

## Capstone Experiences at South Dakota State University

Most all programs offered at SDSU require students to participate in a capstone experience. Capstone is defined as a culminating experience in which students integrate, synthesize, and apply knowledge, skills and personal, academic and professional experiences as they prepare for the transition from college.

A capstone course is generally a class where a student demonstrates all that has been learned in his or her major -- by writing and presenting a major paper, doing a major project, engaging in a research project, or participating in some type of experiential learning opportunity where they are required to demonstrate their learning through a portfolio or final report/project. It provides an opportunity to summarize, evaluate, and integrate some or all of their college experience, providing a venue to demonstrate what they have learned.

Examples of capstone experiences at SDSU include:

**Biology** majors are required to complete BIOL 494, Internship or BIOL 498, Undergraduate Research/Scholarship. Biol 498 Undergraduate research entails conducting of approved laboratory research under guidance of a faculty member, followed by analysis and presentation of the findings as a poster at the department's Fall or Spring Scholarship Event. Biol 494 Internship involves one of two tracks. Students in the mentoring track are trained in laboratory teaching and then work with Graduate Teaching Assistants in the teaching of specific laboratory courses. Students in the experiential track engage spend time in an industry or service setting working closely with a professional mentor. These students are required to submit weekly activity logs and present an overview of their experience at the department's Fall or Spring Scholarship Event

Students who major in **Agronomy** complete ABS 475/475L, Integrated Natural Resource Management & Lab. Students will understand and integrate the basic principles of land and natural resource stewardship through the use of scientific principles and the land-grant philosophy. Students will develop viable resource management plans and case study (extension scenario) solutions that evaluate the impact of the plan or solution on cultural, social, ethical, historical, and community concerns. Students will collect, review, analyze, interpret, and make recommendations according to the scientific method. Natural resource management plan recommendations will be presented by student teams to producers, community leaders, and faculty in an open, public forum.

**Entrepreneurial Studies** students are required to take ENTR 488, Entrepreneurial Studies Capstone. In this course, ES majors are required to complete and fine tune their business plan and effectively present the plan. By this time, students will be accumulating resource and have determined potential financing for their businesses. By the end of this course, students will have an investment-ready business plan and be prepared to present their plan to financiers and investors.

**Geography** majors are required to take GEOG 447, Geography of the Future. In this course, geography majors are required to use their geographical skills and knowledge to examine a relevant issue in a place or region, develop scenarios of how it may change during the next 50 years, and propose a solution, mitigation plan, or adaptation strategy. Students present preliminary findings in posters at the South Dakota State Geography Convention and their final findings at the end of the term.

Students majoring in **Music Education** and **Music Studies** complete the MUAP 483, Public Recital course. The goal of the senior recital is to combine studies in performance, theory, style, history (context), and pedagogy into a single performance project of appropriate length, design and quality. The senior capstone serves as a synthesis in music by working independently on a variety of musical problems, forming and defending value judgments about music, acquiring the tools to work with a comprehensive repertoire and understanding basic interrelationship and interdependencies among the various professions and activities which make-up the musical enterprise.

**Interdisciplinary Studies** majors are required to complete a year-long undergraduate thesis project. The thesis must explore a complex problem or phenomenon related to the student's individualized plan of study and future goals. The capstone is the project's final phase where students synthesize findings, draw conclusions and provide recommendations. Capstone culminates with the presentation of the completed written thesis as well as an oral defense before a peer panel. IS graduates list the capstone experience as a key factor in their success moving into new career and preparing for the rigors of graduate study.

**Aviation Education** students take AVIA 489, Senior Capstone in which they are required to work in teams to examine and solve problems related to global aviation, environmental concerns, aviation education, technology advances, aviation safety and security practices, labor issues and aviation economics. Students are required to apply their knowledge to teach other students about aviation related topics through a variety of outreach functions.

Students majoring in **Human Development & Family Studies** are required to successfully complete two courses as part of the senior capstone experience: HDFS 441, Professional Issues in HD&FS and HDFS 495, Practicum. The professional issues course focuses on finalizing one's

professional philosophy of practice (career-life-leader philosophy paper and presentation) which integrates one's education across courses with experience-based learning and practice through the practicum. The practicum in Child and Family Services provides students with the opportunity to utilize and implement and integrate the use of knowledge, skills and theories learned in the program.

**Electrical Engineering** students complete both EE 464, Senior Design I and EE 465, Senior Design II. In these two courses seniors develop electrical or electronic systems from conceptualization through prototype completion. The projects are typically solicited by an industry sponsor, research faculty or senior students themselves. Students work in teams of 2-5, with a faculty advisor who provides technical advice. Throughout the project students learn to present and document their work using industry best practices. The course sequence culminates in an Engineering Exposition where student teams present their projects.

Students in the **Pharmacy** program complete a variety of capstone experiences and assessments. The fourth year of the curriculum is designed for students to apply their skills and knowledge in various clinical settings during Advanced Pharmacy Practice Experiences (APPE). These experiences are followed by the Pre-NAPLEX (designed to simulate the licensure exam). Students also complete a 4<sup>th</sup> year formal seminar in which students demonstrate presentation skills, analyze studies, answer questions, and draw relevant conclusions.

## Capstone Experiences: Student Comments from Spring 2014

### **Senior Math majors – Math 401, Senior Capstone and Advanced Writing**

*“everything that a student has learned over their undergraduate career is put to use”*

*“the senior paper is the bulk of the grade for capstone and is what all math majors can look forward to doing. It is definitely needed. It gives the students the skills to research.”*

*“Capstone is highly important because it gives students the opportunity to reflect on what they have learned and how far they have come”*

*“Most importantly, I learned a great deal about how to write about mathematics in a scholarly manner.”*

### **Graduating Senior in Electrical Engineering – EE 464 and 465, Senior Design I and II**

*“The senior design project incorporated many aspects of electrical engineering such as hardware design, programming and signal integrity analysis.”*

*“the senior design course was a good learning experience in which I gained knowledge about practical situations in the workplace and how to handle them.”*

*“It was a good opportunity to utilize many different aspects of electrical engineering and combine them to create a fully functioning product.”*

### **Senior English major – ENGL 479, Capstone Course and Writing in the Discipline**

*“I had to write a professional grade research paper, analyze and compare a variety of medieval and modern texts, and present the final paper at the end of the year in oral form, which stretched both my verbal and written communication skills.”*

*“I appreciated this course because I honestly felt it represented the culmination of my SDSU experience as an English major.”*

### **Senior Entrepreneurial Studies major – ENTR 488, Entrepreneurial Capstone Experience**

*“We presented our business plans as if we were presenting to a panel of investors. Overall, the capstone experience was an effective method of applying and demonstrating the knowledge I learned.”*

*“As a result of this course, I will be better prepared to create and evaluate business ventures, which is an essential part of the fundraising process.”*