

The Secondary Teaching Option in Biology prepares undergraduate students to earn both a B.S. in Biology and an Illinois Type 09 certificate to teach Grades 6-12 Science. The program also educates post-baccalaureates and Masters degree seeking students (MAT) that already have an undergraduate degree and may sometimes hold other teaching certificates. We are approved by the State of Illinois Board of Education (ISBE), and are nationally accredited by the National Science Teachers Association (NSTA) and National Council for Accreditation of Teacher Education (NCATE).

Our goal is to prepare highly effective science teachers skilled in managing, motivating and promoting learning of biology among diverse high school students. Most of our graduates teach in the Chicago Public School district and several suburban school districts. The program is small, and rigorous and we excel in preparing excellent science teachers. Our alumni and pre-service teachers alike express pride in being part of this program.

We use 8 key assessment tools to evaluate program effectiveness and student learning outcomes. The Assessment Plan can be accessed at the Biology Department website and Secondary Teaching portal, as well as the www.csuteachscience.org website. Each year students and instructor performance are evaluated in collaboration with the Secondary Chemistry and Physics programs. This ongoing assessment guides us in making revisions to the curriculum and other aspects of the program if needed, to ensure success and effectiveness of teacher candidates.

Over the last three years, we have a 100% graduation rate for Secondary Biology student teachers (9/9). In some cases, a second placement or additional skill development was required, and through collectively efforts by university faculty and staff and mentor high school teachers, success for all candidates was achieved.

Our teacher candidates develop solid mastery of both science and pedagogy content as demonstrated by their science GPAs that have ranged from 2.6 to 3.8 with an average of 3.0 over the past 3 years. This average is well above the requisite 2.5 GPA needed for student teaching, and also above the average GPA of all biology students. Education course GPAs have averaged nearly 4.0 over the same time period. Further demonstration of content preparedness is that approximately two thirds of our candidates passed the Illinois State Content Exam and APT tests on the first try over the last three years. After analyzing exam subarea scores, we found weaknesses for some students within the Physical Science and Earth Systems and Universe subareas of the Content Exam. Therefore, revisions have been made in the Content review class (BIOL 1092), so that it is no longer a tutorial format, and we use diagnostic assessments and collaborative teaching with Chemistry and Physics instructors. Also, more collaboration has been initiated among instructors of the CSU Earth Science course so that different sections work together to maximize student learning.

Last year (2011), we implemented an alumni survey that polls our graduates on several aspects of the program focusing on how we have prepared them to be effective science teachers. Our graduates have uniformly indicated they are very pleased with their

education and preparation, also some suggested that more and earlier classroom experiences and additional administrative support would have been helpful. Consequently, current efforts are aimed at including more classroom experiences earlier in the program, developing key high school partnerships that will last through student teaching, expanding the CSU Secondary Science alumni network and teacher induction, and finally, developing more organized information and communication (such as the websites) to assist our pre-service students.

We are pleased that many of our graduates have become science leaders in their schools. For example, over the last five years, one CSU Secondary Biology graduate was selected to mentor 'Teach for America' students during her first year. Another was promoted to Science Chair. Several have returned to CSU for summer in-service classes that help them improve their teaching and stay involved as professionals.

Key Changes made since 2005 include:

1. Coordinated training of Secondary Biology, Chemistry and Physics students to enhance broad science knowledge and improve preparedness for the more recent changes to a general Science Type 09 certification;
2. Developed three new courses for pre-service and in-service science teachers to promote hands-on and inquiry based teaching and pedagogical content knowledge;
3. Incorporate experimental design, data analysis and inquiry investigation project into curriculum;
4. Addition of safety emphasis within Methods and Student Teaching courses;
5. Emphasis on alignment of lesson planning with state and national standards including NSES and Project 2061 and most recently, new common core standards;
6. Building of partnerships with target schools to provide excellent mentoring;
7. Addition of 'Impact on Student Learning' project and assessment of teaching effectiveness to Student Teaching;
8. 1092 course revision based upon student performance and instructors' knowledge of content exam
9. Attained outside grants in collaboration with Chemistry and Physics colleagues to support science teacher preparation at CSU.