>  | 3         |
| Core Course <sup>1</sup>  | 3         | Free Elective****   | 3         |
|   | <b>16</b> |   | <b>16</b> |
| <b>Admission to Candidacy</b> (Complete and return "Application for Teacher Education Program Candidacy" to the Education Department no sooner than the completion of 48 credits and no later than 65 credits.) |           |   |           |
| <b>Summer **</b>  |           | <b>Credits</b>  |           |
| Fall  | Credits   | Spring  | Credits   |
| CHEM 243 <sup>PR</sup> Analytical Chemistry   | 3         | CHEM 244 <sup>PR</sup> Instrumental Analysis                    | 3         |
| CHEM 243L <sup>PR</sup> Analytical Chemistry Lab  | 2         | CHEM 244L <sup>PR</sup> Instrumental Analysis Lab               | 2         |
| CHEM 357 <sup>PR</sup> Physical Chemistry I   | 3         | CHEM 358 <sup>PR</sup> Physical Chemistry II                    | 3         |
| CHEM 357L <sup>PR</sup> Physical Chemistry I Lab  | 2         | CHEM 358L <sup>PR</sup> Physical Chemistry II Lab               | 2         |
| CHEM 351 <sup>PR</sup> Technological Competency   | 1         | EDUC 305 <sup>3</sup> Assessment I                              | 3         |
| EDUC 270 <sup>3</sup> Introduction to Special Education   | 3         | Core Course <sup>1</sup>  | 3         |
| Core Course <sup>1</sup>  | 3         |   |           |
|   | <b>17</b> |   | <b>16</b> |
| <b>Summer **</b>  |           | <b>Credits</b>  |           |
| Fall  | Credits   | Spring  | Credits   |
| CHEM 471 <sup>PR</sup> Advanced Inorganic Chemistry   | 3         | CHEM 494 <sup>PR</sup> Senior Colloquium II                     | 1         |
| CHEM 493 <sup>PR</sup> Senior Colloquium I  | 1         | EDUC 350 <sup>3,4</sup> Secondary Classroom Management          | 3         |
| EDUC 302 <sup>3,4</sup> Secondary Science Methods   | 3         | EDUC 366 <sup>3,4</sup> Methods For Teaching Diverse Learners   | 3         |
| Core Course <sup>1</sup>  | 3         | Core Course <sup>1</sup>  | 3         |
| Core Course <sup>1</sup>  | 3         | Core Course <sup>1</sup>  | 3         |
| EDUC 231 and EDUC 232 Technology Module I & II  | 2         | Core Course <sup>1</sup>  | 3         |
|   | <b>15</b> |   | <b>16</b> |
| <b>Summer **</b>  |           | <b>Credits</b>  |           |
| Fall  | Credits   |   |           |
| EDUC 467 <sup>3,4</sup> Observation & Student Teach. (Sec.)   | 10        |   |           |
| EDUC 468 <sup>3,4</sup> Student Teaching Seminar  | 2         |   |           |
| EDUC 440 <sup>4</sup> Inclusive Education   | 3         |   |           |
| <b>Take Praxis II</b>   |           |   |           |
|   | <b>15</b> |   |           |
| <b>Total Credits Required for Graduation = 145</b>  |           |   |           |

\*\* Students are encouraged to take some Core courses during the summer months to help "lighten" their course load during a semester.

\*\*\* Students may take either MATH 231, MATH 237, MATH 238, or MATH 361 to fulfill the MATH requirement

\*\*\*\* A programming course such as ENGR300/L is highly recommended as an elective course

<sup>1</sup>Choose one course from each of the Core Requirements listed on the reverse side.

<sup>2</sup>Course may satisfy both a Major and a Core requirement. MATH 129 satisfies the Quantitative Reasoning Core requirement; CHEM 113 and PHYS 113 satisfies the Scientific Endeavor and Science in Context Core requirements.

<sup>3</sup>Updated Child Abuse & Criminal Record & FBI Clearances **REQUIRED** for EDUC 235, EDUC 240, EDUC 270, EDUC 302, EDUC 305, EDUC 350, EDUC 366, EDUC 440, EDUC 467, and EDUC 468.<sup>PR</sup> Course has a prerequisite – check college catalog.