Chapter XII: CAPSTONE EXPERIENCES

Who takes it?
All seniors take a capstone course in their major.

When is it administered?
During the senior year.

What office administers it?
The faculty of the discipline.

Who originates the capstone course and review?
The faculty of the discipline.

When are results typically available?
The fall following the year in which the capstone courses are given.

From whom are the results available?
The faculty of the discipline or the division office.

What type of information is sought?
Each discipline establishes specific outcomes for that discipline.

Are the results available by division or discipline?
Yes—by discipline only.

Are the results comparable to data of other universities?
No.

Over the last two decades, capstone courses have seen improvement. Faculty have developed many approaches to capstones and have discovered numerous benefits beyond the initial expectations. Capstone courses help students to integrate the subfields, skills, and perspectives of the major. They prompt faculty discussion, which contributes to increased coherence of a major's course of study. The courses create opportunities for multiple assessments to be made of the major and liberal arts and sciences objectives by the faculty themselves. It is the faculty's direct analysis of the students' cumulative learning that makes this method of assessment so beneficial.

GOALS FOR STUDENT LEARNING

Truman seeks that its students graduate with in-depth knowledge in the major comparable to knowledge received from the best universities in the country and the world. Thus, the university emphasizes that a student's learning should be cumulative and should cover the breadth of the discipline. The graduating student is also expected to demonstrate the ability to integrate knowledge and to make interdisciplinary connections.

Skills that have been identified as critical objectives for the university include the ability to write various types of papers, to speak comfortably both in formal and impromptu presentations, to work collaboratively with fellow students, and to think critically. Assessment of the third goal, attitudes, has included varied levels of attention, but many of the majors have developed several of the following four foci:

1. Does the student demonstrate openness to more than one position and make fact/value distinctions?

2. Does the student possess positive self-esteem and practice self-evaluation?

3. What are the students' attitudes toward the university and the major?

4. Does the student demonstrate ethical and social responsibility?

SELECTED ASSIGNMENTS FROM CAPSTONE COURSES: KNOWLEDGE, SKILLS AND ATTITUDES

Strategies for senior experiences to demonstrate and build on student knowledge of the discipline range from presenting an article review to writing a formal thesis or paper, or from designing a research project to sitting for a locally-developed comprehensive exam. Independent of the capstone course, the university requires each graduating student to sit for a nationally standardized exam. Furthermore, interdisciplinary connections are encouraged through such mechanisms as selected case studies, required interdisciplinary portfolio entries, and exit interview questions that ask the students to identify connections between their major and the LSP. The university's portfolio assessment of the liberal arts and sciences is implemented through capstone courses. Faculty in the major are asked to collect the portfolio and are encouraged to add specific portfolio requests pertaining to objectives in the major.

To assess student skills such as communicating and collaborating, faculty might ask students to formally present their research to the class, to argue and defend an issue position, to sit for an oral examination, or to work in groups to solve a problem and/or conduct a research project. Many of the capstone courses also attempt to consciously assess various levels of critical thinking through the ability to apply concepts and theories of the discipline to new situations, and to analyze, synthesize, and evaluate. Other disciplines focus more generally on problem-solving ability. Case studies, literature reviews,

argumentation papers, audience analysis, canon discussions, and student self-evaluation each prove to be popular assignments that combine knowledge objectives with skills assessment.

Objectives regarding attitudes are more difficult to specify and assess than knowledge and skills, but faculty in many majors have developed a consensus on several objectives and have developed approaches to assess them. Case studies can present students with ethical dilemmas to resolve, and role-playing can be an effective means for demonstrating multiple perspectives to an issue. Students may be asked to argue for a position other than the one they hold. Many of the capstone courses provide multiple opportunities for students to self-assess. Students might be asked to identify their strengths and weaknesses during an exit interview or to evaluate the curriculum. Every student is asked to evaluate the university and the major in the university-wide Graduating Student Survey. Faculty in the major then receive the data on their majors as well as university averages during the summer Master Plan and Assessment Workshop.

CAPSTONE BENEFITS

Benefits of the capstone courses are varied, but an examination of the benefits of a specific capstone can best demonstrate some of the potential contributions capstone courses can make. Team teaching the capstone course brings opportunities several times a week for colleagues to reflect on and discuss student learning in the major. Inevitably, such discussions include references to the curriculum, specific assignments, and teaching pedagogy. Faculty have the opportunity to learn teaching strategies and discipline subfields from each other. This is a particularly good opportunity to mentor new faculty about the importance of discipline objectives, high expectations for students, and frequent faculty-student interaction. Through collegial discussions, program objectives are shared, cohesiveness increases, and improvements are planned.

VARIOUS MODELS OF CAPSTONE EXPERIENCES

Since the university granted faculty in each discipline the autonomy to interpret the capstone requirement for their major programs, a wide variety of models has evolved. Several models are presented in the following pages showing the knowledge, skills, attitudes paradigm. These various models provide a more complete description of capstone courses at Truman State University. One discipline from each division is included below. Discipline reports rotate in this *Almanac* on a yearly basis.

DISCIPLINE: Accounting

COURSE TITLE: BSAD 460 Strategic Management

CREDIT HOURS: 3

METHODS OF CONDUCTING THE SEMINAR: The seminars are taught by a single faculty member. Three different professors teach sections of the course. The seminar uses a lecture format.

KNOWLEDGE:

BROADLY EDUCATED PROBLEM SOLVERS
- Comprehensive Exam
- Case studies/simulations

Synthesis of accounting, finance, marketing, and management
Class Discussion

INTERDISCIPLINARY CONNECTIONS
Case Studies/Simulations
Discussion of Current Issues
International Strategies
Ethics/Social Responsibility

SKILLS:

WRITING
Writing-Enhanced Course
Case Writing Assignments
Writing Portfolio

SPEAKING
Group Presentation of Strategy Research Paper; or
Group Presentation and Discussion of Case Study (In Most Sections)

TEAMWORK
Group Papers and Presentations (In Most Sections)
In-Class Application/Problem-Solving Exercises

ATTITUDES:

ETHICS/SOCIAL RESPONSIBILITY
Case Studies
Class Discussion

SELF CONFIDENCE
Argumentation--Ability to State and Justify Position Effectively
Knowledge of Models Which Become Tools of Analysis

SELF ASSESSMENT
Portfolio

TYPES OF EXPERIENCES:

Students are heavily involved in collaborative projects as they study strategic issues. All of the courses require a significant amount of writing. Most of the sections require group presentations. All of the sections require teamwork.

ADDITIONAL INFORMATION:

The capstone experience helps students to develop business synthesis and evaluation skills.

DISCIPLINE: Theatre

COURSE TITLE: THEA 495 Senior Theatre Seminar

CREDIT HOURS: 1

METHODS OF CONDUCTING THE SEMINAR: Seminar format, led by individual theatre faculty on a rotational basis. One-credit course that meets as a three-credit hour course. Experiences include: senior project (oral and written components), senior theatre manifesto, résumé and/or portfolio construction, simulated job interview, assessment exam, senior exit survey, vocational interview, and numerous analysis/discussion assignments.

KNOWLEDGE:

*Class discussion
*Written analysis/discussion assignments
*Résumé/personal statement/portfolio construction
*Assessment exam
*Simulated job interview
*Senior project

SKILLS:

*WRITING

Theatre Manifestos
Personal Statements and Résumés
Abstract/Analysis papers
Senior Project

*SPEAKING (Extemporaneous)

Class Discussion
Manifesto and Professional/Ethical Issues Debates
Peer Editing/Feedback Groups for Manifestos and Résumés
Vocational Interview (interviewing a theatre professional)
Feedback/Course Evaluation Sessions

*SPEAKING (Formal)

Simulated Job Interview
Presentation of Senior Project

*COLLABORATIVE SKILLS

Class Discussion and Debates
Peer Review Groups
Simulated Job Interview—Research and Role-Playing

*CRITICAL THINKING SKILLS

+Comprehension and Application

Assessment Exam
Abstract/Analysis Papers
Senior Project

+Analysis

Abstract/Analysis Papers
Debates Over Professional/Ethical Questions
Vocational Interview—Designing Questions, Engaging Interviewee, Interpreting/Reporting Results

+Synthesis

Development of Theatre Manifesto
Simulated Job Interview—Research, Preparation, and Performance
Résumé/Portfolio
Senior Project

+Evaluation

Class Discussion and Debates
Peer Reviews of Manifestos and Résumés
Simulated Job Interview
Senior Project

ATTITUDES:

*Openness to more than one position and recognition of fact/value distinction

Manifesto Discussions
Abstract/Analysis Discussions
Vocational Interview Interpretation and Feedback

*Reflective evaluation of self

Theater Manifestos
Professional/Ethical Questions Debates
Videologs Returned to Students
Simulated Job Interview Feedback
Senior Project Feedback

*Evaluation of University and Major

Assessment Exam
Senior Survey
Course Evaluation

DISCIPLINE: Communication Disorders

COURSE TITLE: Option 1: (Clinical) CMDS 480 Clinical
Option 2: (Non-Clinical) CMDS 489 Culminating Experience in Communication Disorders

CREDIT HOURS: Option 1: 2 -1.5 credit hours for total of three hours
Option 2: 3 credit hours

METHODS OF CONDUCTING THE SEMINAR: Seminar is taught by various instructors depending upon the option taken.

KNOWLEDGE:

Option 1

Clinical Practice Skills associated with conferring with clinical supervisor and parents.

Option 2

Integrate their knowledge of speech/language pathology with skills in professional writing.

SKILLS:

Option 1
Writing
Lesson plans
Conferring with clinical supervisor and parents
Utilizing clinical materials, equipment and computer programs
Writing reports

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Option 2
Writing
Write weekly papers summarizing topic presentations given by professionals or viewed from videos

ATTITUDES:

Option 1
Ethics
Practical application of privacy requirements
Case Study
Mentor/Parent interactions

Self Confidence
Diagnostic and treatment abilities
Medical report writing

Option 2
Ethics
Implications that various topics have for society, people needing services, and service providers will be addressed

TYPES OF EXPERIENCES:

Option 1
Course requires a significant amount of writing with the various reports and follow-up data that must be filed on each client. Various debriefing sessions are conducted after each clinical interaction.

Option 2
Topics may range from Alzheimer's disease to deafness. Students will refine their writing by demonstrating weekly improvements in the areas of content, grammar, and punctuation. In addition, students will log instructor's comments and corrections onto a weekly recording form.

ADDITIONAL INFORMATION:

Option 1
Helps student to enhance their clinical skills relative to speech, language pathology.

Option 2
The course is designed to allow students to integrate their knowledge of Speech/language pathology with skills in professional writing.

DISCIPLINE: French

COURSE TITILE: French 430 French Capstone Experience

CREDIT HOURS: 2

METHODS OF CONDUCTING THE CAPSTONE EXPERIENCE: All French majors are required to develop and present their capstone experience in the final semester of their senior year. They select a supervisor from the French faculty; a yellow card and instructor's permission are required. The students consult with their faculty supervisor on project conception and then meet with the supervisor a minimum of five times throughout the semester. The students submit a written report to the faculty and formally present their projects orally in a forum of faculty and peers. An interdisciplinary project may be done in consultation with a French faculty member and faculty from outside the French Program.

The capstone experience for French majors offers four different options:

1. A major research project under the supervision of a faculty mentor;
2. A translation of a previously un-translated French text (required of students graduating with a translation minor);
3. An Education project, such as an after school program in French for K-12 students, under the supervision of a faculty member in French/Education;
4. Any other appropriate project approved by the French faculty.

The purpose of the Capstone Experience is a culmination in which the students will demonstrate skills and knowledge garnered from their own experience with the French program. The students select and

develop a linguistic, cultural, or pedagogical strand expanding their understanding of the language and culture.

KNOWLEDGE AND SKILLS:

Students demonstrate their language skills and knowledge of French in a written and oral presentation of their capstone experience. They are evaluated on their linguistic knowledge and skills as well as their understanding of their particular subject area they choose. They should be able to synthesize materials from different sources.

ATTITUDES AND TYPES OF EXPERIENCES:

Students select topics and negotiate a project that transcends their traditional boundaries with the language. They are encouraged to view problem solving from a holistic and integrative perspective.

Students present their projects in a forum that encourages multicultural expression and sensitivity.

Faculty work with students one on one. This system ensures an in-depth intellectual involvement of all of our graduating students.

Students can present a research paper, a public presentation, a workshop, prepared pedagogical materials, a translation, or other individually approved project.

DISCIPLINE: Mathematics

COURSE TITLE: No course is required though a one-hour, optional Capstone Seminar Course is available.

CREDIT HOURS: 0

NATURE OF THE EXPERIENCE: The Capstone Experience in Mathematics requires completing an independent project mentored by a faculty member. Each student will be responsible for choosing a project and a supervisor. If the supervisor approves, the student will then propose (in writing) this project to the Undergraduate Committee. The Undergraduate Committee will then decide whether the project is appropriate.

At the completion of the project, the student, with the approval of the supervisor, will present the final written report to the Undergraduate Committee. The committee will then decide whether this report is adequate. If so, the supervisor will make arrangements for the public presentation. At the completion of this presentation, the student will have completed his or her Capstone Experience and met the graduation requirement.

KNOWLEDGE:

The student should learn some Mathematics outside the classroom setting. The student should synthesize material obtained from different sources. These are assessed independently by two Mathematics faculty members who read the paper and must approve it before the student is allowed to make the oral presentation.

SKILLS:

The student should clearly communicate mathematics, orally and in writing. The written communication is assessed independently by two faculty members who read the paper and must approve the written document before the student may make the oral presentation. At least three faculty members and several students attend the oral presentation, but there is no formal assessment.

ATTITUDES:

The student should gain confidence in her or his ability to learn, synthesize, write and present substantial mathematical material derived from at least two different sources.

Not formally assessed.

TYPES OF EXPERIENCES:

Acceptable:

- The student may undertake research in collaboration with a faculty member.
- The project may be further study of an area of interest to the student. For example, someone interested in combinatorics could study, and report on, design theory.
- The project might be an application, new or old, of mathematics. For example, the student could learn about the application of linear algebra to Markov chains.
- The student could base his or her report on an article in The Mathematical Monthly.

Not acceptable or questionable:

- An unadorned computer program would be unacceptable. A nontrivial program, in conjunction with a paper explaining the mathematics involved might be acceptable.
- A summary of an article, or a book report, might be inadequate. As stated above, the student should synthesize material from different sources. The project certainly could be based on a single article or book, but at the very least, the material should be placed in an appropriate context.
- A report on the history of some mathematics might or might not be acceptable. One of the criteria above is that the student learn some mathematics (not just history). A history that demonstrates the student's mastery of the mathematical issues involved would be good.

ADDITIONAL INFORMATION:

- The student is responsible for finding a supervisor and a project, for getting the necessary approvals from the Undergraduate Committee, and of course for completing the project.
- The supervisor's role is primarily to provide guidance. He or she may help in the choice of project (e.g., by suggesting articles to look at), and may need to provide encouragement or suggestions at difficult moments. It is not intended that the supervisor should actually choose the project, or ride herd on the student. The amount of assistance needed will naturally vary, but the

project is the student's, not the supervisor's. The supervisor will, however, have to approve the student's work before it is taken to the Undergraduate Committee.

- The Undergraduate Committee's role is mainly to ensure that projects are appropriate. It is their job to disapprove of projects that don't meet the above criteria. They should not be expected to check papers for correctness.

Some Final Notes:

- The final paper should be submitted to the Undergraduate Committee *in the semester before graduation*. The main point here is that the student should complete his or her project in the first term of senior year, at the latest.

- The public presentations should be 25-50 minutes in length. Of course, the paper will be more extensive.

- The paper must adhere to the usual standards of style and format. It must be typed, and it must contain a proper list of references.

- Projects undertaken for other purposes could be used for this as well. (Projects undertaken for a class may serve as a basis, but must be considerably extended.) The paper and public presentation will still be needed, however.

- An outstanding project might also satisfy the honors requirement.

- Faculty in other disciplines can serve as supervisors.

DISCIPLINE: Agricultural Science

COURSE TITLE: AGSC 490, 491: Agriculture Practicum I and II

CREDIT HOURS: 2 each (4 total)

METHODS OF CONDUCTING THE COURSE: The teaching assignment for this course rotates among the Agricultural Science faculty; the course consists of a 1 hour lecture/discussion and a 2 hour lab for which one faculty member plays the role of Practicum Advisor. Students work collaboratively with both the Practicum Advisor and other faculty and students to plan, develop, and execute an agricultural production enterprise which may be agronomic, horticultural or animal-related. Successful completion of this class requires student team(s) to work together to solve problems by drawing on the students' collective experience and knowledge of plant science, soil science, animal science, and agricultural business and marketing.

<u>KNOWLEDGE</u> . . .

☐ . . . **of the breadth and complexity of agriculture**: In designing and executing their project, students must consider the complexity of the US agricultural system and the interaction of

its constituent parts in order to select a project for which production and marketing are suited to northeastern Missouri.

☐ . . . **of US production of food and fiber**: In order to successfully produce and market a saleable agricultural product or service, students must draw on their knowledge and experience from other agricultural classes and research experiences. They must also find, assess, and utilize current scientific information pertaining to the production of food and fiber in order to address problems that arise in the execution of their project plan.

☐ These components of knowledge are assessed in the capstone experience by evaluating the extent to which students carry out their project successfully—that is, they undertake an agronomic, horticultural, or animal-related project and see it through to completion, learning from both their successes and mistakes as they go.

SKILLS . . .

☐ . . . **in writing**: Writing is required at three levels in Agriculture Practicum I and II, with development, editing, and revision of the Strategic Plan outlining the proposed agricultural project, the Final Report produced at the end of both Fall and Spring semesters, and student self-reflection via the writing of "take-aways" in which the students consider each of the following prompts: how has working on a team evolved for you? what surprises or findings enabled you to think outside the "box" that came into the course with you? what do you consider to be the greatest overall weaknesses in your plan? what do you consider to be the greatest weakness of your business proposition? Written products are graded by the Practicum Advisor, with the Strategic Plan and Final Report documents returned for revisions as necessary.

☐ . . . **in prepared speaking**: Students regularly present to the class information pertaining to planning for or conducting the production enterprise. Each student's contribution to such presentations over the course of the semester is evaluated and affects their final grade. In the future, the Practicum class in the spring semester will culminate in a "Field Day" (Open House) at the University Farm, at which students will present the results of their project to the general public.

☐ . . . **in extemporaneous speaking**: Students regularly engage in class discussion focused on the Strategic Plan, the Final Report, and problems encountered in production or marketing of their product. Involvement in these discussions affects each student's participation score.

☐ . . . **in computing**: Use of computers for word processing, presentations, and the creation and maintenance of a webpage are all important parts of the course.

☐ . . . **in integrating knowledge**: The overriding goal and purpose for this course is to provide a senior-level experiential class in which our students are forced in the development and execution of their chosen project to utilize (and thereby integrate) much of the theoretical information they have learned since beginning our curriculum as freshmen. The Practicum Advisor encourages this integration of knowledge by prompting students to correctly identify and seek out their own solutions to problems encountered in the production and marketing process.

☐ . . . **in analysis, thinking, problem solving, management**: Problems encountered in the production of the chosen product must be analyzed and solutions proposed, requiring students, individually and collectively, to employ skills of analysis, thinking, and problem solving. In addition, students must learn to manage the time requirements of the project and learn to manage the interpersonal relationships necessary for successful completion of this team project. Successful demonstration of these skills are assessed through the in-class presentations that students make on planning or problem-solving related to the production enterprise, and through the reflective paper that each student writes at the end of the

semester, in which the student self-assesses their growth in analysis, thinking, problem solving, and management skills.

☐ . . . **in leadership and collaboration**: This class is designed to be student-directed, with the Practicum Advisor playing primarily a facilitative role. Therefore, student leadership and collaboration are critical to the success of the class. Students, in discussion with the Practicum Advisor, identify key roles and responsibilities related to their project and then identify individuals or committees to fulfill these duties. Successful demonstration of leadership and collaboration skills is assessed through the combination of the Practicum Advisor's observation and evaluation of class members and through peer evaluations completed by each class member.

ATTITUDES . . .

☐ . . . **of life-long learning**: The acquisition of an attitude or habit of life-long learning is difficult to assess. While we have no direct assessment of its acquisition in this class, course design fosters this attitude by providing a bridge between curricular knowledge acquisition and "extra-curricular" learning. This bridge comes in the form of a class where students seek out knowledge because it is necessary to successfully conduct a project that they have chosen, not just because they will be tested on their retention of information.

☐ . . . **of active participants in democracy and** . . . **of responsibility**: Because students plan and carry out the production enterprise as a team, they are encouraged to actively participate and to demonstrate responsibility by contributing fully to the project. Such involvement not only provides practice in collaboration, but also fosters an attitude of participation and responsibility that will hopefully carry over to the student's civic involvement after graduation. Cultivation of these attitudes is assessed through the end-of-the-semester peer evaluations and self-reflective papers.

TYPES OF EXPERIENCES:

As mentioned above, students plan and carry out the production and marketing of an agronomic, horticultural or animal-related product or service. Through the successful completion of this project, they engage in several types of learning experiences, including . . .

☐ . . . field trips to selected northeast Missouri farms,
☐ . . . preparation of a written Strategic Plan outlining plans for the project,
☐ . . . research and in-class presentation of technical material related to the project,
☐ . . . a Final Report describing conduct of the project and evaluating its success,
☐ . . . a Field Day at the University Farm in which students present the process and outcome of their project to faculty, other students, and members of the general public,
☐ . . . a Reflective Paper in which the student details "takeaways"—major experiences, knowledge, and attitudes that they have retained from the class.

ADDITIONAL INFORMATION:

☐ The current Agricultural Science capstone experience developed as an outcome of Quinquennial Program Review in 2002. These two new courses, created to encompass the capstone experience, are being offered for the first time on a "trial" basis in the Fall 2004 and Spring 2005 semesters.
☐ Refinement of the courses and assessment of outcomes will occur as the course continues to be taught and re-evaluated.

DISCIPLINE: Psychology

COURSE TITLE: PSYC466 Psychological Research

CREDIT HOURS: 3

METHODS OF CONDUCTING THE COURSE: Taught by individual professor in small class (10-12 students) using primarily discussion and hands-on empirical research in small teams (1-3 students).

KNOWLEDGE:
Show familiarity with the major concepts, theoretical perspectives, empirical findings, and historical trends in psychology. *How Assessed*: Tests and other assignments.

Understand basic research methods in psychology, including research design, data analysis, and interpretation. *How Assessed*: Semester-long research project.

Develop insight into behavior and mental processes. *How Assessed*: Tests and in-class discussions.

Emerge from the major with realistic ideas about how to implement their psychological knowledge, skills, and values in occupational pursuits in a variety of settings. *How Assessed*: In-class discussion, use of Career Center resources.

Understand the ethical principles of psychological research and practice, as defined by the American Psychological Association. *How Assessed*: Tests and preparation of applications to Truman's IRB.

SKILLS:
Use critical and creative thinking and the scientific approach to solve problems related to behavior and mental processes. *How Assessed*: Semester-long research project.

Apply psychological principles to personal, social, and organizational issues. *How Assessed*: Semester-long research project.

Learn to conduct meaningful psychological research, including literature review, research design, data analysis, and interpretation. *How Assessed*: Semester-long research project.

Be able to communicate effectively in a variety of formats. *How Assessed*: Research paper, research presentation to discipline faculty and peers.

ATTITUDES:
Respect and empathy for others. *How Assessed*: In-class discussion.

Appreciation of the complexity and dynamic nature of scientific knowledge. *How Assessed*: Semester-long research project, in-class discussion, tests.

TYPES OF EXPERIENCES:
The majority of class time is dedicated to the completion of an entire research project, from hypothesis formation and literature review to data collection, analysis, and interpretation. Working in small teams, students are responsible for performing any and all tasks relevant to the research process in psychology

(*e.g.*, obtaining ethical approval, recruiting volunteers, presenting and defending their research). Although the course is taught by an individual professor, other discipline colleagues are involved in the ethical review process and all are invited to the research presentations at the end of the semester. Additional course activities typically include: preparation of senior portfolios, trips to the Career Center, discussion of the senior test, and discussion of psychology's relevance to all areas of life.

ADDITIONAL INFORMATION:

Approximately 10 sections of the course are offered every year to accommodate the 110 or so seniors we graduate annually. Many projects developed in this course go on to be presented at other conferences (*e.g.*, Psi Chi and Student Research Conference). One difficulty we have is obtaining sufficient computer classroom space to accommodate end-of-year PowerPoint presentations which typically require multiple rooms for two consecutive evenings.