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THE UPPER MIDWEST REGIONAL CAPSTONE AWARD PROGRAM

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ABSTRACT: Five Upper Midwest universities—Iowa State University, Michigan State University, Michigan Technological University, the University of Wisconsin-Madison, and the University of Wisconsin-Stevens Point—all offer a capstone course or capstone sequence for senior students in forestry that results in a written paper or project report. The five universities have collaborated with private industry and public agencies to develop an award program for these capstone reports.

In this paper we describe the capstone courses taught by each of the universities and their project requirements. We summarize experience gained on the administrative and judging requirements and procedures, including those relating to costs and funding, during the first year of the competition. We also discuss the benefits of the program to students, faculty and the participating industries and agencies

INTRODUCTION

Employers representing a wide range of fields in both the private and public sector uniformly stress the need for new employees to have good skills in the areas of problem solving and critical thinking, communication and teamwork. These essential elements have been recognized for some time, and the reasons for incorporating them into an “integrated resource management” course were well stated in the *Journal of Forestry* roughly twenty-five years ago (Bentley, 1975; Lavin, 1975; Hagenstein, 1975; Gould, 1975; Beuter, 1975). Most forestry programs have some type of capstone experience in their curricula, and capstones are also incorporated into the curricula of other natural resource disciplines (Willis and Scalet, 1995). Several of these were described in journals (Straka, 1993) and in the proceedings of the forestry education conference held in Syracuse in 1994.

In the fall semester of 1996, the authors were sharing experiences about their respective capstone courses and the quality of the reports produced by the students. From that discussion emerged the idea of initiating an award program to recognize the best reports and the teams that produced them. It also seemed appropriate to include other universities in the immediate region so they were contacted to learn if they had capstone courses and whether they wished to participate. Iowa State University, Michigan State University, Michigan Technological University, the University of Wisconsin-Madison, and the University of Wisconsin-Stevens Point all have capstones and agreed to be included in the program. The University of Minnesota does not have such a course and is thus not participating in the awards program. While there was

no attempt to exclude any other regional universities, it was decided early on to keep the program relatively small so that it might be manageable.

Capstone Courses at the Five Universities

What follows is a brief description of the various capstone courses that exist among the five universities. Iowa State University’s Forestry 454—Forest Resource Case Studies, was initiated in 1975. It is a 3-credit course and is the oldest continuously taught capstone course among the schools participating in the award program. Since it has been described in detail elsewhere (Countryman, 1994, Countryman and Thomson, 1979), it will only be noted here that the course provides students with a portfolio of case study projects that have been submitted by foresters and others throughout Iowa. This portfolio provides a broad set of potential projects. While many focus on land and resource management planning, others relate to such things as problems involved in forest products manufacturing.

At Michigan Tech, the capstone consists of a three-term sequence of 2-credit courses (FW 481, 482 and 483—Integrated Forest Resource Management I, II, and III) that begins in the fall quarter and continues throughout the academic year. The first course focuses principally on resource inventory and the second on development of alternative management scenarios. The third course continues with development and analysis of efficient land allocations in response to each scenario and evaluation of landscape-level implications of each land allocation using a

geographic information system. Students work in teams of 3-5 and are assigned 80-160 acre tracts of forestland for study. Teams prepare reports based on the material covered and applied to their study property for each course. This has the advantage that the final report at the end of the year is cumulative and can incorporate improvements and correct deficiencies noted by instructors on earlier versions.

Michigan State uses the 3-credit Natural Resources Planning and Policy course (FW-FOR-PRR-RD 466) as the capstone for its forestry and wildlife majors, but enrollment is open to students in related natural resource disciplines such as fisheries, parks and recreation and resource development. The course is taught during the spring term and focuses on ecosystem-based planning and policy issues through development of a multiple-use plan and case studies. Teams usually include five students who work together to prepare a plan for a large property (10,000+ acres).

The designated capstone course at UW-Madison is Integrated Resource Management, which is currently in the process of being assigned a permanent course number. While most Forest Science majors take this course, an alternative capstone experience consisting of a Senior Thesis, is available to students who meet the requirements for admission to the Graduate School. The capstone course is 3 credits and is similar to those at other institutions in that students work in teams of 3-5 to inventory, analyze and prepare a management plan for a specific property which varies in area from 200-2,000 acres. The course is taught during the fall semester. Teams are required to conduct resource inventories, develop and analyze management alternatives and prepare and submit written plans. In addition, teams present their plans orally in a public forum where the audience consists of faculty, students, and outside professionals and landowners.

UW-Stevens Point (UW-SP) has been using its Integrated Resource Management Seminar (NRES 490) as the capstone. It, too, involves student teams and focuses on interdisciplinary natural resource planning of a small and large tract of land. NRES has been a 1-credit course but UW-SP is currently in the process of increasing the credits to two. This expanded format will provide time for a richer capstone experience and a more in-depth planning project.

Administration of the Upper Midwest Capstone Awards Program.

Responsibility for administering the program rotates in alphabetical order among the member universities of the Upper Midwest Capstone Awards Program on a two-year basis. During the time that a University runs the program, it is responsible for recruiting the industrial sponsors of the program, selecting judges and coordinating the judging of the capstone reports.

The judging panel is comprised of seven members. Three represent the industries that have funded the program for the year, two represent public agencies, and two represent universities in the program. Each judge serves for two years and the terms are staggered so that at least three judges remain from the previous year in order to provide continuity and "institutional memory." In order to smooth the transition from one university to the next, during the year prior to the change in one administrative responsibility, one judge is selected from the university that will next administer the program. Michigan Tech administered the program in 1997 and 1998 and Jeff Stier, representing the University of Wisconsin-Madison, served on the panel of judges. The University of Wisconsin-Madison will administer the program from 1998 to 2000.

Three industry sponsors are asked to support the program for two years by providing \$250 per year for the awards and also to provide a judge for two years. The sponsorships are also staggered so that continuity is maintained. Michigan Tech's Pete Cattelino, the advancement officer for the School of Forestry and Wood Products, made the initial contacts with industry representatives on behalf of the Upper Midwest Capstone Awards Program.

Each fall term of the academic year, the program administrator recruits new judges and industry sponsors and disseminates the announcement of the award program (Appendix A). They also send a reminder letter to each of the institutions participating in the program including any new information that is necessary. Throughout the academic year each University runs its capstone course or sequence as it has always done. Faculty then select a maximum of two papers or reports to represent their school and submit them for judging. In May seven copies of each report (one for each of the judges) and a brief cover sheet describing the objective(s) of the report is sent to the program coordinator. The coordinator packages sets of the reports and mails them to the judges. Judges rank the papers and write comments which are then forwarded to the coordinator by the third week of June. The coordinator tabulates rankings, collates comments and faxes this information to the judges by the end of June. In early July the judges and the coordinator hold a conference call to discuss the papers and select the top two papers. The coordinator is responsible for mailing the award checks to the students.

The program is relatively inexpensive to conduct. The awards total \$750 per year (3 industry sponsors provide \$250 each). The administering university spends about \$400 per year on administrative costs, primarily on mailing the reports to the judges and on the conference call. Since administration is rotated among the five schools, each university only pays these costs for two years within a ten-year cycle.

Experience the First Year

The award program was held for the first time in the 1996-97 academic year. Four of the five schools participating in the program submitted capstone reports. UW-Stevens Point did not because, as described above, their capstone course is currently undergoing reformulation. Each school was permitted to submit two reports but Michigan State submitted just one; hence the coordinator was faced with disseminating copies of seven reports to each of the seven judges. Despite some tricky logistics, the process went smoothly, and judging was completed in July, 1997.

The panel of judges was charged with selecting a first and second place winner. Prior to the conference call among the judges, each judge ranked the reports and these rankings were shared anonymously by the coordinator with the other judges. How hard was the judging? Well, it certainly wasn't easy. There is always an element of "apples and oranges" in such an exercise and this one was no exception. In addition to the capstone courses having slightly different objectives and emphases, teams ranged in size from 3 to 5 students and the properties on which they worked from 80-18,000 acres. Yet, despite these differences and the diversity within the panel of seven judges, there was strong, although not unanimous agreement about which report was viewed as the best. The first place award of \$500 went to a 5-person team from Iowa State.

There was less agreement, however, about the relative rankings of the remaining reports. The various judges brought different perspectives and considerable discussion and negotiation was needed to select the second place winner. In the end the judges found two reports to be of similar quality and declared a tie for second place between a team from Michigan State and one from Michigan Tech. The two teams split the \$250 cash award. This significantly reduced the cash award per team member but the judges felt it was most important to recognize the efforts of the students and that the amount of money students received was less critical to the success of the program.

After the judging was completed, the judges suggested changes that they believed might help make the process easier in subsequent years. These have been incorporated into the guidelines for the competition. Most of these changes reflected attempts to standardize understanding of the context within which the reports are generated. For example, judges thought that it would be helpful to know what proportion of the course grade was determined by the capstone report, how many credits the course(s) were, and how many and what kind of data were provided to the teams versus their having to generate original data. Initially, the guidelines for the competition called for reports to be judged according to the objectives and grading criteria for each of the respective capstone courses. However, given the diversity among the five schools, the committee elected to develop explicit evaluation criteria for purposes of the competition.

What Benefits Do Participants See from the Award Program?

Faculty at the participating institutions see it as a way to help motivate students to do their best work and as a means of gaining some degree of recognition for their best students. Faculty whose students produce winning reports can also take satisfaction from their teaching efforts and all faculty can gain a better understanding of what their colleagues around the region are doing. The program thus functions as a mini-forum for exchanging ideas about what does and doesn't work and why different schools have organized their capstone experiences in the ways they have.

Some students are motivated to try for both the recognition and the cash the awards bring. While the amount of the award is not very substantial when split among members of the winning teams, students are always short of funds and some respond positively to economic incentives. Others tend to be more interested in the competitive challenge than in the potential financial payoff. And yet others recognize that winning such an award can be a very positive thing to include on one's resume when searching for that first employment opportunity. Students are quick to realize that the public agency and industry judges are apt to remember the names of the authors of what they considered the best reports, and that this could be an advantage when competing with others for job opportunities.

The forestry professionals who judge the reports get to "take a peek" into the academic world, and to gain an understanding of what is being taught at the various forestry schools and how. They are also able to determine, at least to an extent, how well students assimilate and develop the knowledge and skills that will be so important in the professional world. Several industry judges also distribute the reports among their own employees

with two purposes in mind. First, the additional readers improve the quality of the judging. Second, many firms now provide forest management assistance to NIPF landowners and the high quality of the reports has helped the companies improve their own landowner reports.

The award program provides the public agency judges, and perhaps more importantly, the companies sponsoring the awards, an opportunity to identify some of the best and brightest students, students who will soon be entering the workforce. Hence, participation in the program can be viewed as a way to identify potential future employees. However, lest we paint too mercenary a picture, we do want to note that industry sponsorship has been very easy to gain and the company representatives have been genuinely and enthusiastically interested in encouraging and recognizing excellence among students.

SUMMARY AND CONCLUSIONS

While it is always dangerous to generalize from a sample size of one, our experience with the first year of the award program has been very positive. Industry and public agency professionals were delighted to be asked to participate and did so enthusiastically. Funding has been no problem. While there was great diversity among the reports and the panel of judges, the judging went relatively smoothly and subsequent refinement of the evaluation criteria should make it somewhat easier in the future. Since the program was not initiated until late 1996, students at some schools were well into or had already completed their capstone projects and the award program probably had little effect on motivating those teams. However, this year students were made aware of the program at the beginning of the fall semester and it did seem to encourage them to work harder on their reports.

Considering the ease with which the award program was developed and administered, we would encourage schools in other regions to consider initiating a similar program. We would suggest, however, that schools might want to control some of the variability among capstone reports by working with other schools that have similar characteristics in terms of land ownership patterns, forest types and capstone requirements. If other regional award programs were to become established, some day there might even be a national award program, perhaps coordinated by the Society of American Foresters or one of its working groups. As Arlo Guthrie suggests in "Alice's Restaurant," if we can get a critical mass of three or more programs established, we just might have the beginning of a movement!

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Appendix A: Announcement for the 1997-98 Upper Midwest Capstone Award Program

AWARD PROGRAM FOR SENIOR CAPSTONE COURSES AND SEQUENCES

Purpose:

To recognize excellence among senior forestry students in the Upper Midwest (Iowa, Michigan and Wisconsin) by evaluating their integrated knowledge as presented in senior capstone course or sequence projects. Awards will be presented to the two best student capstone reports.

Description:

Iowa State, Michigan State, Michigan Tech, UW-Madison and UW-Stevens Point all have capstone course or sequences that require senior students to synthesize their knowledge of natural resources while solving a forestry problem. In part this has been driven by a desire of forest industry and public agency critiques of forestry education. This award will recognize student excellence in capstone courses and sequences.

Each university will submit a maximum of two papers to the judging committee as well as a summary of the objective of each paper. At the end of the academic year a committee of three industry representatives, one from each sponsoring company, two university faculty, rotating among the universities, and two public agency representatives will select the first and second place reports. Judging will be based on the overall quality of the report as well as the match to the stated objective of the paper. The first place report will receive a \$500 award and the second place report will receive a \$250 award.

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