

Eastern Oregon University – Computer Science & Multimedia Studies Program

Summary of Program Vision, Goals and Strategic Objectives

Vision Statement

Eastern Oregon University's Computer Science and Multimedia (CS/MM) program's purpose is to prepare students for futures in software development in the private and public sectors, or for further study in graduate school. The program provides a thorough foundation in problem-solving skills and introduces the use of several programming languages. It also requires that students become acquainted with the process of software development from problem statement to implementation and maintenance. In particular, since the technologies used in the profession vary widely and evolve rapidly, successful preparation requires acquiring the ability to learn independently and quickly.

Objectives

The major objective of this program is to teach students how to develop solutions to problems. Problem solving may focus on software, but our graduates also need to recognize when software is not the appropriate solution. Other overall program objectives include:

- students will be adept at applying structured and object-oriented methodologies in their approaches to problem-solving
- students will demonstrate facility with multiple programming environments and also the ability to learn new programming environments
- students will design efficient, easy to use interfaces for software packages
- students will demonstrate clear understanding of the functioning of web pages

There are three concentrations in the program that have specific objectives. In addition to the above goals:

Students with the computer science concentration also will

- demonstrate understanding of basic operating system concepts
- describe the construction and communication protocols for various computer network models
- construct and maintain normalized databases

Students with the multimedia studies concentration also will

- develop an understanding of how various media (graphics, audio, video) are digitized
- demonstrate the ability to appropriately integrate digital media into multimedia titles
- develop special facility in working with some digital medium

Students with the statistical and scientific computing concentration, in addition to the objectives required for the computer science concentration, will apply numerical analysis techniques to solve statistical problems, and recognize appropriate techniques to apply in specific situations.

Current Status and Strategic Objectives of the CS/MM, Pre-engineering Program & Sciences

The CS/MM program is less than a decade old and has gained in strength through the quality of the program offerings, dedication of the faculty, and support of the ETIC state initiative. In addition to the vision and objectives stated above in terms of training graduates who can gain basic knowledge, experience and the ability to solve problems independently, the CS/MM and other science faculty understand the importance of STEM education in Oregon. The OPAS Proposal of April 7, 2008 outlined the need in Oregon for more training in Engineering and Applied Sciences:

The technology sector is widely recognized as a critical and growing component of the Oregon economy. Jobs in engineering and applied sciences in the high-tech and other industrial clusters represent some of the most attractive family wage employment opportunities in the state. This segment now employs over 83,000 people with an average wage over \$72,000, which is more than twice the average salary for Oregonians working in the private sector. There is considerable potential for growth in this employment sector: engineers and computer specialists comprise 4.2% of the workforce in Washington, and 3.6% in California, but only 2.8% of the workforce in Oregon. From its initiation, ETIC has focused on assisting the Oregon higher education system in expanding its production of technical graduates in order to meet the needs of industry and to ensure that Oregon citizens have the education to benefit from the opportunities provided by this growing sector.

Eastern Oregon University is the regional higher education institution for the eastern half of Oregon. EOU covers 10 counties the size of Pennsylvania. In addition to the immense challenges of distance, there is the factor of rural heritage to consider – there is less of a “college bound” culture in Eastern Oregon than in the more metropolitan areas of the state. The ETIC board members and colleagues in other educational institutions have been very supportive of our increasing the strength of our CS/MM and pre-engineering programs. The funding level of support has benefited increased enrollment of majors and graduates. For our part, the programs have almost matched, and sometimes exceeded the projected goals that have been stated in our proposals. The potential for accomplishing stated recruitment and retention objectives, and of having a broader impact on STEM initiatives for Eastern Oregon are strengthened by the overall picture that include:

- A growing CS/MM program – We are in the process of developing an industry advisory council and an industry needs survey this fall
- A modern research and teaching facility strengthened by a \$17 million dollar science building expansion
- Nationally recognized chemistry and biology departments as represented by grants, publications, and awards
- Twenty years experience in innovative teacher education in the area of science training for both pre-service and in-service learning. College of Education faculty have developed well known curricula in developmental inquiry and delivered groundbreaking teacher institutes such as Great Discoveries.
- Strengths in outreach as exemplified by Girls in Science which has won 5 national awards from the American Chemical Society
- Lego Robotics contest was the second largest in the state in 2007
- High School Mathematics day regularly draws hundreds of students to EOU
- The student peer-reviewed *Eastern Oregon Science Journal* received a first place award from the American Scholastic Society in 2008
- Articulation program with OSU for pre-engineering transfers
- Students excel in graduate school because of the experiential nature and low faculty-student ratio of our undergraduate programs
- Growing interdisciplinary foci in new EOU campus initiatives

Because of our small size we are thinking more holistically. Therefore, we would like to advance on the following strategic objectives:

1. Focus on development of an Industry Advisory Council for our CS/MM program, and develop partners in technical industries to advance more computer science and pre-engineering education
2. Strengthen the existing program in CS/MM
3. Strategize with partners to strengthen STEM education - developing rich materials for teachers and students, high school initiatives, and innovative teaching ideas – such as interactive remote curriculum to middle and high school students
4. Develop long term strategies to inculcate scientific thinking and analysis that take advantage of ongoing initiatives, program strengths, student research, and cultural attitudes in regional and rural areas
5. Develop partners, in addition to the IAC so that we maximize ideas, efforts and resources

EOU aspires to join with others in strengthening the interest of young people in science and technology that will make Oregon a strong global player in the areas of science, technology, and energy alternatives.