DEPARTMENT OF AGRICULTURAL EDUCATION
UNIVERSITY OF ARIZONA
Tucson, Arizona

Academic Program
And
Cooperative State Research, Education, and Extension Service
Review

Spring 2001

SELF STUDY DOCUMENT
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A. Program Description and Goals

The Department of Agricultural Education, a unit in the College of Agriculture and Life Sciences (CALS), contributes to the College’s unique functional role as a leader in the University’s land-grant mission by providing an array of programs in formal undergraduate and graduate instruction, research and service to enable the people of Arizona, the nation and beyond to improve the quality of their lives. The following are the Department’s Vision, Mission and Credo statements that serve as the basis for our programmatic goals and efforts:

Vision

We engage the future by honoring our past and continuously improving through innovation in agricultural and applied science education and technology.

Mission

The primary mission of the Department is education focusing on integration, application and dissemination of knowledge in the agricultural and applied sciences.

We accomplish this by

- Providing undergraduate and graduate curricula in agricultural teacher education, and interdisciplinary agricultural technology management.
- Conducting educational research
- Providing professional improvement opportunities and instructional support for non-formal educators, and for faculty and administrators in the K through post-secondary education continuum.

Our Credo

We are student centered and value:

- Quality teaching and advising
- High standards of professionalism, performance and practice
- A positive learning environment for students, staff and faculty
- Continuous personal development for all faculty and staff
- Teamwork
- Open communication
- Mutual respect

The strength of the Department is firmly grounded in its nationally and internationally recognized faculty who in a positive and proactive manner are committed to educational excellence and to addressing the challenges and opportunities presented by the current climate of change within the College, the University, the nation and the world. We are firmly committed to the mission of the University and College, which are as follows:

University Mission Statement

The University of Arizona, a public, land-grant, research institution, is dedicated to preparing students for an increasingly diverse and technological world, and to improving
the quality of life for the people of Arizona and the Nation. The University provides distinguished undergraduate, graduate and professional education; excels in basic and applied research, and creative achievement; and integrates these activities and achievements of regional, national and international significance into everyday life.

**College Mission Statement**

The College of Agriculture and Life Sciences stimulates learning through exploration and discovery to enhance agriculture, the environment, our natural resource base, family and youth well-being and the development of local communities. We accomplish this mission by integration, dissemination, and application of knowledge in the agricultural and life sciences.

The Department’s priorities emphasize our faculty’s commitment to invigorate our program’s teaching, research and outreach agendas to more closely align with the College of Agriculture and Life Sciences and the University missions, education, research and outreach focuses are ongoing Department priorities. Our vision is to have the citizens of Arizona see the programs of Agricultural Education as an extension of the resources, experiences, and expertise found in the University, College and the Department.

**B. Program History (Since last review)**

Internal and external reviews of the Department were last conducted during the Spring and Fall semesters 1991. At that time the Department consisted of Dr. Roger T. Huber, Head, Dr. Phillip R. Zurbrick, Professor, Dr. David E. Cox, Associate Professor, and Dr. Glen Miller, Assistant Professor. At that point in time, the Department was embarking on new directions and new ways to contribute to the mission of the College and the University. As the Department worked to respond to the recommendations in that review, steps were taken that have brought us to the current status of the Department. The exemplary support of CALS has been fundamental to this development.

**Internal Review**

The internal review committee made four recommendations. The most urgent recommendation was the filling of a vacant position in the Department. The review recommended a national search for an individual with a potential to develop an active and professionally viable research program. Further, this person needed to have a strong commitment to vocational education though not necessarily from an agricultural education background.

The College of Agriculture approved a new hire and Dr. John F. (Jack) Elliot was hired in 1992. Since that review, Dr. Zurbrick retired and Dr. Cox was appointed Associate Dean for Academic Programs for the College of Agriculture, now CALS. Dr. Billye Foster, Dr. Nancy Huber, Mr. Bill Hanekamp, Dr. James Knight and Dr. Edward Franklin have also now been added to the faculty. Dr. Roger Huber, Head, retires effective June 30, 2001 and Dr. James Knight assumes the position of Department Head on July 1, 2001.

The second recommendation from the internal review committee was the merger of the Computer Applications Group (CAG) and the Agricultural Science Communication as a springboard for designing a vision for the future of their programs. This recommendation
proposed that the Department take over the responsibility of all introductory microcomputer instruction in the college. This recommendation was not compatible with the nature or the administration of the units that had been temporarily combined. Thus, these units were later moved to other or independent administrative units.

The third recommendation was that the Department should evaluate the curriculum for future vocational agriculture teachers (now referred to as agricultural education teachers). They recommended that the credits devoted to pedagogy be reduced and more depth in content areas be provided. Several factors affected the recommendation. The Arizona Board of Regents asked that all undergraduate majors in Arizona Universities require no more than 120 credit hours. At roughly the same time, the University of Arizona increased the undergraduate general education requirements. This led to a new distribution of required units within the College and the Department. Currently, the Major in Agricultural Education consists of 66 units in general education including 21 units of basic skills and proficiencies and 45 units in study areas. The entire general education component is highly science oriented to the extent that most graduates in agricultural education qualify for certification in agricultural education and general science. The Agriculture and Education component of the degree consists of 54 credit hours including 28 hours of required agricultural sciences and 26 hours of professional education (pedagogy) courses. The committee also asked about the role of the proposed revision in the General Agriculture major in the Departments undergraduate program. The abolishment of the General Agriculture Degree and the establishment of the Agricultural Technology Management Degree became a reality in 1992. The new degree developed under the leadership of Dr. Roger Huber, Head, offered a strong science base and the ability to customize the degree to focus on turf grass management, ornamental landscape/horticulture management, field crop production and management, or information systems. This degree has filled an important void in the College. The actual core of the courses taken by majors in Agricultural Technology Management is the same as for those students majoring in Agricultural Education. Therefore, beginning in 2000 the department began offering one major (Agricultural Technology Management and Education) with two options (Agricultural Technology Management and Agricultural Education).

The fourth and final recommendation of the Internal Committee was an effort to revise the high school vocational agriculture curriculum and begin to update all teaching materials. A major revision to the high school curriculum was accomplished under the leadership of Dr. Elliot. A new curriculum called Applied Biological Systems (ABS) was developed and with support from the University of Arizona Science and Mathematics Education Center (SAMEC) received approval from the Arizona Board of Regents to meet University admission requirements for all Arizona Universities. Specifically, Applied Biological Systems (ABS) (Arizona Department of Education level II curriculum) is an acceptable laboratory-based Biology course. Agriscience (based on the Arizona Department of Education level III Agricultural Business Management competencies) is an acceptable laboratory-based integrated science course for ½ credit. Agriscience II (based on the ADE level III Agricultural Business Management competencies) is an acceptable laboratory-based integrated science course for ½ credit.

In addition to curriculum changes, numerous Departmental publications such as student reference units and teacher guides have been updated and several new publications have been developed. Professional development activities have accompanied the development of new curricula to insure the proper implementation and interpretation of the new materials.
External Review

The last external review of the Department was performed on September 25-27, 1991. The review panel structured their report by Instructional Programs and reported strengths and concerns. The effort to address their concerns is reported by the same areas used in 1991.

Undergraduate Teacher Education

The department has strengthened the mathematics requirements in the Agricultural Education degree as suggested by the review. In 1991 only three (3) units were required in the undergraduate teacher education program and today students are required to complete math through college algebra and a statistics course.

Much effort has been made to market the program to improve enrollment and to increase awareness of the program in the College of Agriculture and Life Sciences and the University community. This has been accomplished through the effort of the faculty to serve on important committees at the College and University level as well as an aggressive public awareness program through local secondary schools.

The Department has carefully selected course-work from other departments to benefit graduates in Agricultural Education and Agricultural Technology Management. The faculty members are recognized experts and are frequently sought after by other departments and by other educational agencies.

The curriculum in the Department has been strengthened in the sciences and dual certification in Agricultural Education and Secondary Science Education is now possible. Practical laboratory experience is unfortunately still on the decline. Many support courses that had a hands on component have ended with the retirement of key faculty members. The Faculty in the Department is continuously looking for undergraduate course work that will give our student majors practical laboratory experiences.

The connection between agricultural science and agricultural mechanization and technology still needs improvement. The crosswalk between agricultural mechanics competencies and science competencies needs to be addressed.

Teacher competencies have been updated and plans are under way to formalize student input and feedback into professional competencies through an assessment process. Graduates of the program will be routinely asked for input on the competencies. The agribusiness component of the undergraduate curriculum has been strengthened with the addition of AGTM 380.

Facilities and space are still an issue in the department but they are greatly improved. Room 230 in Forbes has been modernized and contains video capture and data projection equipment. Offices have been modernized and carpeted and adjustments have been made to make the space available more useable. While too small to meet the need, a modern, well-equipped computer lab has been developed and serves the department efficiently. However, this presents an on-going issue of keeping up to date.
Agricultural Mechanics

The 1991 external review team raised the classic concern of the program keeping pace with changes in the industry when it suggested that the issue was not one of movement, but one of speed. While modernization of skills and the equipment needed to provide those skills have progressed, the cost of modernization has continually restricted the ability of the Department to keep up with change. Effort has been made to be sure that competencies taught are transferable to modern equipment and that industry partnerships provide critical equipment at critical times.

Safety concerns resulting from small facilities still exist. The addition of classroom space has helped the situation, but square feet per student in workspace are inadequate. Students are crowded and have inadequate workspace.

Additional help for agricultural mechanics instruction has improved faculty time. Four courses in agricultural mechanics are currently offered.

General Agriculture

Agricultural Technology Management has replaced the general agriculture component of the program. This innovative degree effectively addressed all of the concerns voiced about the General Agricultural Degree.

Agricultural Communications

The agricultural communications component of the program ended soon after the external review. However, with the Agricultural Technology Management option of Information Systems, some students still can and do pursue this area of interest.

Graduate and Outreach Programs

Teacher concerns with the modernization of curriculum have been and continue to be addressed. Web links have made access to curriculum on the web available to Arizona teachers. The amount of technical agriculture offered to teachers has been increased through in-service education and summer school offerings. A systematic outreach plan has not been developed.

International and Extension Education

The international and extension education component of the program ended soon after the external review. However, efforts by the Department to be active in the International arena continue. Several faculty members have traveled internationally and have been or are now involved in projects in Russia, Namibia, and Vietnam. Two faculty members have served and one is serving as an officer in the Association for International Agricultural and Extension Educators (AIAEE). The Department is currently working on the development of a project with the World Bank and with Vietnam. The Namibia memorandum of agreement was approved in November 2000.
Research

Addition of new faculty has greatly strengthened the research program in Agricultural Education and Agricultural Technology Management. Theory and methodology have been improved and graduate course work in research and research methods has been doubled. The level of extramural funding has essentially doubled over the past five years to the present level of $334,674 (see Table 7 page 31).

Service Programs

The Departmental efforts in service to agricultural education, career and technical education and agricultural technology management constituents have been steadily increasing since the last review. However, the formalized and funded service activities in Agricultural Communications, Extension/Agricultural Computer Support Programs, and Rural Safety and Health have been moved to other administrative units.

C. Overview of the Program’s Academic Quality

With the addition of new faculty members over the past few years, the strength of the academic programs provided by the Department has been significantly enhanced. The local, national, and international reputation of the program has been steadily growing and has produced some unique opportunities and recognition for the Department. For example the Department received the 1995 Executive Citation from the Arizona Vocational Association in recognition of the Department’s proactive efforts in addressing the integration of science into vocational education. More recently, the Department received the “Meritorious Departmental Achievement in Instruction” award for 2000-2001 from the University. While the Department is relatively small by University standards, the quality of its efforts is now being recognized across the campus. Nearly every faculty member in the Department has received recognition for teaching excellence and that plays a major role in how we are perceived in the College, University, and across the state, nation and the world.

Full-time faculty members teach all of the courses taught in the Department and the evaluation results of those efforts reflect a highly positive response from the people whom they serve. The courses being taught serve the majors but a number of the courses serve far larger populations for the College and University. The student credit hours generated have been rising as well as the number of majors in the Department. At the same time, the dollars generated in extramural funding has been rising steadily and outreach efforts have also been increasing in scope and breadth.

The teacher preparation portion of the Department’s efforts has been so successful that others in teacher education at the University and other universities are seeking our expertise in this area. Our process for preparing teachers and for conducting an induction program for beginning teachers are being lauded as models for others to follow. With several of our faculty members serving as consultants to education and industry, the reputation of our Department, College and University are being impacted in a very positive way.

At the heart of the entire academic program in the Department are the nationally and internationally recognized faculty members who have unique styles, interests and strengths but have an uncommonly unified philosophy based on service to constituents. This is
reflected in the recognition of the faculty for their role in advising students and their involvement with student and professional organizations.

In the future the Department will be working to improve the scope, breadth and depth of its research efforts. This will involve a movement to secure additional help with the outreach efforts of the department and additional financial support. Thus, additional time and resources for faculty members to do more and better research will be provided. In addition, the Department will be reinvesting itself in recruitment efforts. While the Department has been gaining more majors, the profession is still faced with a significant shortage of qualified teachers, not only in Arizona but also across the U.S. By intensifying and extending our recruitment efforts, we will be positioned to help with the shortage issue. Programs that serve as benchmark institutions for the University of Arizona include:

- The Ohio State University
- Texas A&M University
- Iowa State University
- Pennsylvania State University
- The University of Florida

It should be noted that all of these University programs offer doctoral degrees and include other components and majors not offered here. In terms of programs without a doctoral degree, the University of Arizona was ranked as the top program in the country by an opinion study conducted in Agricultural Education (1993). Since the 1993 study, it is worth noting that the Department has grown and made significant improvements in the last eight years.

D. Faculty

Faculty’s Overall Strengths and Weaknesses

The vision statement for the Department says “we engage the future by honoring the past and continuously improving through innovation in agricultural and applied science and technology.” There is a rich traditional focus in the department on the preparation of agriculture science teachers. More recently, the technology management focus has been added to keep up with the changing nature of the industry. Faculty members also participate in developing innovative educators working overseas or in non-classroom settings. The faculty’s greatest strength is in the absolute commitment to agricultural educators and FFA underscored with an emphasis on service and outreach. The flip side of this presents a challenge in that the department may be perceived as somewhat insulated from the rest of the university community. Within CALS for example, there is limited communication between Agricultural Education faculty and 4-H specialists and marginal focus within the Department for preparation and support of Extension agents. The collective view of the future of the Department includes continued emphasis on meeting the needs of agricultural education teachers in Arizona, expansion of the technology management focus, and development of an Interdisciplinary Doctoral Program (IDP) collaboratively with other teacher preparation units at the University of Arizona.

Nature and Breadth of Faculty Research and Other Scholarly Contributions

Faculty interests include mainstream issues for Agricultural Education such as teaching effectiveness, student assessment, women in agricultural education, understanding
agricultural and environmental issues, agricultural literacy, and safety issues in agricultural mechanics such as hearing protection. There is also work going on in the areas of leadership education, and technical agricultural issues such as insect population ecology and pest management control. Further, there are activities related to international issues.

Five of the eight faculty members come to the department from other disciplines, which contribute to a diverse palette of research and scholarship. While the bulk of the Agricultural Education scholarly endeavor focuses on professional development of teachers along with classroom and curriculum concerns, an area of interest that is gaining momentum is women in Agricultural Education.

**Distribution of Full-Time and Part-Time Faculty Including TA’s**

Although Adjunct Faculty members have contributed meaningfully to the department in the past, there are no part-time faculty employed by the Department at this time. However, a part-time position has been approved to hire an adjunct person to teach AED-615, Research Methods for Fall of 2001. Once again, the College has stepped up to assist us in meeting this need. In any given semester, there are at least two and as many as four Teaching Assistants supporting faculty endeavors. Since most TAs come to the department with some teaching experience, no formal training beyond the University-sponsored teaching workshops is offered. However, these graduate students receive abundant one-on-one support and mentoring.

**Professional Participation**

Core faculty are very active in professional organizations related to agricultural education teaching and research as well as international agriculture as evidenced by numerous board memberships, editorships, and service awards which may be found in their Curriculum Vitae (Attachment 1). In addition, all faculty and several graduate students participate in leadership education groups nationally. At the University of Arizona, faculty participation within the college and across the campus is varied and prolific – from diversity issues to integrated science education, and from post-tenure review to institutional transformation.

**Faculty Potential To Respond To Change Etc.**

The core faculty has transitioned easily from the historical focus on vocational agriculture to that of preparing students to be effective agricultural science teachers. Two initiatives are seen as cutting edge in the field – research into the role of women in agricultural education and the exploration of a possible collaborative doctoral program. The core faculty is very close knit and committed to professional excellence while supportive of the faculty in the Department whose diverse interests contribute to the breadth of teaching and learning opportunities offered students.

**Collective View of the Program’s Future**

There is agreement among the faculty that the past several years under the guidance of a Department Head from outside the field has been a time of growth and expansion. The future of the unit rests with the faculty’s ability to maintain the core focus while continuing to be open to broadening the scope to meet the needs of the students enrolled.
E. Undergraduate Program

Program Offerings

The Department offers a degree in Agricultural Technology Management and Education (AGTE) with two options for the undergraduate majors in the department. The options are Agricultural Education-Teaching and Agricultural Technology Management. The basic courses required for each major are essentially the same during the first two years of the program. As the majors move towards the completion of their degree, they move into their respective areas of specialization. The following tables depict the student credit hours generated and the number of declared majors by academic program for the past five years:

**TABLE 1**
Student Credit Hours by Academic Year
1995-1999

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A ED</td>
<td>801</td>
<td>856</td>
<td>1193</td>
<td>1232</td>
<td>1477</td>
</tr>
<tr>
<td>AGTM</td>
<td>480</td>
<td>466</td>
<td>722</td>
<td>734</td>
<td>696</td>
</tr>
<tr>
<td>Total</td>
<td>1281</td>
<td>1322</td>
<td>1915</td>
<td>1966</td>
<td>2173</td>
</tr>
</tbody>
</table>

**TABLE 2**
Undergraduate Student Majors
Fall 95-Spring 2000

<table>
<thead>
<tr>
<th>Major</th>
<th>Fall 95</th>
<th>Sp 96</th>
<th>Fall 96</th>
<th>Sp 97</th>
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<th>Sp 98</th>
<th>Fall 98</th>
<th>Sp 99</th>
<th>Fall 99</th>
<th>Sp 00</th>
</tr>
</thead>
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<td>A ED</td>
<td>22</td>
<td>20</td>
<td>19</td>
<td>19</td>
<td>40</td>
<td>45</td>
<td>46</td>
<td>47</td>
<td>49</td>
<td>50</td>
</tr>
<tr>
<td>AGTM</td>
<td>41</td>
<td>37</td>
<td>45</td>
<td>34</td>
<td>32</td>
<td>31</td>
<td>32</td>
<td>31</td>
<td>39</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td>57</td>
<td>64</td>
<td>53</td>
<td>72</td>
<td>76</td>
<td>78</td>
<td>78</td>
<td>88</td>
<td>92</td>
</tr>
</tbody>
</table>

Proficiency Courses

The courses offered and taught by the Department of Agricultural Education that have been created to serve the general college and university purposes are also the source of enrollments by students outside the major. The university has created and adopted a relatively new approach to the general education curriculum. Courses have been identified at two basic levels called Tier One and Tier Two. Each segment of Tier One includes two courses, and each segment of Tier Two includes one course. Both Tier One and Tier Two courses provide rigorous treatments of fundamental knowledge and methods of inquiry within the segment. They have been designed to foster independent, creative, and interactive learning, inspiring students to think about themselves, others, and social organizations in new and insightful ways. They were created to instill in students a love of learning, excite them about the university experience, and leave them with valuable skills and knowledge applicable to their lives. Following are the courses that have been designed and implemented to serve these broader purposes:

**AGTM-380 (Global Agriculture and International Relations):** This course is designed and approved to be part of the University-wide General Education Curriculum formulated under the University-Wide General Education program of 1996. It is crosslisted with the Department of Geography and Anthropology. As a part of the Tier
Two series, it falls under the subject category of Individuals and Societies. As an Individuals and Societies course, AGTM 380 meets the following guidelines:

Courses in Individuals and Societies afford students an opportunity to examine systematically individual and collective behavior, and to explore the basic concepts and theory used in analyses of personal, social, cultural, political, economic, philosophical, religious and scientific issues. For example, students explore conceptual frameworks and methods, which elucidate cognitive, linguistic, psychological, social, political and historical processes. As a result, the students understand more clearly issues of self-identity, social difference and social status, the role of science in society, and the effects of major institutions on individual experiences. AGTM 380 is taught by Mr. Hanekamp, a Senior Lecturer in the Department, and Dr. Amir Ajami, Assistant Director, International Agriculture Programs.

The intent of the study area is to examine 1) how individuals, singly and collectively, respond to and deal with issues that affect their lives and 2) the concepts and methods by which these processes can be studied. Courses for this study area focus on the scholarly mid scientific study of social and personal issues.

Because the development of these types of courses has been a relatively recent phenomena, the process involved faculty members and departments preparing the syllabi for such courses along with a proposal that went through a university screening process before being selected for the Tier program. The course is taught at times that are not in conflict with other departmental courses. As a result, many of the students in the department choose to enroll in this course.

Each semester the course is evaluated by the CIEQ student survey administered by the University of Arizona. As a University General Education course, the course is reviewed every 3 to 4 years to determine if it continues to meet the design objectives and learning outcomes required by the General Education Program. The course is updated annually to include current events and unfolding global issues in the fields of international relations, global food security and renewable resource sustainability. The processes of updating include systematic reference searches, current event screening of the Internet and international travel and project activities during the summer by the instructors.

**AED/AGTM-120 (Microcomputing Applications):** The College has instituted a requirement for all majors in the College to have computing skills. With that in mind AGTM 120 was established as an introductory course on computing. The department offers one section of that course. The course is evaluated using the CIEQ student survey administered by the University of Arizona. The instructors of the course also meet on an annual basis to discuss any appropriate changes that should be implemented. Nearly all of the majors in the department take the AED section of the course because it is offered at a time that is not in conflict with other offerings.

AGTM 120 is managed through the Agricultural and Biosystems Engineering Department. During each regular semester there are approximately 8 sections offered using faculty from throughout the College. It is cross-listed several ways including PLS 120, FCR 120, and ABE 120. The course is offered every semester and in the summer.

AGTM 120 is an introduction to the use of microcomputers in word-processing, spreadsheets, database management, presentations, Internet and other areas. A Web Site
has been developed and maintained for this class, which has averaged 30 students per semester in the section taught by our faculty. The course has undergone several revisions during the past four years. New software and upgraded machines along with new books have been incorporated. The lead instructor for AGTM 120 for the past four years has been Dr. Foster and switched to Dr. Franklin beginning with fall semester 2000.

**AED/AGTM-422 (Communicating Knowledge in Agriculture and the Life Sciences):** The University and College have been involved with the improvement of writing and other communication skills. In response to that effort, the Department offers this course to serve the College in this regard. This course has become highly popular in the College with large numbers of students enrolling. The course is evaluated both formatively and summatively. Since Dr. Elliot started teaching the course in 1993, he has solicited input from faculty and advisors from the departments that send the majority of the students. He uses that information to adjust the areas of emphasis in the class and to keep from duplicating content from other programs/courses.

The overall CIEQ course evaluations have averaged above 4.9 on a 5.0 scale since 1993. Regardless of those high scores, during the student’s final 20-minute individual final presentation each person is asked ways to improve the course. Many excellent ideas have been implemented as a result of this process.

**AED/AGTM-432 (Technology Management):** In the spring of 1995, AGTM 432 was offered for the first time. It was created to fill a void of an advanced computer application course. The course includes advanced word processing skills, multi-media applications and web-page development. Dr. Elliot teaches the course and utilizes student feedback as his primary source of input for improvement. For example, the course is now using its 4th web page software in 5 years. The course averages close to 5 on overall course evaluations using the traditional CIEQ system.

**Agricultural Education-Teaching**

The responsibility for preparing teachers of agricultural education for secondary schools is a significant focus for the Department. The program in this area is quite unique in comparison to other programs from across the country in that it provides a “competency-based professional core.” Working with the teachers in the field, 85 competencies (Attachment 2) have been validated for the program. These competencies serve as the foundation upon which each professional agricultural education course is built. Thus, each of the courses developed for the program is comprised of a segment of the validated competencies. On an annual basis the competency list and the course outlines are revisited by the faculty members with the intent to keep up with the changes in the profession. In other words, the curriculum development for the Department is not static; it is a work in progress. Course and content articulation is the ultimate goal resulting in the design of this program of professional preparation. Therefore, a professional program is in operation, not just a series of unarticulated professional education courses.

The competency-based teacher program offered by the Department, if mastered, will enable a student who demonstrates those competencies to be an effective teacher. The specific objectives for each of the professional education courses in agricultural education are based upon the specific competencies that are identified to be taught in the respective courses. From a curriculum standpoint, this approach helps to eliminate unnecessary duplication and
overlap of course content and, at the same time, allows for reinforcement of significant areas where redundancy is important.

The undergraduate courses are taught by full-time faculty members and are assessed by using the standard assessment program (CIEQ) offered by the University. In addition, assessment of the course content, quality of instruction, and other related items are conducted via personal interviews between the students and faculty members, and exit interviews with all of the graduating seniors by the Department Head. Undergraduate courses presently taught are as follows:

**A ED 195A Introduction to Teaching Agriculture and Related Sciences** (1) II The exchange of scholarly information and/or secondary research, usually in a small group setting. Instruction often includes lectures by several different persons. Research projects may or may not be required of course registrants.

**A ED 293 Internship** (1-6). Specialized work on an individual basis, consisting of training and practice in actual service in a technical, business, or governmental establishment.

**A ED 297A Youth Leadership in Ag Technology Management and Education** (1) I II. The practical application of practices relative to functioning within a group setting and involving an exchange of ideas and practical methods applicable to the advisement of youth organizations.

**A ED 297B Youth Leadership in Ag Technology Management and Education** (1) I II. The practical application of practices relative to functioning within a group setting and involving an exchange of ideas and practical methods applicable to the advisement of youth organizations.

**A ED 299 Independent Study** (1-3). Qualified students working on an individual basis with professors who have agreed to supervise such work.

**A ED 299H Honors Independent Study** (1-3). Qualified students working on an individual basis with professors who have agreed to supervise such work.

**A ED 301 Youth Leadership Development** (3) I. Characteristics of effective advisors, leadership styles, strategies for the management and organization of youth groups in agriculture, practice in leadership development techniques.

**A ED 391H Honors Preceptorship** (1-3) I II. Specialized work on an individual basis, consisting of instruction and practice in actual service in a department, program, or discipline. Teaching formats may include seminars, in-depth studies, laboratory work and patient study.

**A ED 393 Internship** (1-6). Specialized work on an individual basis, consisting of training and practice in actual service in a technical, business, or governmental establishment.

**A ED 394 Practicum** (1-6). The practical application, on an individual basis, of previously studied theory and the collection of data for future theoretical interpretation.

**A ED 396H Honors Proseminar** (3) I II. The development and exchange of scholarly information, usually in a small group setting. The scope of work shall consist of research by course registrants, with the exchange of the results of such research through discussion, reports, and/or papers.

**A ED 397E Workshop for Preceptors** (1) I II. Practical application of teaching/learning activities focused on the improvement of instruction to enhance the teaching ability of student assistants who serve in various departments in the College of Agriculture as preceptors.
A ED 399 Independent Study (3). Qualified students working on an individual basis with professors who have agreed to supervise such work.

A ED 399H Honors Independent Study (1-3) I II. Qualified students working on an individual basis with professors who have agreed to supervise such work.

A ED 407 Principles of Vocational Education (2) II. Social and economic values of vocational education, federal laws, state policies and administration; theories and principles with special reference to programs in the secondary school.

A ED 410 Leadership Concepts and Context (3) I II. Personal leadership development through experiential learning, philosophical exploration, examination of the literature, and reflective writing.

A ED 422 Communicating Knowledge in Agriculture and the Life Sciences (3) I. Principles and processes of knowledge diffusion and methods of transferring appropriate technology to user/clientele groups. Communicating effectively within organizations.

A ED 438 The Teaching of Secondary School Agricultural Science (4) I. Specific methods, objectives, organization of subject matter, and evaluation in the various subjects.

A ED 439 Experiential Education Principles and Practice (3) II. A hands-on course which explores experiential teaching and learning through integration of readings and writing, application of concepts, modeling of principles, and thoughtful reflection.

A ED 442 Transformation of Agrarian Societies in the Middle East (3) II. Dynamics, processes, and implications of rural change in the Middle East; focus on changes in peasant communities, nomadic pastoralists, rural-urban relations, and planned change.

A ED 460 Instructional Materials Development (4) I. Analysis and construction of resources and materials used in instructional delivery. Analysis and development of competencies and behavioral objectives used in preparing instructional materials.

A ED 462 Curriculum Development (2-3) II S. Analysis, design, construction and evaluation of resources appropriate for a competency based agricultural education curriculum.

A ED 485 Teaching Psychomotor Skills in Laboratory Sciences (1-2) I II. Methods and procedures in teaching psychomotor operational skills, conducting demonstrations, providing for student and teacher safety, sequencing skills activities, providing and organizing facilities, including micro-teaching demonstrations.

A ED 493 Internship (1-3) I II. Specialized work on an individual basis, consisting of training and practice in actual service in a technical, business, or governmental establishment.

A ED 494R Research (3) I II. The practical application, on an individual basis, of previously studied theory and the collection of data for future theoretical interpretation.

A ED 496C Ambassador Orientation (1-2). The development and exchange of scholarly information, usually in a small group setting. The scope of work shall consist of research by course registrants, with the exchange of the results of such research through discussion, reports, and/or papers. Open to COA Ambassadors only.

A ED 498 Senior Capstone (1-3) I II. A culminating experience for majors involving a substantive project that demonstrates a synthesis of learning accumulated in the major, including broadly comprehensive knowledge of the discipline and its methodologies. Senior standing required.
A ED 498H Honors Thesis (3) I II. An honors thesis is required of all the students graduating with honors. Students ordinarily sign up for this course as a two-semester sequence. The first semester the student performs research under the supervision of a faculty member; the second semester the student writes an honors thesis.

A ED 499 Independent Study (1-5). Qualified students working on an individual basis with professors who have agreed to supervise such work.

A ED 499H Honors Independent Study (3) I II. Qualified students working on an individual basis with professors who have agreed to supervise such work.

Agricultural Technology Management

Historically the Department administered the “general agriculture” major for many years. That major fell out of favor because of the lack of focus. However, the need in the agricultural arena for well educated people who understand the “science in agriculture,” and at the same time are equally skilled in the many aspects of agricultural technology, environmental protection, communication, business and economics was more important than ever. In response to that need, a major in agricultural technology management was created.

The major is both intensive and diverse, and contains core areas in:

- Written and oral communications (15 credit hours)
- Basic science and mathematics (24 credit hours)
- Environmental science and societal issues (16 credit hours)
- Agricultural economics and business management (18 credit hours)
- Basic agricultural sciences (23 credit hours)
- Technical agriculture (30 credit hours)
- Electives (6 credit hours).

Courses in the core areas are as follows:

- Communications: English composition, business or technical writing, small group decision making, organizational communications, agricultural communications.
- Basic Sciences and Mathematics: General biology, general chemistry, college algebra, statistics, computer science, either trigonometry, calculus or finite mathematics.
- Environmental Science and Societal Issues: Environmental science, Ethical considerations in agriculture, agriculture and the environment (focus on pesticides), world food economy, environmental biology.
- Agricultural Economics and Business: Economics, agricultural finance, agricultural marketing, agricultural business management, accounting, personnel management, and agricultural sales.
- Basic Agricultural Sciences: Plant science, soil science, plant genetics, plant physiology, fundamentals of entomology, general plant pathology.
- Technical Agriculture: Irrigation principles and management, soil fertility, agricultural entomology, insect pest management, diagnosis and control of plant pathogens, weed management, a minimum of 12 credit hours from one or a combination of the following areas: field crops, vegetable crops, turfgrass science and culture, landscape horticulture, nursery systems management, tree and vine crops, agricultural engineering/mechanization, pest management.
- Electives: Western civilization, arts, language and literature.
The Agricultural Technology Management curriculum provides graduates with a solid foundation in science, agricultural technology, communications, environmental science and societal issues, and business/economics. In addition, built into the major are all the courses needed to qualify for California and Arizona pest control advisor certification. Another key component in the revised major is the inclusion of an optional industry internship program for the students.

The Agricultural Technology Management major is a professional curriculum designed to meet the challenges of the 21st century. Graduates have many employment opportunities in production/management/sales positions, as certified plant/animal protection specialists, and in many agricultural service-oriented businesses. In addition, graduates wishing to enter post-graduate programs in the agricultural sciences meet most of the requirements short of calculus and biochemistry. The courses taught by the department in support of the AGTM major are as follows:

**AGTM 100 Principles and Practices of Agricultural Mechanization** (3) I. Basic principles and operative skills in construction and maintenance which are part of agricultural operations in production and urban agriculture systems. Principles for wood and metal construction, inert gas welding, plasma cutting, and construction of wood and metal projects are included. Major emphasis is placed on safety in the laboratory.

**AGTM 120 Microcomputing Applications** (3) I II. Introduction to the use of microcomputers in word processing, spreadsheets, presentation graphics, networks and other areas.

**AGTM 195A Agriculture Technology and Public Policy** (1) I II. The exchange of scholarly information and/or secondary research, usually in a small group setting. Instruction often includes lectures by several different persons. Research projects may or may not be required of course registrants.

**AGTM 213 Agricultural and Food Marketing** (3) II. Examine the organizational, institutional and economic elements that form agricultural and food marketing systems at the regional, national and international levels.

**AGTM 293 Internship** (1-6). Specialized work on an individual basis, consisting of training and practice in actual service in a technical, business, or governmental establishment.

**AGTM 299 Independent Study** (1-3). Qualified students working on an individual basis with professors who have agreed to supervise such work.

**AGTM 330 Turf and Landscape Technology** (3) II The basic scientific principles and skills of construction, operation, and maintenance in turf, landscape and urban agricultural equipment. Provides student with laboratory experiences in machinery, sprinkler and drip irrigation installation, operation and maintenance, chemical application systems, and hardscaping.

**AGTM 350 Applications in Agricultural Mechanics** (3) I The fundamentals of electric power, electric motors, and leveling and measurement, and the internal combustion engine. Subject matter is selected to provide the fundamentals of applied mechanical knowledge and skills basic to urban agricultural mechanization and appropriate for instructional programs in agricultural mechanics at the secondary school level.

**AGTM 351 Operations in Agricultural Mechanics** (3) II The fundamentals of agricultural power and machinery with emphasis upon applications to urban agricultural mechanization. Competencies include set up, adjustment, lubrication, as well as operation and maintenance of
machinery involved in landscape construction, turf installation, turf maintenance, and other machinery specifically suited to urban agricultural mechanization. Selected production agriculture equipment may also be included.

AGTM 380 Global Agricultural and International Relations (3) I II The importance of agriculture to the cultures, political structures, and economies of developing countries in Africa, Asia, South America, and Oceania. Writing Emphasis Course.

AGTM 391 Preceptorship (1-3) I II. Specialized work on an individual basis, consisting of instruction and practice in actual service in a department, program, or discipline. Teaching formats may include seminars, in-depth studies, laboratory work and patient study.

AGTM 393 Internship (1-6). Specialized work on an individual basis, consisting of training and practice in actual service in a technical, business, or governmental establishment.

AGTM 399 Independent Study (1-5) I II. Qualified students working on an individual basis with professors who have agreed to supervise such work.

AGTM 402 Agriculture and the Environment: Focus on Pesticides (3) II Concepts, principles and applications of population ecology as related to the impact of pesticide usage on agro-ecosystems, non-target organisms, environmental quality, and the sustainability of agricultural production. Examination of the current regulations governing pesticide use in agriculture.

AGTM 422 Communicating Knowledge in Agriculture and the Life Sciences (3) I. Principles and processes of knowledge diffusion and methods of transferring appropriate technology to user/clientele groups. Communicating effectively within organizations.

AGTM 432 Technology Management (3) II Utilizing the latest computer and technological advances to communicate effectively. Understanding the capacity and limitations of computers, software and technology.

AGTM 493 Internship (2-8). Specialized work on an individual basis, consisting of training and practice in actual service in a technical, business, or governmental establishment.

AGTM 494R Research (3). The practical application, on an individual basis, of previously studied theory and the collection of data for future theoretical interpretation.

AGTM 498 Senior Capstone (1-3) I II. A culminating experience for majors involving a substantive project that demonstrates a synthesis of learning accumulated in the major, including broadly comprehensive knowledge of the discipline and its methodologies. Senior standing required.

AGTM 499 Independent Study (3). Qualified students working on an individual basis with professors who have agreed to supervise such work.

Advising

Full-time faculty members in the department advise students. Two of the members have received the “A+” award for advising students in the college. One faculty member has received that recognition the past two years in a row. Faculty members meet the students during their orientation and work with them to establish their course load for their entering semester. After that, a faculty advisor is identified who will serve the student for the remainder of their undergraduate academic career. That service typically involves working with the student to plan their undergraduate program and then to meet periodically, usually at registration time, to review that plan and to assess student progress.
A special program exists for those students who enter the university while they are serving as officers of the Arizona FFA Association. Because of their unique travel and service requirements, Dr. Elliot served as a special advisor to that group of students. Dr. Franklin has now assumed that responsibility. After the students conclude their experience as state FFA officers, they are advised in the same manner as other students in the Department.

On an annual basis, the advising load of the faculty members is reviewed and an effort made to balance the loads for each advisor. In the future, undergraduate students will meet with the Department Head as the first step in the advising process. After that, with their input, student will be evenly assigned to the various faculty members.

Alumni

The Department faculty members work through a beginning teacher program and are active with the teachers in their professional organization, the Arizona Association of Teachers of Agriculture (AATA) an affiliate of the National Association of Agricultural Educators (NAAE), and in providing courses and workshop experiences. Because of this unusually close tie to many of the alumni of the Department, a constant flow of information exists in both directions. For example, the teachers in the field (primarily alumni of the Department) were intimately involved in establishing the competencies identified for the teacher preparation portion of the program. The validation of those competencies also directly involved the teachers.

Future plans of the Department include the creation of an Advisory Committee for helping to keep the Department in touch with its constituents and to provide direction for future growth and development. This committee will be made up largely of Alumni of the Department.

Curriculum

The program in both Agricultural Education and Agricultural Technology Management meet the College and University guidelines for students at the University of Arizona. The Department has been designated by the Arizona Board of Regents (ABOR) through the University of Arizona as the only Department in the state university system mandated to conduct formal instructional programs for the preparation of secondary and community college teachers of agriculture. While an accrediting body does not prescribe the curriculum for either of the programs in the Department, both are sensitive and respond to the industry demands. For example, the Arizona Department of Education (ADE) has also instituted standards for the certification of teachers. The Department has made sure that the curriculum offered to those seeking to become teachers meets or exceeds those requirements.

Evidence of Quality

A number of years ago a study was done that ranked the various programs of agricultural education across the nation (1993). For those programs without a doctoral degree, the University of Arizona was ranked number one in the country. Since that time, the department has made some significant changes that should only enhance that status. New faculty positions have been added that allow for greater expertise to be provided to the students in the various courses and programs of the department. With the field validation of the competencies needed in agricultural education, the clarity of the course offerings have been improved. In addition, recognition has come to the Department from the University as mentioned previously.
Coordination

Dr. Elliot coordinates the undergraduate teacher education program for the Department. He also serves on a statewide committee for the Arizona Department of Education involved with certification requirements. This places him in a unique position to know what is going on in other teacher education institutions across the state and to assist the department in keeping current and balanced. In addition, the coordination of the student teaching experience, which includes working with the cooperating teachers and providing for the appropriate seminars and workshops have also been a part of his efforts. Dr. Roger Huber has coordinated the Agricultural Technology Management program since its inception in 1992.

Staying Current

The faculty members have attended and participated in regional and national conferences on an annual basis. At those conferences they have attended the research sessions focused on the program. That information along with the validated competencies has become the source of discussion for the annual faculty meeting when the curriculum has been reviewed and revised.

One effective method of keeping current for the various members of the faculty in the Department has been the actual conduct of research and development activities. Doing effective research requires the individual faculty members to review the related literature and research. Also, preparing for conferences and professional development activities requires a similar type of commitment.

Internships, Practica, Etc.

The historical development and longstanding philosophical commitment to internships, practica, work-study, and seminars is reflected in the curriculum of the Department. Perhaps the most significant is the student teaching experience provided for the students in Agricultural Education and the internships provided for the students in Agricultural Technology Management. All students in Agricultural Education and most students in Agricultural Technology Management participate in an internship experience. (Attachment 8 is the Student Teaching Manual, and Attachment 9 is the Cooperating Teacher’s Manual)

During the past several years the Department has become very active with work-study type efforts for the undergraduate students. The faculty members have made a significant effort to hire student majors to perform many of the Departmental tasks.

Undergraduate Students

Apart from any national study used to make a determination about how our students compare with students in similar units nationwide, it should be noted that for the past few years, students from the Department have been attending and competing with students from across the nation at a National Collegiate Ag Ed conference. During the past two years, University of Arizona students have won or finished second in the nation in the debate and quiz bowl events.

When looking at the overall grade point averages (GPAs) of our students in the Department, they compare favorably with the others in the College and the University. Table 3 shows those data for the past five years.
TABLE 3
Undergraduate Grade Point Averages 1995-1999
University of Arizona

<table>
<thead>
<tr>
<th>Fall</th>
<th>Majors</th>
<th>College</th>
<th>University</th>
<th>AGED</th>
<th>AGTM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>2.709</td>
<td>2.8861</td>
<td>2.9074</td>
<td>2.904</td>
<td>2.497</td>
</tr>
<tr>
<td>1998</td>
<td>2.635</td>
<td>2.8161</td>
<td>2.8783</td>
<td>2.821</td>
<td>2.359</td>
</tr>
<tr>
<td>1997</td>
<td>2.801</td>
<td>2.8483</td>
<td>2.8833</td>
<td>2.869</td>
<td>2.735</td>
</tr>
<tr>
<td>1996</td>
<td>2.668</td>
<td>2.7909</td>
<td>2.8661</td>
<td>2.884</td>
<td>2.577</td>
</tr>
<tr>
<td>1995</td>
<td>2.858</td>
<td>2.7968</td>
<td>2.8491</td>
<td>3.066</td>
<td>2.727</td>
</tr>
</tbody>
</table>

Recruitment

Dr. Foster has developed and spearheaded a recruitment effort for the department. During that time the number of students selecting the department has been steadily rising. Attachment 4 is a copy of the program of activities used to direct that effort. The approach to retention has been to provide excellent advising for the students and getting them involved with the student organizations that serve the majors in the department.

F. Graduate Program

Overview

The graduate program (Attachment 3) in the Department of Agricultural Education leads to either a Master of Science or a Master of Agricultural Education degree. The Master of Science degree, available through the Graduate College, is administered by the Department of Agricultural Education. The intent of the program is to develop academic abilities in research design, implementation, and analysis. An emphasis on research methodology and evaluation is an important part of the program.

The intent of the Master of Agricultural Education degree is to develop academic abilities in agricultural subject matter, instructional techniques and methods, program planning and administration, etc. The Master of Agricultural Education is a practitioner’s degree in which a formal written report or other product is required in lieu of a thesis.

Major changes in the Graduate program in recent years have included efforts to provide course-work in a distance education format. This effort has included offering AED 615- Investigations and Studies in Applied Research and AED 616-Research Project Design and Implementation in a variety of formats and combinations to meet the needs of teachers in the field. In addition, off campus offerings have reflected teacher needs for improved skills in technical agriculture. Offerings in Aquaculture, Horticulture, Hydroponics, Agricultural Mechanics, Animal Sciences, Biotechnology, Advanced Methodology and Leadership have been offered off campus at appropriate times for student/teacher participation. Further, the courses have generally been scheduled to occur in the late afternoon/early evening to accommodate working students.

The flexibility of the Master of Science has been increased to meet the needs of students emphasizing Agricultural Technology Management to do investigations in their area of interest. Major emphasis has been given to using the Masters of Agricultural Education degree to update the curriculum in Arizona. While the publication of the materials lags behind, many new and revised instructional units have been developed as a result of this
effort. Most of the improvements in the graduate program are the result of the effort of individual faculty members. A concise graduate departmental plan for recruitment has not been developed.

Graduate student enrollment in Agricultural Education is summarized in Table 4. Note that the courses attract a wide range of students. The Department has purposely developed courses to be flexible and integrative in nature to better serve the graduate students.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Domestic</th>
<th>Foreign</th>
<th>Domestic (female)</th>
<th>Domestic (minority)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993-94</td>
<td>25</td>
<td>25</td>
<td>0</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>1994-95</td>
<td>19</td>
<td>18</td>
<td>1</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>1995-96</td>
<td>17</td>
<td>15</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>1996-97</td>
<td>17</td>
<td>16</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>1997-98</td>
<td>19</td>
<td>18</td>
<td>1</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>1998-99</td>
<td>24</td>
<td>23</td>
<td>1</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>1999-2000</td>
<td>30</td>
<td>29</td>
<td>1</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>2000-01</td>
<td>18</td>
<td>17</td>
<td>1</td>
<td>12</td>
<td>1</td>
</tr>
</tbody>
</table>

**Curriculum and Courses**

The Master of Science in Agricultural Education requires a total of thirty (30) units of graduate credit with a minimum of twenty units in agriculture or agricultural education. A Thesis (AED 910) must be completed and accepted by the Graduate College. In addition the following courses are required: AED 615, 616, and a statistics course. Candidates complete nine units of credit from the following: AED 502, 507, 510, 522, 532, 538, 539, 540, 560, 562, 585, 601, 621, or 695a. The candidate must present a Thesis seminar and perform satisfactorily both on a comprehensive written examination and an oral examination in defense of the Thesis. A maximum of six units of credit in AED 597, 599, 693, and 699 combined may be used toward degree requirements.

The Master of Agricultural Education requires a minimum of one year’s successful post graduate experience in teaching, extension, or similar educational work prior to admission. A minimum of thirty-two (32) units of graduate course work is required to complete the degree with a minimum of 20 units in agriculture or agricultural education. A thesis is not required, but all candidates must take AED 615 and complete a Master Report (AED 909). Candidates are to complete nine units of credit from the following: AED 502, 507, 510, 522, 532, 538, 539, 540, 560, 562, 585, 601, 616 or 695a. The candidate must present a Seminar, based upon the results of the Master’s report. Satisfactory performance on both a comprehensive written examination and oral presentation of the Master’s Report is required in the degree. A maximum of nine units of credit in AED 599, 699 and 597 combined may be used toward degree requirements.

A five-chapter Master’s Report Proposal is required. It is intended to provide the graduate examination committee with details of the student’s anticipated project upon which the Master’s Report is based. The proposal for the Master’s Report (AED 909) must be approved by the candidate’s committee prior to the development of the material or the collection of data. Enrollment in graduate courses is summarized in Table 5.
<table>
<thead>
<tr>
<th>Course Number and Name</th>
<th>Sem Taught</th>
<th>Total Graduate Enrollment</th>
<th># Non Ag Ed Students Enrolled</th>
<th>Names of Non Ag Ed Units*</th>
</tr>
</thead>
<tbody>
<tr>
<td>A ED 501, 510, Leadership Concepts and Contexts</td>
<td>6</td>
<td>36</td>
<td>14</td>
<td>EDA, RNR, H ED, LRC,</td>
</tr>
<tr>
<td>A ED 507, Principles of Vocational Education</td>
<td>3</td>
<td>11</td>
<td>2</td>
<td>ED P</td>
</tr>
<tr>
<td>A ED/AGTM 522, Comm Knowledge in Ag&amp;Life Sci</td>
<td>5</td>
<td>23</td>
<td>9</td>
<td>RA M, A SC, SWES</td>
</tr>
<tr>
<td>A ED 538, Teach Secondary School Ag Science</td>
<td>3</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A ED 539, Experiential Ed Principles and Practice</td>
<td>5</td>
<td>31</td>
<td>12</td>
<td>LRC, ANTH, SWS, SER, NUSC, ENTO, TTE</td>
</tr>
<tr>
<td>A ED 560, Instructional Materials Development</td>
<td>6</td>
<td>25</td>
<td>3</td>
<td>A SC, ED P</td>
</tr>
<tr>
<td>A ED 562, Curriculum Development</td>
<td>5</td>
<td>20</td>
<td>2</td>
<td>WFSC</td>
</tr>
<tr>
<td>A ED 585, Methods in Teach Psychomotor Lab Sci</td>
<td>4</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A ED 615, Investigations &amp; Studies in Applied Research</td>
<td>5</td>
<td>59</td>
<td>10</td>
<td>FCR</td>
</tr>
<tr>
<td>A ED 616, Research Project Design &amp; Implementation</td>
<td>4</td>
<td>28</td>
<td>2</td>
<td>FCR</td>
</tr>
<tr>
<td>A ED 621, Program Plan and Evaluation</td>
<td>1</td>
<td>9</td>
<td>3</td>
<td>EDA</td>
</tr>
<tr>
<td>A ED 638, 695A, Teach College Level Ag&amp;Life Sci</td>
<td>8</td>
<td>98</td>
<td>51</td>
<td>ABE, SWS, WFSC, RNR, FCR, EAS, MUED, MATH, ENTO, GEOS, ARLR, COMM, ASC, HYD, THAR, BMEG, PHSC</td>
</tr>
<tr>
<td>AGTM 502, Agric &amp; the Environ:Focus on Pesticides</td>
<td>4</td>
<td>8</td>
<td>2</td>
<td>ENTO, PLP</td>
</tr>
<tr>
<td>AGTM 532, Technology Management</td>
<td>6</td>
<td>21</td>
<td>1</td>
<td>RA M</td>
</tr>
</tbody>
</table>
Following are the courses offered in support of the Graduate program by the Department:

**A ED 507 Principles of Vocational Education** (2) II For a description of course topics see A ED 407. Graduate-level requirements include developing a philosophy statement for a secondary-level school. May be convened with A ED 407.

**A ED 510 Leadership Concepts and Context** (3) I II For a description of course topics see A ED 410. Graduate-level requirements include additional writings, assignments, and an expanded philosophy paper. May be convened with A ED 410.

**A ED 522 Communicating Knowledge in Agriculture and the Life Sciences** (3) I For a description of course topics see A ED 422. Graduate-level requirements include an additional report. May be convened with A ED 422.

**A ED 538 The Teaching of Secondary School Agricultural Science** (4) I For a description of course topics see A ED 438. Graduate-level requirements include an entire year's secondary curriculum plan. May be convened with A ED 438.

**A ED 539 Experiential Education Principles and Practice** (3) II For a description of course topics see A ED 439. Graduate-level requirements include an additional research report. May be convened with A ED 439.

**A ED 540 International Extension Education** (3) II Critical evaluation of case histories of international extension education models, and integration of successful components into composite models based on cultural, political and educational situations typically encountered in developing countries.

**A ED 542 Transformation of Agrarian Societies in the Middle East** (3) II. May be convened with A ED 442.

**A ED 560 Instructional Materials Development** (4) I. For a description of course topics see A ED 460. Graduate-level requirements include an additional assignment. May be convened with A ED 460.

**A ED 562 Curriculum Development** (2-3) II S. For a description of course topics see A ED 462. Graduate-level requirements include an additional report. May be convened with A ED 462.

**A ED 585 Teaching Psychomotor Skills in Laboratory Sciences** (1-2) I II For a description of course topics see A ED 485. Graduate-level requirements include additional assigned readings, demonstrations, lesson presentations, and a position paper. May be convened with A ED 485.

**A ED 593 Internship** (1-3) I II. Specialized work on an individual basis, consisting of training and practice in actual service in a technical, business, or governmental establishment.
**A ED 596A Leading and Learning Across the Disciplines** (3) II Seminar participants will explore philosophy and practice regarding the integration of leading and learning across the disciplines.

**A ED 597A Instructional Advances in Experiential Education** (1-3). The practical application of theoretical learning within a group setting and involving an exchange of ideas and practical methods, skills, and principles.

**A ED 597B Advances in Youth Leadership** (1-3). The practical application of theoretical learning within a group setting and involving an exchange of ideas and practical methods, skills, and principles.

**A ED 597D Instructional Advances in Applied Biological Systems** (1-3). The practical application of theoretical learning within a group setting and involving an exchange of ideas and practical methods, skills, and principles.

**A ED 597E Continuing Education in Agriculture** (1-3) I II. The practical application of theoretical learning within a group setting and involving an exchange of ideas and practical methods, skills, and principles.

**A ED 597F Program Development in Vocational and Technical Education** (1-3). The practical application of theoretical learning within a group setting and involving an exchange of ideas and practical methods, skills, and principles.

**A ED 597G Instructional Advances in Vocational/Technical Education** (1-3). The practical application of theoretical learning within a group setting and involving an exchange of ideas and practical methods, skills, and principles.

**A ED 597N Instructional Advances in Environmental Education** (1-3). The practical application of theoretical learning within a group setting and involving an exchange of ideas and practical methods, skills, and principles.

**A ED 597T Instructional Advances in Non-Formal Education** (1-3). The practical application of theoretical learning within a group setting and involving an exchange of ideas and practical methods, skills, and principles.

**A ED 599 Independent Study** (1-5). Qualified students working on an individual basis with professors who have agreed to supervise such work.


**A ED 615 Investigations and Studies in Applied Research** (3) II Study and analysis of research literature, methods, techniques and procedures for conducting investigations, selecting a problem and developing plans for a study.

**A ED 616 Research Project Design and Implementation** (3) II Principles and practices of selecting, developing and analyzing research instruments, analyzing and interpreting both quantitative and qualitative data research in agricultural and extension education, including the use of the computer.

**A ED 621 Program Planning and Evaluation** (3) II Developing and evaluating programs in teaching and extension; situation analysis, objectives, policies, content, procedures, and evaluative criteria.
**A ED 693 Internship** (1-3) I II. Specialized work on an individual basis, consisting of training and practice in actual service in a technical, business, or governmental establishment.

**A ED 695A Teaching College Level Agriculture and Life Sciences** (1-3) I II. The exchange of scholarly information and/or secondary research, usually in a small group setting. Instruction often includes lectures by several different persons. Research projects may or may not be required of course registrants.

**A ED 699 Independent Study** (1-3) I II. Qualified students working on an individual basis with professors who have agreed to supervise such work.

**A ED 900 Research** (2-4). Individual research, not related to thesis or dissertation preparation, by graduate students.

**A ED 909 Master's Report** (1-3) I II. Individual study or special project or formal report thereof submitted in lieu of thesis for certain master's degrees.

**A ED 910 Thesis** (2-6). Research for the master's thesis.


**A ED 930 Supplementary Registration** (1-9). For students who have completed all course requirements for their advanced degree programs. May be used concurrently with other enrollments to bring to total number of units to the required minimum.

**Graduate Students**

Efforts are made to provide flexible scheduling of graduate courses to allow teachers and others the maximum accessibility to the degrees. Every effort is made to recruit quality graduate students and provide them with necessary support during their program. Several of the graduate students also serve as teaching assistants for the faculty members while they are taking coursework. In addition, numerous teachers and others who are not full time graduate students are pursuing graduate degrees at any point in time. The Department has maintained a flexible program in order to accommodate the students seeking Master’s degrees. As stated previously, the inclusion of distance educational opportunities have been created to better serve the graduate students.

**Recent Graduates**

Table 6 lists the Graduate degrees awarded in Agricultural Education for the past 5 years.

**TABLE 6**

<table>
<thead>
<tr>
<th>Graduate Degrees Awarded in Agricultural Education</th>
<th>1995 - 1999</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year</strong></td>
<td><strong>Master of Ag Ed</strong></td>
</tr>
<tr>
<td>1995</td>
<td>1</td>
</tr>
<tr>
<td>1996</td>
<td>7</td>
</tr>
<tr>
<td>1997</td>
<td>3</td>
</tr>
<tr>
<td>1998</td>
<td>1</td>
</tr>
<tr>
<td>1999</td>
<td>4</td>
</tr>
<tr>
<td>TOTAL</td>
<td>16</td>
</tr>
</tbody>
</table>
G. Student Outcomes Assessment

Eighty-Five (85) field-approved and validated competencies provide direction and serve as the major basis for assessing student outcomes for the Department (Attachment 2). These competencies serve as the basis for the core content of the courses taught by the faculty members in the Department. Periodically, the faculty solicits advice from individuals who are actually working in the field to update the competencies. The faculty members annually review the competencies and adjust the courses based upon the actual assessment process.

Methods used to assess intended student outcomes include, but are not limited to:

- Standardized Teacher-Course Evaluations giving student perceptions of skills learned, teaching effectiveness, and learning success.
- Tests and assignments providing objective assessments of value-added student progress in courses.
- Independent studies, internships and research projects allowing faculty to interact with students and facilitate critical thinking, in turn generating feedback on student needs and skills.
- Writing-Emphasis courses allowing evaluation of student readiness for technical, discipline-based writing.
- Academic Advising and Faculty Mentoring providing one-on-one interactions and clearer, more personalized assessment of student progress.
- An Exit Survey providing graduates’ opinions of course offerings and advising assistance.
- An Exit Interview with the Department Head regarding anticipated career experiences, employment plans and perceived preparation, and general overview.
- Informal tracking of alumni employment and professional progress.

H. Academic Outreach

Academic Outreach in the Department of Agricultural Education is evidenced through a variety of programs directed by the eight faculty members. The professional development component, funded through the Arizona Department of Education, provides dissemination of information and technology advances annually for over 2000 public school teachers in Arizona. Active involvement on a variety of advisory boards involving agricultural education and the FFA provide ongoing opportunities for teachers and high school students across the state. In addition, the coordination of the annual FFA Career Development Events Day promotes positive interaction among secondary school teachers, students and faculty of the College of Agriculture and Life Sciences at the University of Arizona.

Expanding on the faculty involvement regarding the professional development grant, the focus of that grant is quite relevant to academic outreach. The grant’s major focus is the improvement of instruction for secondary teachers in career and technical education areas including agricultural science. As a result, an average of 18 outreach efforts is a normal part of the Department’s annual operation. On a scale of five, the Department averages over 4.85 on overall workshop effectiveness. Detailed lists of program offerings are included in Attachment 5.

On a different level, faculty members are often asked to speak on current issues of relevance relating to their individual research or experiences. Collaborative efforts with other
departments and colleges across campus underscore the service driven philosophy of the department. Typical outreach activities include:

- Initiating annual Career Development Event Field Days and FFA State Leadership Conferences
- Speaking by invitation to schools, faculty meetings or conferences, and other interested parties
- Publishing research reports, newsletters, and articles in professional trade magazines and refereed journals
- Providing workshops and professional development classes both individually and collaboratively with ASU and NAU

Developing courses and presentations designed to share pedagogical practices with both faculty and graduate teaching assistants. Another major contribution to the profession in Arizona by the Department of Agricultural Education is the ongoing development of new curricula for the secondary level agricultural education teacher. Along with developing new curricula, faculty and graduate students work at reviewing and revamping existing curricula.

As a service specifically designed to reach the needs of Arizona Agricultural Education teachers, various targeted workshops are sponsored throughout the year including sessions like ‘Developing Agricultural Mechanics Curriculum’ and ‘Utilizing Decisions and Dollars.’ The Department also maintains the New Teacher Program, designed to support and guide new members of the profession through their first and most critical professional year. The program provides on-site visitation, three seminars spread across the year, and ongoing advisement and mentoring by the faculty.

A unique state of synergy exists in the Department partially revolving around the variety of outreach projects initiated by the faculty. Brief examples of outreach activities of each of the faculty follow:

An ongoing effort has been made to reach the special needs of the Native American population in Arizona. In the early 90’s, Dr. Roger Huber secured a United States Department of Education (USDE) grant to help the Navajo people in the Chinle, Arizona area. The grant existed from 1994 to 1997. The project was designed to integrate academic education with vocational agriculture and the Navajo culture. This combination was felt necessary to develop the knowledge and skills for Navajo youth to successfully participate in their local economy and pursue entrepreneurial careers. Congressional budget cuts to the USDE forced the termination of the project along with 19 others nationwide in 1996. However, the project was able to increase levels of integration and application of academic knowledge and technical experiences by students in the area.

Dr. Knight brings another perspective to academic outreach in the Department. Working as a consultant for educational excellence, school climate, diversity issues and teaching effectiveness, he has worked individually with numerous school districts in Arizona and the Arizona Department of Education. Nationally known for his expertise in these areas, Dr. Knight has tailored a variety of workshops and seminars to address the needs of schools in Arizona and throughout the country.

Still a different approach to outreach is exhibited through the work of Dr. Nancy Huber. Working through students enrolled in her graduate classes, Dr. Huber has facilitated a number of projects that have had a positive impact on the greater university community. Examples of those projects include: identifying the extent that students agreed with The University of Arizona’s nine descriptors of a student centered research university; development of a web
site designed as a university community resource on experiential learning; development of a
web site designed to provide information on the need for and availability of mentors; and
planning and implementing an exploratory forum involving department heads and graduate
students, from five colleges, with the graduate student council. An interesting offshoot of this
outreach style evolved when a former student returned and solicited Dr. Huber’s help with an
extension program on leadership exploration for the San Carlos Apache Tribe Social Service.
Her book, “Leading from Within” has been adopted by several universities as their
Leadership text and is now provided for the entire management team of the Sandia National
Laboratories by their organization.

Another outreach component revolves around the work of Dr. Miller in his ongoing work
with secondary agricultural education teachers through hands-on workshops introducing new
technical advances in areas related to agricultural mechanics. Aquaculture and horticulture
workshops that explore topics such as landscape equipment maintenance provide teachers
with current insight into the career possibilities for their students. In December of 1999, Dr.
Miller arranged for a behind the scene tour and workshop revolving around the hydroponics
operations at Disney World for 35 teachers and administrators from Arizona. Dr. Miller also
works to help teachers develop the components of the state FFA Agricultural Mechanics
Career Development Event so that the event reflects the Arizona industry and their classroom
curriculum.

Dr. Elliot is the driving force behind the Arizona Department of Education professional
development grant. His work in this area has led to an increased involvement in the number
of committees and boards on which he serves. His active involvement on the State Board of
Education: Career and Technical Education Advisory Committee and the Arizona Council for
Occupational and Vocational Administrators allowed him to intervene and alert the
agricultural education community to a plan that would ultimately eliminate most of Arizona’s
existing agricultural education programs. Through his involvement in this area, key leaders
in agricultural education were able to form a united front and postpone any action until
further clarification of the subject becomes available. In addition, he co-chaired the State
Board of Education Career and Technical Education committee. The certification report was

Diversity of interest within the Department is expanding our academic outreach capacity.
Mr. Hanekamp provides an international outreach dimension for our curriculum and
extension activities. Under his direction, the Department interacts with the Office of
International Programs on the Memorandum of Agreement with the Vietnam National Center
of Science and Technology and the College of Agriculture and Life Sciences. This
agreement has and continues to open opportunities for agricultural science faculty and
educators to arrange short term faculty and research scientist exchanges. Since 1998, two
visitations to the College were arranged for faculty and educators from the Institute of
Tropical Biology, Vietnam followed by visitations by science and educator faculty from the
College to the National Center Science Institutes in Vietnam. A number of project and
funding proposals to expand faculty and student exchanges are pending in the areas of
tropical biology research, as well as modernization programming in secondary education,
curriculum revitalization in the agricultural and biological sciences and teacher and education
administrator development.

Dr. Foster brings another support mechanism maintained by the Department through the
Desert Roses Newsletter and Web Site. In August of 1996 the first issue of Desert Roses was
mailed to the female agricultural education professionals in Arizona. Designed to be a pro-
active ‘support’ letter, Desert Roses framed a communications network for the women in
agricultural education in Arizona. The original group included 21 teachers, two administrators, and one secondary level counselor. Today the newsletter is sent to over 300 agricultural education professionals holding a variety of positions nationwide. The Web Site is literally viewed by people all over the world and was nationally recognized as one of the best education sites in the country when it received the StudyWeb Academic Excellence Award in 1999.

The newest member of the Department faculty, Dr. Ed Franklin has already provided positive impact in the area of academic outreach. He has begun to take an active role in the induction program for beginning teachers and has also worked with student teachers in the field.

I. Collaborations with other Units

The faculty members participate in interdisciplinary programs and efforts on campus (Arid Lands Resource Sciences, GLOBE [Global Learning and Observation to Benefit the Environment], ADOT [Arizona Department of Transportation], SAMEC [Science and Math Education Center], CATTs [Collaborative for the Advancement of Teaching Technology and Science]). This involvement draws on the academic expertise in the department in the classroom through formal teaching, service on thesis and dissertation committees and participation in seminars, panel discussions, and conferences. As University citizens, faculty members are often called upon to serve on new faculty member searches, support the work of the Faculty Teaching Center, Freshman Year Center (Partners Program) and participate in advisory committee work.

In the past five years, a conscious effort has been made to attract students from other majors in the various colleges to several of the leadership and teaching courses offered by the Department as well as in the basic computer courses taught by our faculty. This effort has been successful and is credited with expanding the thinking of students in the department who are often not otherwise exposed to the thoughts and ideas of their cohorts from other disciplines, particularly those beyond the College of Agriculture and Life Sciences. To further this effort, a number of courses are now being cross-listed in other departments.

The following items represent some of the collaborative efforts that have and are going on with other groups:

- The Department collaborates with the school of Family and Consumer Sciences through a variety of cross-listed courses, most specifically in communication, leadership, and experiential education.
- The FFA competitive field day Career Development Events are a collaborative effort among the various departments in the College and is intended to provide a university learning experiences for students from throughout the state. This has an added benefit in that it serves as a recruiting tool.
- VetScience/Microbiology majors are now being counseled into communication, leadership and education courses in the Department to enhance people skills seen as increasingly necessary for their professional field.
- The Department has a close association with the Science Education faculty who are working together to prepare science teachers and equip them with skills for success.
- Because of the integrative nature inherent in the research programs of some of our graduate students, we have nurtured working relationships with a number of faculties across campus e.g. from the College of Education, the Medical School, Humanities, Public Health, Anthropology, and the technical departments in the College of Agriculture.
and Life Sciences. These associations are generally rewarding for all concerned and underscore the need to more fully develop interdisciplinary study possibilities across all the colleges.

- Pest Management in Controlled Environment Agriculture, an AGTM course, is a collaborative effort offered to students through Entomology and Plant Sciences. It was the precursor of the newly created option available in the Center for Controlled Environment Agriculture, the AGTE Major (Ag Tech Management and Education). This is a joint effort with Ag BioSystems Engineering and Plant Sciences.

J. Resources

The College of Agriculture and Life Sciences has been very supportive of the programs in the Department. It has provided start-up funds for new hires and has repeatedly provided additional funds when required to meet unforeseen and unplanned events. CALS support of Departmental efforts such as the State FFA Officer financial package, TA positions, clerical support, and various other projects have been instrumental in the operation and development of the Department.

The operating funds provided to the Department meet only basic operational needs, so much of the cost of doing business for an active and professionally involved faculty have come through grant support and salary savings. Little budgetary flexibility remains to address unforeseen problems in existing programs or to support new initiatives. However, plans have been made in concert with the College that should go a long ways to alleviate much of the concern in this area.

The faculty has been successful in attracting extramural support for its research and development activities. However, in a department that carries a major commitment to teaching, much beyond what might be considered normal for other departments, the pursuit of extramural support is a difficult endeavor at best. Table 7 provides the information related to sponsored projects for the past five years.

<table>
<thead>
<tr>
<th>TABLE 7</th>
<th>Sponsored Projects for Agricultural Education</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$124,104</td>
</tr>
</tbody>
</table>

K. Administration

The Department Head, Dr. Roger Huber, has provided the administrative leadership and decision making for the unit, following appropriate consultation with faculty, staff and students. The Head works with the administrative assistant and the business officer to administer the financial operation of the Department.

Because the Department is small, the committee structure is handled as a “committee of the whole” when possible. In addition, faculty members are identified to provide oversight and leadership for the various programmatic efforts. For Example, Dr. Miller has provided leadership to the graduate program and Dr. Elliot has worked directly with the undergraduate teaching program and the computer and technology activities. Dr. Foster has been leading
the recruitment efforts and Dr. Knight has been coordinating the CDE day and other collaborative efforts on and off campus. Mr. Hanekamp is giving leadership to the international efforts and Dr. Nancy Huber is providing the driving force in the development of an IDP for Leadership Education. Dr. Franklin is now providing leadership for the induction program for the beginning teachers.

L. Affirmative Action

The members of this unit strongly support and adhere to the affirmative action policies and principles of the University of Arizona. We endeavor to conduct well-publicized and open searches for all positions. When soliciting applications for faculty and staff positions, we specifically request assistance in encouraging applications for qualified minorities and women.

The Department’s efforts in this area are demonstrable. With the addition of Dr. Foster to the faculty and an active recruitment program, the number of females pursuing majors in the department has steadily increased. In addition, the number of students from ethnically diverse backgrounds is also rising. Both Dr. Foster and Dr. Knight have gained national recognition for their work in this arena.

M. Summary Statement and Future Goals

The Department has experienced some tremendous success in many areas, especially those associated with the teacher preparation phase of the program. It is recognized in the College, the University, nationally and internationally for outstanding teaching, research and service. The faculty possesses a rare combination of talents and professional expertise welded by a very powerful and consistent philosophy based upon service to the constituents of the program. As a Department, they teach an inordinate number of courses relative to other departments in the College and the University. The students rate them highly and are pursuing majors in the Department at higher numbers than ever before in the Department’s history. There has been excellent support for the Department from the College and so the program has experienced needed growth to handle the increased teaching loads.

However, with all of that said, there is plenty of room for improvement and the Department is committed to the following:

- Strengthen the excellent teaching, advising and service activities that have brought the Department to its present status.

- Improve the existing facilities and try to find more space for future growth and development.

- Expand the research program of the Department. This can be done with individual faculty efforts and with Department and College support. The goal will be to have the Department more recognized nationally and internationally for its research efforts and programs.

- Strengthen the ties with the Cooperative Extension service.
• Promote and encourage an international dimension in the Department to provide a global perspective to the curriculum, instruction, research and faculty development.

• Appoint and involve an Advisory committee to assist the Department in looking forward, being responsive to its constituents, and improve all of its programs.

• Resolve the publishing issues associated with revised and newly created curriculum materials for secondary agricultural education teachers.

• Implement a plan for recruitment of outstanding graduate students to the Department.

• Re-emphasize the undergraduate recruitment efforts, including specific strategies to recruit students from under-represented populations.

• Initiate specific efforts to articulate and collaborate with the community colleges and other universities in Arizona.

• Develop a list of competencies for the Agricultural Technology Management program similar to the one that exists in the Agricultural Education program.

• Create a more systematic approach to the outreach efforts, especially as it relates to off-campus courses and workshops, of the department.

• Establish a Lecturer position focused on providing assistance with some outreach efforts, including recruitment of undergraduates and graduates, pursuing internship opportunities, offering major assistance with the annual CDE day, and assisting with supervision of student teachers and new and returning teachers.

• Continue the development of courses and support systems for career and technical education teachers in Arizona.

• Keep abreast of the technological advances such that students will be afforded access to them as they participate in the programs of the Department.

• Improve the infrastructure of the Department to provide a place where people enjoy working and students enjoy studying and learning.

N. Self-Study Document Information

This document was prepared following the outline suggested in the “Academic Program Review Procedure Manual, August 2000” (Attachment 6).
O. List of Attachments

1. Faculty Vitae
2. Department Competency Crosswalk by Courses
3. Guide for Graduate Students
4. Departmental Recruitment Program of Activities
5. Professional Development Program Offerings
7. Student Teaching Manual
8. Cooperating Teacher’s Manual