

Initial Approval of Specialty Program

Recommendations from Review Panel Regarding Programs to Prepare Teachers of Physical Science (DP)

July 31, 2007

Institution: Eastern Michigan University					
Program Level	Comprehensive Group Major (# Credits)	Group Major w/ physics minor (# Credits)	Group Major w/ earth/space science minor (# Credits)	Group Major w/ biology minor (# Credits)	Group Major w/ chemistry minor (# Credits)
Elementary					
Secondary	54-55	36-37	43	39	33-34
K-12					
Source of Standards/Guidelines: Michigan State Board of Education				Pub. Date: August 8, 2002	
Program Assessment Summary/Recommendation					
<input type="checkbox"/>	Meets all standards and requirements	<input checked="" type="checkbox"/>	Not all standards and requirements are met	<input checked="" type="checkbox"/>	Insufficient documentation for program review
<input type="checkbox"/>	Approval	<input checked="" type="checkbox"/>	Program is not Approvable as Presented		
<p>Standards/requirements not met:</p> <p>Reviewers unable to confirm that some single discipline minors linked to the physical science group major covered corresponding group major physical science program standards. For example, how does the physics minor program cover the standards that are cited as covered by PHY 221, PHY 222, and PSCI 270 as these are the sole courses cited for meeting standards like mechanics, electricity, and relativity?</p> <p>The physics minor program requires PHY 223, PHY 224, and PHY 370, all of which cover the same topics as the above-mentioned courses, but require calculus.</p> <p>The same uncertainty occurred with the chemistry option in which only CHEM 121/122 or CHEM 270/271, for example, are cited as sole required coursework for meeting some standards.</p> <p>We make the assumption that it does not matter where or how many times a standard is met; just that it is met. Not indicating the parity between PHY 221/223 and PHY 222/224 was an oversight.</p>					

Group major linked to chemistry minor does not meet 36 semester hour minimum for group major programs.

As described in the proposal, and shown again below, the number of required hours in the Option #2 of the Physical Science group major adds up to 37 hours. (Note that both ESSC 110 and 111 and ASTR 205 and 315 are required for the major.) This exceeds the requirements. Form XX has been adjusted to reflect this.

Option 2: With a Chemistry teaching minor (CHMT - 24 hrs), complete the following courses,

Required Physical Science courses		37 hrs
1) PHY 221 Mechanics, Sound, and Heat	4 hrs	
2) PHY 222 Electricity and Light	4 hrs	
3) PSCI 270 Relativity, Atomic and Nuclear Physics	3 hrs	
4) PHY 372 Modern Physics Laboratory	1 hr	
5) PSCI 305 Energy and Society		3 hrs
6) PSCI 309 Thermal Science and Heat Transfer		3 hrs
7) PSCI 340 Milestones in Physics and Astronomy	3 hr	
8) CHEM 406 The Nature of Science or PHY 406 Ethical Issues in Physics	1 hr	
9) ESSC 110 The Dynamic Earth System	4 hrs	
10) ESSC 111 The Earth System Through Time	4 hrs	
11) ASTR 205 Principles of Astronomy	4 hrs	
12) ASTR 315 Observational Astronomy		3 hrs
 Additional Requirements		
1) Life Sciences course		4 hrs
BIOL 105 Introductory Biology for non-majors	4 hrs	
2) Mathematics course(s)		4-5 hrs
(MATH 119 Applied Calculus AND	3 + 2 hrs	
MATH 107 Plane Trigonometry)		
OR		
MATH 120 Calculus I	4 hrs	
 Professional Studies (in addition to the normal requirements)		
Under: Phase II Content Methods, Literacy and Technology		
PHY 325 Methods of Teaching the Physical Sciences		3 hrs

Additional information needed/action to be taken:

Reviewers were unable to determine whether candidates have early field experiences in science classrooms or the type of feedback candidates receive as they learn to teach conceptually and through investigative experiences. Please provide additional narrative and documentation that would address these comments.

Due to the structure of our university and the relationship between the College of Arts

and Sciences and the College of Education, most teaching and field experiences occur in professional studies courses, "early" only in that one may be admitted to the Teacher Preparation Program and begin these courses as a junior. Most if not all teaching experiences, then, occur outside the content area classes, with the exception of the science teaching methods course (e.g. PHY 325, CHEM 325, ESSC 347, BIOL 403). Descriptions of these courses may best be found in accrediting documentation for the COE programs, such as the CPED2S Manual (Caring Professional Educators for a Diverse and Democratic Society conceptual framework for all initial teacher preparation programs at EMU, found at www.emich.edu/coe/teach_ed/handbooks/CPEDS_manual_2007.pdf). Students who are candidates for secondary DP certification have the same field experiences through their COE courses as all other science program teacher candidates (for Integrated Science, Physics, Biology, Chemistry, and Earth Science) in, for example, their three FETE (field experience) courses. The FETE 302 and FETE 402 courses are done between admission to the Teacher Preparation Program and student teaching. The candidate spends 20-30 clock hours in an appropriate science classroom. Among the activities they do are student learning analyses, tutoring reading in the content area, etc.; they are evaluated on professional skills and behaviors by their cooperating teachers in these courses. They also get feedback, based on their reflections during the field experience, from a university instructor.

Comments:

A physical science (DP) minor is not a program option; therefore, the institution's description of this program option was not reviewed. For reference place see online standards: (http://www.michigan.gov/documents/Physical_Science_Standards_5_03_65849_7.doc).

When we began this process, the document stated: "A teacher candidate choosing to earn a secondary physical science endorsement will be prepared to teach physical science, chemistry, and physics at the secondary level. Candidates may elect to earn a group major of 36 semester credits, a group minor of 24 semester credits, or a comprehensive group major of 50 credits when earning this endorsement. Candidates who apply for the DP endorsement must pass the Michigan Test for Teacher Certification physical science test." When was this changed? Both documents have the same date of Aug. 8, 2002.

Reviewers compliment the proposed balance of coursework in the numerous physical science program options.

The institution must ensure that physical science teacher candidates have knowledge of and experience with safe science classroom resources available online through the Council of State Science Supervisors: <http://www.csss-science.org/safety.shtml>.

This is required to meet NCATE requirements for all our science programs and occurs in the science teaching methods courses (PHY 325, CHEM 325, ESSC 347, BIOL 403).

The institution is complimented for documenting that over a majority of the science faculty associated with the preparation of physical science teacher candidates is familiar with Michigan's K-12 science curriculum framework and collaborative with K-12 schools. Thirty-four of 39 faculty reported K-12 science curriculum familiarity and 22 of 39 faculty reported K-12 collaborative work).