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# Teaching Modular Courses in Agriculture

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Agriculture Courses integrate a broad spectrum of disciplines and are of the greatest benefit to students when a balanced perspective of available knowledge is presented. Recently, many factors have combined to endanger this traditional instructional approach. Enrollments in colleges of agriculture have declined. For example, enrollment in the College of Agriculture at New Mexico State University has declined 45% since 1977. Horticulture and agronomy student numbers mirror this decline. Declining enrollment reduces resources allocated to agricultural teaching programs. In fact, college FTE has declined 26% since 1977. This reduction has been accomplished by not replacing retiring faculty. Reduction in the teaching pool diminishes flexibility in course offerings. Furthermore, credibility may be threatened when a broad course array is taught by few professors.

When a faculty member lacks the full complement of academic strengths and experiences, a sense of unease pervades while teaching in the deficient aspects of the course. This can be obviated by allowing faculty to teach only the areas of their respective competence in modular 1-credit courses. This has been successful in agricultural economics and agricultural business courses (Beck 1982; Lindahl and Nelson 1982).

## Experiences

This paper discusses our recent experiences in developing modular courses in an attempt to utilize more faculty with narrow specific assignments. The department developed two minicourses in response to perceived student's needs, and in an effort to more efficiently utilize faculty expertise. The restructured courses include Floriculture, a 3 credit course with a laboratory and Research Methods in Plant Science, 1-3 credit (credit option by student) course.

The Floriculture course was reformed into 4, 1-credit modules consisting of 3 lectures and one 2 hr.

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laboratory per week. It was renamed Greenhouses: with each unit subtitled respectively, Structure, Environments, Nursery and Bedding Plants, and Floriculture. The one-credit courses were taught sequentially for about one month each over the semester.

The Research Methods in Plant Science (3 credits) was redesigned and retitled Research Orientation and Perspectives. It was divided into three consecutive 1 credit modules. The first 5 week course, entitled Research Proposals, dealt with developing a hypothesis, creative thought and writing techniques for the biological sciences. The second unit (5 weeks), Results Presentation, covered oral communication skills, organization of data for visual aid presentation. The final unit (5 weeks), Results and Interpretation, dealt with sources of literature and the interpretation of research findings.

For both of these courses, one professor was officially assigned to teach each 1-credit unit. Students seemed to not only accept the rigors of the divided approach, but also preferred the modular course format. They understood each course was only 4-5 weeks in length. Furthermore, they accepted different instructors for modular courses, whereas they were adamantly opposed to more than one professor teaching one 3-credit course, which was attempted in the research methods course.

## Advantages

There are many advantages to modular courses. The most obvious is it provides a mechanism to utilize the strengths of faculty resulting in a more credible, integrated learning opportunity for the students. The modular approach also enables the departmental administration to assign faculty official credit for participation. Traditionally, the instructor of record gets full credit for a course. Guest lecturers or even team teachers get no credit for their efforts. With a modular approach, the distribution of credit is more equitable even though instructors may not get full credit for their informal contribution to the team effort. More administrators are moving toward greater accountability for the teaching faculty. Official

assignment of FTE can avoid potential difficulties hindering faculty working together in cooperative teaching efforts. Administratively, the extractions of each professor could be budgeted by increasing the FTE allocated from 10% to 13%. Course preparation time would need budgeting.

In order for a modular course series to be successful, the teaching faculty must carefully plan and assign the topics. Nevertheless, some repetition occurs and material may be unintentionally omitted. This can be minimized by having all professors of the "team" present at each lecture. While, redundancy for reinforcement can be a useful teaching tool, it is easier to determine what is worth repeating if all professors are present. After the second or third offering, it becomes less critical for regular participation of all the team. However, the camaraderie and synergism which can occur with more than one professor in the classroom, committed to the topic *de jour*, is appreciated by the students. Regardless of the level of team participation, it is important for the instructor of record to keep subsequent professors up to date and informed about special class needs or interests.

Student preparation is crucial to the success of the course. During the first class meeting, the organization and course strategy must be made clear to the students. It should be emphasized that the student has only 4-5 weeks, to demonstrate performance; not 15 weeks. Essentially, the student cannot afford to slacken his or her efforts and count on making up the lost effort. A final grade for each module is assigned every 4-5 weeks.

While the students have to be more responsible and timely, they do benefit. Expectation of each professor is high. Furthermore, the short burst of activity with each modular course also serves to enhance learning. Since they are exposed to different faculty, they are also exposed to different teaching styles and approaches, backgrounds, preparations and applications of subject matter. In fact, professors may differ philosophically and expose the students not only to alternative techniques, but also lively repartee. This cross-fertility can be a major asset in the instructional process.

### Disadvantages

Modular course offerings are not without disadvantages. Students react to their perceived high workload in approximate proportion to the number of faculty members involved. It is difficult to avoid gaps, and certainly it is more difficult to fully integrate the course content. This is especially true of courses with laboratories or field trips. In one laboratory all the perspectives may not be covered. For example, in a greenhouse structure course, a field trip exposes students not only to greenhouse structures but also to environmental control components and to the plants being produced. While three different foci are possible, the one primary focus is probable. Furthermore, some

of the efficiencies and spontaneity of modular teaching are lost if the same class is taken to the same greenhouse by three or four instructors. Team effort and team teaching in laboratories can minimize these problems.

Another possible disadvantage for modular courses is the necessity for prerequisites. Ideally the first module should serve as a building block (prerequisite) for subsequent ones. This limits the potential clientele for subsequent courses to only those who have taken the first ones. One solution was tried in the Research and Orientation course. Students could "test out" of the first course by submitting a research proposal approved by the major advisor. The approach increased enrollment for the subsequent modules, but did reduce the grouping of the class because of the loss of common experience. Prerequisites are constraining, but with prior planning they are not a major obstacle.

The most significant structural restriction has been the grading process. The grades are assigned to each discreet unit throughout the semester. In one case a student lost credit after having completed an early module by fully withdrawing from the University. Under our present structure, someone must remind the system that the student did complete the early modules course without completing the entire semester. Therefore, credit should be granted. While other issues can probably be resolved through consultation among the participating instructional team and students, this issue requires changes in the administrative responsiveness.

The use of discreet modular courses has been an effective way to distribute faculty workload and — in a way to achieve enhanced learning. It also maintains the integrity of the curriculum course array, and it helps administrators maintain accountability.

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