# TEACHING MAJOR in CHEMISTRY, 49-53 Hours

# STUDENT HANDBOOK

This handbook is for students electing the Teaching Major in Chemistry program

Please note that this handbook is intended to be advisory only; it is your responsibility to meet all the requirements as summarized in the Undergraduate Catalog and on your DAPR.

| | |
|---|---|
| **Important phone and office number:** | Departmental and Department Chair offices: 5-8060 (CP 305) |
| **E-Mail addresses:** | Department Chair (Dr. Robert J. Morris) rmorris@bsu.edu<br>Faculty Advisor (Dr. Jason W. Ribblett) jwribblett@bsu.edu |
| **Snail mail box location:** | CP 305 |
| **Departmental web page**: | http://www.bsu.edu/csh/chemistry/ |
| **DAPR report:** | http://www.bsu.edu/apps/dapr/ or<br>Freshman Advising Center, NQ 324, 5-1161 (Honors College 5-1194)<br>CP 253 Advising Resource Center 5-5513 (Advisor Ms. B. Jean Dinwiddie) |

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**FRESHMAN YEAR HIGHLIGHTS** (See the following two pages for sample programs)

1. Let your Academic Advisor know as soon as possible that you want to pursue a professional education program in Physical Science.

2. Enroll in SCI 150 the first term you declare a Teaching Major . Note that this course is offered only during the fall term

3. Start your CHEM and MATHS courses your first term.

4. Meet with the departmental advisor for teaching majors during your first term. Your advisor will help you prepare for your first decision point meeting and provide you with the names of the faculty who will comprise your departmental "decision points" committee. Your first decision point meeting will be near the end of your second semester of study.

5. Save the artifacts and answer keys (rubrics) needed for your first "decision points" meeting (see page 6). These are:
   a. final exam practice sets (PSS) from Chem 111 and 112
   b. final exam from Chem 111 and 112 if possible
   c. One each computer- and noncomputer-based lab report from Chem 111 and 112

BALL STATE UNIVERSITY

TEACHING MAJOR IN CHEMISTRY

This is a four-year program that will meet the chemistry certification standards of the state of Indiana

| | | |
|---|---|---|
| CHEM 111 | Gen Chem 1 | 4 |
| CHEM 112 | Gen Chem 2 | 4 |
| MATHS 165 | Calculus 1 | 4 |
| MATHS 166 | Calculus 2 | 4 |
| CHEM 225 | Analysis | 3 |
| | | |
| CHEM 234 | Organic Ch 1 | 5 |
| CHEM 235 | Organic Ch 2 | 5 |
| OR | | |
| CHEM 231 | Organic 1 | 4 |
| CHEM 232 | Organic 2 | 4 |
| | | |
| PHYCS 120 | Gen Physics 1 | 5 |
| PHYCS 122 | Gen Physics 2 | 5 |
| OR | | |
| PHYCS 110 | Gen Physics 1 | 4 |
| PHYCS 112 | Gen Physics 2 | 4 |
| | | |
| CHEM 344 | Physl Chem 1 | 4 |
| CHEM 450 | Inorg Chem | 4 |
| CHEM 463 | Prn Biochm 1 | 3 |
| | | |
| 3 hours from HONRS 499 or approved CHEM Internship 369 or Research 470 | | 3 |

49-53 hrs

This is a sample student program including University Core Curriculum (UCC), program and elective courses.

TEACHING MAJOR IN CHEMISTRY

FALL

FRESHMAN

| Course | Hrs. |
|---|---|
| Chem 111 (UCC) | 4 |
| UCC | 9 |
| Sci 150 | 3 |
| Sub Total | 16 |

SPRING

| Course | Hrs |
|---|---|
| Chem 112 | 4 |
| Maths 165 (UCC) | 4 |
| UCC | 9 |
| Sub Total | 17 |

SOPHOMORE

| Course | Hrs. |
|---|---|
| Chem 231 | 4 |
| Maths 166 | 4 |
| UCC | 3 |
| Edmul 205 | 3 |
| Edpsy 251 | 3 |
| Sub Total | 17 |

| Course | Hrs |
|---|---|
| Chem 232 | 4 |
| Chem 225 | 3 |
| UCC | 8 |
| Sub Total | 15 |

JUNIOR

| Course | Hrs. |
|---|---|
| Chem 463 | 3 |
| Chem 470 | 2 |
| Phycs 120 | 5 |
| UCC | 3 |
| Edpsy 290 | 3 |
| Elective | 1 |
| Sub Total | 17 |

| Course | Hrs. |
|---|---|
| Chem 450 | 4 |
| Chem 470 | 1 |
| Phycs 122 | 5 |
| Sci 395 | 3 |
| Edfon 420 | 3 |
| Sub total | 16 |

SENIOR

| Course | Hrs. |
|---|---|
| Chem 344 | 4 |
| Sci 396 | 3 |
| UCC | 3 |
| Edsec 380 | 3 |
| Edjhm 385 | 3 |
| Sub Total | 16 |

| Course | |
|---|---|
| Edsec 460 | 6 |
| Edjhm 460 | 6 |
| Sub Total | 12 |

Grand Total 126 hrs.

| Anticipated offerings: for the most recent schedules, check the Current Schedule of Classes and/or http://www.bsu.edu/apps/courseplanner/courseschedule.asp | | | | | |
|---|---|---|---|---|---|
| | Fall | Spring | I$^{st}$ SS | 2$^{nd}$ SS | Sum. Sem. |
| CHEM 111 Gen Chem 1 | X | X | X | | |
| CHEM 112 Gen Chem 2 | X | X | | X | |
| MATHS 165 Calculus 1 | X | X | | | X |
| MATHS 166 Calculus 2 | X | X | | | X |
| PHYCS 120 Gen Phycs 1 | X | X | X | | |
| PHYCS 122 Gen Phycs 2 | X | X | | X | |
| CHEM 225 Analysis | X | X | | X | |
| CHEM 231 Organic 1 | X | X | X | | |
| CHEM 232 Organic 2 | | X | | X | |
| CHEM 344 Phys Chem 1 | X | | | | |
| CHEM 369 | X | X | X | X | X |
| CHEM 450 Inorganic | | X | | | |
| CHEM 463 Prn Biochm 1 | X | | | | |
| CHEM 470 | X | X | X | X | X |
| HONRS 499 | X | X | X | X | X |

**Teaching Major in Chemistry, 49-53 hrs., Decision Point Document**

| Decision Point # | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Proposed Time for Decision Point | end of 1st year | end of 2nd year | term prior to student teaching | end of last term |
| Significance/Rationale | initial identification with Teacher Educ. program | admission to teacher Educ. Program; take 200 level Educ. Courses | ready to student teacher | recommended for licensure |
| Teacher Educ.Requirements | Sci. 150, grade of "C" or better | Edmul 205, Edpsy 251 | Sci 395, 39; Edpsy 290, Edsec 380, Edjhm 386, Edfon 420 | Edsec 460, Edjhm 460 |
| Content Requirements (courses) | Chem 111, 112; Maths 165 | Chem 225, 231, 232; Maths 166; Phycs 120, 122 | remaining math/physical science courses | completed |
| Other requirements: standardized exams and grades | 6. ACS exam score of 22 or more. "C" or better in courses above. | ETS AP chemistry exam score of 3 or more. "C" or better in courses above. | Overall GPA of 2.5 or more. "C or better in courses above. | |
| Content Portfolio (all artifacts should include both the student work and the instructors assessment document/rubric and class averages) (minimum requirements) | 1. Final exam practice sets (PSS) from Chem 111 and 112<br>2. Final exam from Chem 111 and 112 if possible<br>3. One each computer- and noncomputer-based lab report from Chem 111 and 112<br>4. Reflective statement regarding progress in course work and continuing interest in teaching | 1. Final exams from Chem 231 and Maths 165, representative exam from Chem 232<br>2. Evidence of involvement in Chem 111 or 112 PSS sessions, or SI/tutoring activities<br>3. Chem 231/232 lab book<br>4. Reflective statement regarding progress in content area | 1. Two final exams from Chem 344, 450, 463<br>2. Laboratory report from Chem 344<br>3. Copy (such as a video tape) of demonstrations presented in Sci 395, 396 or to gen. chem. classes<br>4. Evidence of completed research or creative project including notebook and power point versions of presentations made.<br>5. Reflective statement regarding progress in physical science and mathematics | |
| Standards of importance for the presentation and evaluation of the Content Portfolio. (from Appendix C of PSB Standards Document) | 1. Atomic structure & isotopes<br>2. Structure of matter, Lewis and VSEPR methods, phase diagrams<br>3. Chemical reactions, writing and balancing<br>4. Conservation of energy and the increase in disorder, use of free energy, enthalpy and entropy | 1. Structure of matter, structure and bonding of carbon compounds.<br>2. Reactions of carbon compounds including radical, substitution and addition reactions<br>3. Interactions of energy and matter, M.O. diagrams of molecules to help explain spectroscopic and chemical properties. | 1. Structure of atoms<br>2. Structure and properties of matter<br>3. Chemical reactions<br>4. Conservation of matter and increase in disorder | |
| Evaluation (assessment) of content portfolio (2-3 person committee assigned by the Chem. Dept.) Rankings:<br>**Unsatisfactory** -disorganized approach to problem solving, numerous uncorrected content area errors.<br>**Basic** - few content errors, knowledge and concepts not integrated<br>**Proficient** - solid and integrated knowledge<br>**Distinguished** - solid and integrated knowledge with evidence of continued learning | 1. Evidence of abilities to organize and present portfolio items.<br>2. Evidence of progress in problem solving and writing skills<br>3. Evidence of use of computers to acquire and present data<br>4. Evidence of an ability to respond to oral questions such as: where do you think you made the most progress this year? Problem solving? Writing? Integrating basic principles and concepts? | 1. Evidence of abilities to organize and present portfolio items.<br>2. Evidence of progress in problem solving and writing skills<br>3. Evidence of use of computers to acquire and present data<br>4. Evidence of an ability to respond to oral questions such as: where do you think you made the most progress this year? Problem solving? Writing? Integrating basic principles and concepts? | 1. Evidence of abilities to organize and present portfolio items<br>2. Evidence of progress in problem solving and writing skills<br>3. Evidence of abilities to carry out a research project and keep detailed records<br>4. Evidence of abilities to use technology to present information<br>5. Evidence of being able to describe complex phenomena and/or processes for solving complex problems in Chem 344, 450, 463 | |

Approved July 10, 2002