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– April 2, 2008
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## Appendix I.1

# Using Alumni Input as a Reality Check of Agronomy Teaching and Advising

John G. Graveel\* and James J. Vorst

**ABSTRACT** As part of a systematic review of the undergraduate curricula and courses, the perceptions of Purdue agronomy alumni who graduated between 1960 and 2003 were obtained. A survey was administered to assess outcomes, identify gaps in the curriculum, measure how well the program addresses current and future needs, and provide a direction for change. There were 286 respondents to the survey, which was sent to 1446 alumni. Survey results indicated that the agronomy curriculum prepared graduates well in technical areas, problem solving skills, and increased their ability to integrate information. Oral communication skills, diversity issues, and business skills were listed as areas in which they were least prepared. Respondents suggested that problem solving should receive more emphasis in the curriculum. On average, they suggested that the curriculum should emphasize the practical and theoretical aspects equally, that two semesters of foreign language be included, and that international studies be emphasized. Factors that most influenced alumni decisions to major in Agronomy included: recommendation of friends, Purdue's reputation, and their interest in agronomic topics. Interestingly, alumni respondents indicated that high school counselors had essentially no influence on their decision to major in agronomy.

Improving the quality of agricultural undergraduate programs at major land-grant universities is a continuing goal. The agricultural industry is evolving and its needs are changing. The educational systems to meet these needs must not fall behind. Numerous reports have been published indicating the need for agriculture curricula that develop competencies in problem solving, critical thinking, international understanding, and communications (Foster et al., 1990; Frick et al., 1992; Kunkel et al., 1996; Patterson, 1996; Salvador et al., 1995; Suvedi and Heyboer, 2004; Welton, 1987).

The purpose of the curriculum is to provide a set of experiences that will ensure each student's education occurs in a logical and thorough fashion. The curriculum should be challenging and support diverse types of cognitive and motor development and professional abilities appropriate to each individual (Diamond, 1998).

The desired outcomes of educational programs in the Department of Agronomy at Purdue University are students who: are prepared to assume positions of agronomic and community leadership locally, nationally, and internationally; are well versed in basic and applied plant and soil sciences; understand characteristics of production sustainability at the local, national, and international level; are holistically educated and sensitive to gender and cultural

Department of Agronomy, 915 W. State St., Lilly Hall of Life Sciences, Purdue Univ., West Lafayette, IN 47907-2054. Received 3 July 2006. \*Corresponding author (jgraveel@purdue.edu).

J. Nat. Resour. Life Sci. Educ. 36:87-94 (2007).  
<http://www.JNRLSE.org>  
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677 S. Segoe Rd., Madison, WI 53711 USA

### Impact Statement

College curricula need to be evaluated to determine whether or not they are keeping pace with innovations in technology, the job market, and the global environment. The Department of Agronomy at Purdue University conducted a survey of their alumni as one way to obtain feedback on the curriculum. As a result of the survey, changes are being made in the curriculum to balance practical and theoretical aspects, encourage international studies, provide multicultural awareness, and possibly consider foreign language as a requirement in the Agronomy Department.

issues; are multidimensional thinkers who are able to analyze problems, develop solutions, and communicate results; are independent, active learners who can identify reliable resources of information to facilitate their lifelong learning.

The survey of alumni perceptions of the agronomy curriculum in 2003 was Purdue Agronomy's first comprehensive survey to be conducted of graduates from 1960 through 2003. This survey was a part of a systematic review of the undergraduate curricula, courses, and academic advising to assess outcomes, identify gaps in the curriculum, measure how well the program addresses current and future needs, and provide guidance for improvement.

Abbreviations: IPIA, International Programs in Agriculture; OSU, Oklahoma State University; UNR, University of Nevada Reno.

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Fig. 1. Alumni survey.

Department of Agronomy Alumni Survey of Undergraduate Programs

Name (optional): \_\_\_\_\_

Option or major: \_\_\_\_\_

Year graduated: \_\_\_\_\_

Present position: \_\_\_\_\_

PART I: CURRICULM ISSUES

Listed below are skills and abilities generally considered beneficial to college graduates. Please rank how well you believe Agronomy graduates are prepared in each of these areas.

		Very well pre- pared	Adequately prepared	Slightly prepared	Not prepared
1	Problem solving/analytic skills	4	3	2	1
	Identifying, solving, and sorting out facets of a problem				
2	Decision Making Skills	4	3	2	1
	Making timely decisions, and identifying who will be affected by the decisions made				
3	Planning, organizing, setting priorities	4	3	2	1
	Determining tasks to be carried out toward meeting objectives, assigning tasks to others, and monitoring progress				
4	Oral communication skills	4	3	2	1
	Presenting information verbally to others, either one-to-one or in groups				
5	Written communication skills	4	3	2	1
	Transferring written information through reports, business correspondence, memos, and notes				
6	Interpersonal skills, working with others	4	3	2	1
	Maintaining a positive attitude and working well with superiors, subordinates, and peers				
7	Ability to integrate and use information from diverse sources	4	3	2	1
	Identifying sources of information				
8	Keeping up-to-date in your field	4	3	2	1
	Gaining knowledge from everyday experiences and using new technology to your job				
9	Ethics	4	3	2	1
	Using ethical standards to make personal and professional decisions				
10	Technical skills	4	3	2	1
	Achieving and retaining the skills and ability to deal with required technical knowledge and information in your area of expertise				
11	Diversity	4	3	2	1
	Being aware of and reacting positively to cultural, ethnic, and gender issues				
12	Business skills	4	3	2	1
	Managing personnel, fiscal matters, and strategic business plans				

Of the 10 skill areas listed below, rank 1-3 the three skill areas that should receive the most emphasis in the curriculum

\_\_\_ Problem Solving

\_\_\_ Interpersonal Skills

\_\_\_ Decision Making

\_\_\_ Ability to Integrate Information

\_\_\_ Planning and Organizing

\_\_\_ Keeping up-to-date

\_\_\_ Oral Communication

\_\_\_ Positive Attitude/Work Ethic

\_\_\_ Written Communication

\_\_\_ Technical Skills

\_\_\_ Other

## PART II: ADVISING, DEPARTMENTAL ISSUES

- 1 Please indicate how much of your education you believe was theoretical, or basic, vs. applied, or practical. Rank for agronomy courses only.  
 Percent theoretical, or basic \_\_\_\_\_  
 Percent practical, or applied \_\_\_\_\_  
 Total: 100%
- 2 Please indicate what you believe is the ideal balance between theoretical, or basic and applied, or practical, aspects of courses in agronomy.  
 Percent theoretical, or basic \_\_\_\_\_  
 Percent practical, or applied \_\_\_\_\_  
 Total: 100%
- 3 Student Advising  
 How satisfied were you with the academic advising you received as an undergraduate?  
 4 = highly satisfied  
 3 = satisfied  
 2 = dissatisfied  
 1 = highly dissatisfied  
 Comments:
- 4 We presently use a decentralized advising system, with several faculty advising 10–30 students each. Would you favor going to an advising system in which one trained counselor advises all agronomy undergraduates?  
 Suggestions for improving our counseling system:
- 5 What do you envision as the "hot topics" on the horizon that we should be incorporating into our undergraduate Agronomy curriculum?
- 6 How many semesters of foreign language should be required in agronomy?  
 (encircle)                      0                      1                      2                      3                      4                      5                      6
- 7 Should the agronomy curriculum increase its emphasis on international studies?  
 (encircle)                      Yes                      No                      .
- 8 Please check these factors that positively influenced your decision to major in agronomy.  

<input type="checkbox"/> Parents	<input type="checkbox"/> Friends
<input type="checkbox"/> School Counselor	<input type="checkbox"/> Department/ Purdue Reputation
<input type="checkbox"/> Work Experience	<input type="checkbox"/> Scholarships and Financial Aid
<input type="checkbox"/> Quality of Education	<input type="checkbox"/> Interest in your option in Agronomy
<input type="checkbox"/> Visit to Campus/Department	<input type="checkbox"/> Other _____
- 9 In summary, how satisfied were you with the education you received as an Agronomy major?  
 4 = highly satisfied  
 3 = satisfied  
 2 = dissatisfied  
 1 = highly dissatisfied
- 10 Additional comments:
- 11 (Optional) Please list any milestones or accomplishments you have achieved since graduation.  
 Thank you.

## Materials and Methods

### Survey Construction

A three-page survey solicited information on Purdue's curriculum in agronomy (Part I) and on advising and departmental issues (Part II, Fig. 1). The survey consisted of multiple choice, rank order, and open-ended questions. Open-ended questions were limited to reduce time required of respondents. The purpose of Part I of the survey was to identify strengths and weaknesses of the curriculum. In

Part I, alumni were asked to determine how well the undergraduate curriculum prepared graduates in 12 areas and to rank their responses on a scale of 1 to 4, with 4 being *very well prepared* and 1 being *not prepared*. The last question in Part I addressed skill areas that should receive more emphasis in the curriculum. In Part II strengths and weaknesses in noncurricular issues were probed by asking 11 questions ranging from academic advising and recruitment through area of emphasis, "hot topics" and level of satisfaction with their education in agronomy. At the end of Part II

we provided space available for additional comments and milestones or accomplishments the alumni had received since graduation.

### Survey Disbursement

In summer 2003 the survey was distributed to 1446 departmental alumni who graduated between 1960 and 2003 and for whom current addresses were available. A follow-up email was sent in December 2006. Recipients of the survey represented various sectors of the workforce: public and private businesses, local and state governments, and academic institutions.

### Weighted Responses

A four-point modified Likert scale (Likert, 1932) was used to calculate a weighted average. A numerical value was assigned to each response. "Very well prepared" was scored 4; "adequately prepared" was scored 3; "slightly prepared" was scored 2; and "not prepared" was scored 1. These values were summed to obtain weighted responses to the selected aspects of the curriculum. There were 275 respondents to the survey in 2003. There were an additional 11 respondents to the follow-up email. Alumni demographics and responses can be found in Table 1.

the Midwest outside Indiana, and 51% were elsewhere in the United States.

### Curriculum Issues

Respondents indicated that the curriculum prepared undergraduate students in technical areas and problem solving skills well and increased their ability to integrate and use information (Fig. 2). Oral communication, appreciation of diversity, and business skills were listed as areas in which they felt least prepared. Keeping current; ethics; interpersonal skills; decision making; planning, organizing, and setting priorities; and written communication skills were ranked in the middle. Similar results were reported by Madewell et al. (2003), Zekeri and Wheelock (1995), Barker and Graveel (2004), and Weis (1992) when employers evaluated problem solving and technical skills of graduates.

Diversity, defined as "being aware of and reacting positively to cultural, ethnic, and gender issues" is presently garnering much attention by employers and alumni (Diamond, 1998; Felsberg, 2005). Many respondents cited the importance of having an appreciation for diversity and suggested more attention be given in the curriculum to recognizing the importance of minorities and female employees. All entering freshmen in the Purdue University College

**Table 1.** Distribution of responses among curriculum options.

Year	Agronomic business and marketing	Applied meteorology	Environmental soil science	International agronomy	Plant genetics and plant breeding	Soil and crop management	Soil and crop science	Turfgrass science	Misc.
1960–1984	0†	6	1	3	0	69	13	27	39
1985–1989	0	2	0	1	0	11	3	1	6
1990–1994	1	1	0	0	1	7	3	6	1
1995–1999	6	0	1	0	1	13	4	8	3
2000–2003	6	2	1	1	0	9	8	10	5
Unknown	0	0	0	0	0	0	0	0	4
Total	13	11	3	5	2	109	31	52	58
%	5	4	1	2	1	38	11	18	20

† Number of alumni responses in each agronomy option.

## Results and Discussion

### Survey Response Rate

Twenty percent of departmental alumni graduating from eight options in agronomy returned the survey. The response rate (20%), was higher than that reported by Madewell et al. (2003) at the University of Arkansas, but lower than that at Oklahoma State University (OSU) (43%) and the University of Nevada–Reno (UNR) (39%) (Oklahoma State University Office of University Assessment, 2000; Dittloff, 2000). The target population for the survey conducted at OSU was recent baccalaureate degree recipients. At OSU a phone interview was used whereas UNR utilized a traditional mailing followed by two follow-up letters to encourage responses. Of the respondents to the Purdue University survey, 41% were located in Indiana, 10% in

of Agriculture are required to complete 3 credit hours of multicultural awareness electives. This requirement can be fulfilled through a course entitled Communicating Across Cultures, a selection from a multicultural elective course list, or successful completion of an approved noncredit multicultural awareness experience of a minimum of 4 weeks duration, which may be used in lieu of 3 credits of multicultural awareness electives.

Feedback from the survey indicated that agronomy graduates are least prepared in business skills (Fig. 2). In the past the Department of Agronomy focused on problem solving, technical skills, integrating information, and staying current in science. Agronomy options that have at least two business courses in addition to introductory economics in their plans of study include Turf Science, Plant Genetics and Plant Breeding, and Soil and Crop Management. The

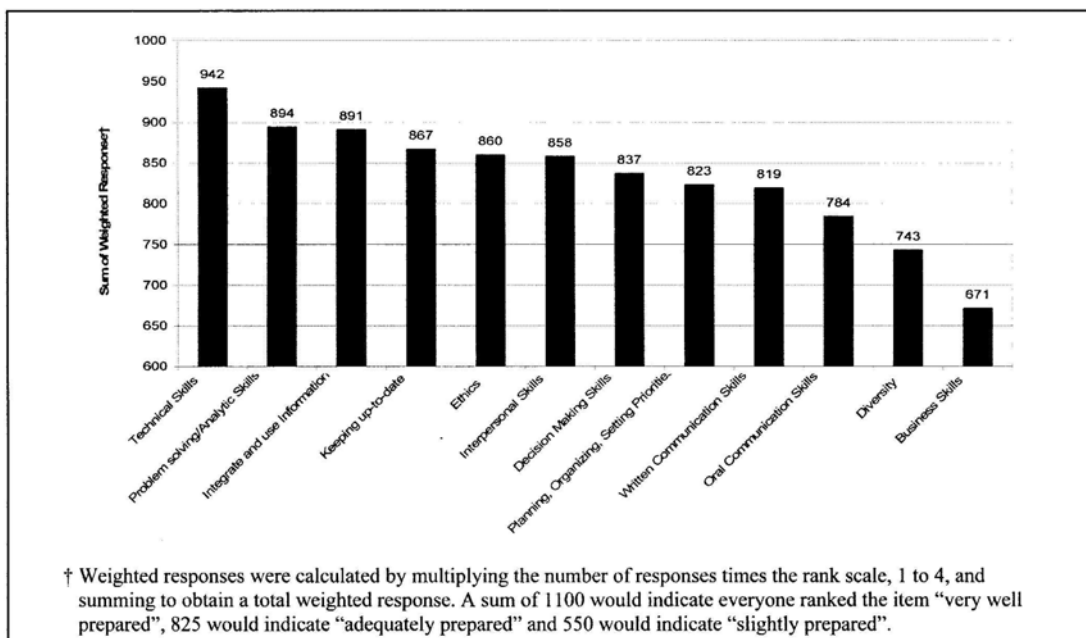


Fig. 2. Alumni evaluation of preparedness in 12 aspects of the curriculum.

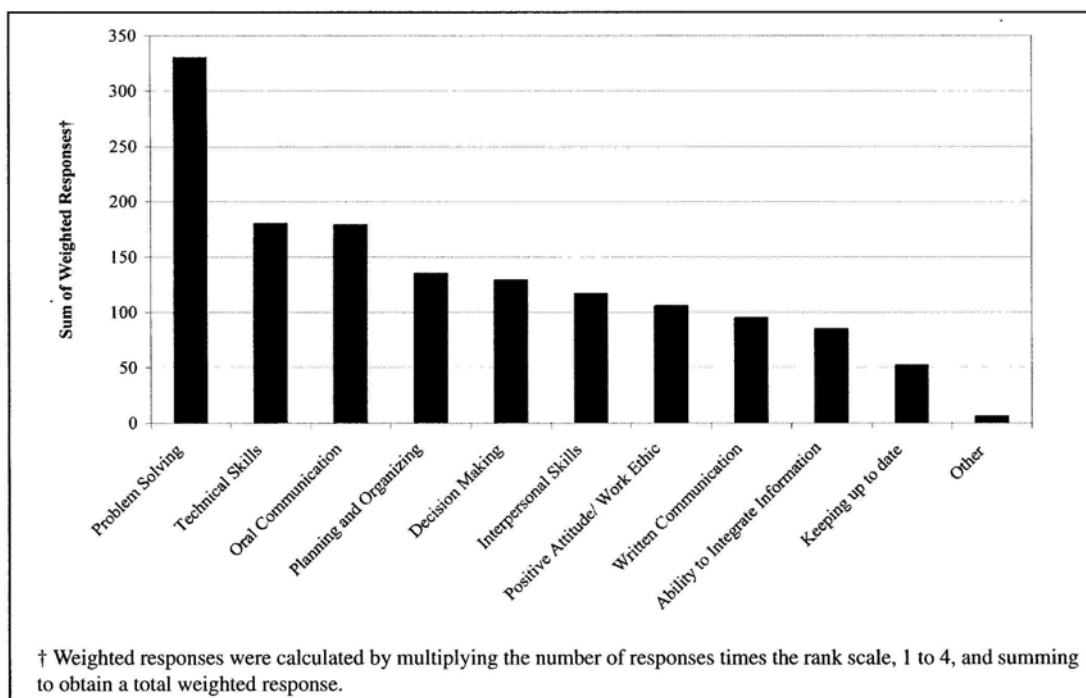


Fig. 3. Skill areas that should receive emphasis based on the survey of alumni.

Agronomic Business and Marketing option includes courses in agricultural economics, economics, management, and organizational leadership and supervision. The remaining options—Applied Meteorology, Environmental Soil Science, International Agronomy, and Soil and Crop Science—have only one required business course. Based on the survey results students are now encouraged to enroll in more business courses.

### Skill Areas

Skill areas suggested by the alumni to receive the most emphasis in the agronomy curriculum are reported in Fig. 3. Alumni indicated that the curriculum is strongest in providing students with strong technical and problem solving skills (Fig. 3) but emphasized the importance of being able to think creatively. Planning and organizing, decision making, interpersonal skills, and maintaining a positive work ethic were considered more important than written communication, ability to integrate information, and being current in one's discipline.

According to Garton (1994), more emphasis needs to be placed on defining the problem; seeking the relevant data; formulating possible solutions and/or recommendations; applying the concepts, principles, and/or skills learned; and evaluating the solution to the problem. Purdue alumni agree this is important and results of the survey will guide continued curriculum revision.

### Theoretical and Practical Education

When asked to respond to the balance between theoretical and practical education alumni felt theoretical and practical aspects should receive equal emphasis. However, they responded that the curriculum balance was 41 to 59% in favor of practical knowledge. According to Zimdahl (2003) the original mission of land-grant colleges of agriculture was to promote the liberal and practical education of the industrial classes. The alumni survey indicated the agronomy curriculum is in accordance with that original mission.

### Advising Issues

The level of satisfaction with academic advising was high. Eighty-two percent of respondents expressed satisfaction with the decentralized advising system in which several faculty share advising responsibilities. Similar results were obtained by Suvedi and Heyboer (2004) for the College of Agriculture and Natural Resources at Michigan State University.

### Hot Topics

Alumni are a valuable source of information on the rapidly changing needs of graduates. Emerging areas alumni believed the department should incorporate into the undergraduate curriculum, in descending order, included biotechnology/genetics, resource management/environment, stewardship, international issues, ethics/business/economics, and sustainability/biodiversity (Table 2). Globally, biotechnology awareness is highest in the United States, Canada, and Western Europe (Fritz et al., 2003). Therefore, to improve the quality and value of undergraduate education, agronomy must place increased emphasis in this area.

**Table 2.** Areas that alumni believed were emerging issues and that our curriculum should address.

Emerging issue
Biotechnology/genetics
Resource management/environment
Stewardship
International issues
Ethics/business/economics
Sustainability/biodiversity

### The Foreign Language Issue

The foreign language requirement has been a point of discussion in the College of Agriculture at Purdue for several years. Students are required to have completed 2 years of a foreign language in high school to be accepted into the College of Agriculture. Language training at the secondary school level is a natural transition to a foreign language experience in higher education. There are many international opportunities available to agricultural students who want to work abroad. Freivalds (1998) discussed marketing agric-products in the former Soviet Union nations and the importance of being able to interact locally and to do business in the native language. James Patterson (1996), an agricultural attaché, pointed out the importance of understanding a foreign language. Preparing students for citizenship in a global society is recognized as an integral part of our undergraduate mission. Within the Department of Agronomy, only the international agronomy curriculum has a foreign language requirement. Alumni have indicated the importance of a foreign language experience and international study abroad programs for our undergraduates in agronomy. Fifty-six percent of those responding would like to see a minimum of two semesters of foreign language (Table 3). Purdue's Office of International Programs in Agriculture (IPIA) provides opportunities for agricultural undergraduates to experience part of their education outside the United States by offering one year, semester, summer, maymester, or spring break study abroad programs (International Programs in Agriculture, 2005). Presently 11% of agronomy undergraduates participate in study abroad programs. The Department of Agronomy has set a goal of having 30% of its undergraduate students participating in an international experience by 2010.

**Table 3.** Semesters of a foreign language required in the agronomy curriculum suggested by the alumni.

Number of	
Semesters suggested	Alumni responses†
0	82
1	37
2	95
3	16
4+	40

† There were 270 alumni responses to this question.

## Positive Influences in Selecting Agronomy

Factors perceived by the alumni respondents to have most influenced their decision to major in agronomy included friends, Purdue's reputation, interest in agronomic topics, and a high school visit to campus/department. High school counselors had essentially no influence on their decision to major in agronomy (Table 4). Burdette-Williamson and O'Neal (1998), in their study of African-American undergraduate students at a large Midwest university found that only one-third of the students identified a secondary teacher or high school counselor as influencing their decision about a major, whereas the rest identified parents, siblings, relatives, and friends as more influential. However, Grainger and Bolan (2005) pointed out the importance of high school guidance counselors in selecting

**Table 4.** Factors that positively influenced alumni decision to major in agronomy.

Factors	Total no. selected
Friends	121
Department/Purdue reputation	118
Interest in agronomy option	107
Visit to campus/department	103
Parents	97
Quality of education	76
Work experience	43
Scholarships/financial aid	39
School counselor	6
Other	38

a career in nursing. Most high school guidance counselors are graduates of the College of Liberal Arts or the College of Education and therefore are not familiar with agriculture programs, which may account for our findings. This suggests a need to familiarize secondary school counselors with agricultural programs by providing tours to the agricultural campus or by connecting a counselor with an alumnus from their high school. The College of Agriculture is publishing a magazine entitled *Destination Purdue* for high school students. This magazine broadens the awareness of agriculture and promotes interest in the College of Agriculture. Our survey results indicate that secondary school counselors should be included in the distribution of this publication.

**Table 5.** Summary of alumni perceptions of the education they received in the Department of Agronomy.

Summary of perceptions	%
Highly satisfied	58
Satisfied	40
Dissatisfied	2
Highly dissatisfied	0

## Alumni Perceptions

Ninety-eight percent of alumni were highly satisfied or satisfied with their education in the Department of Agronomy (Table 5). Similar results were obtained by Suvedi and Heyboer (2004) for the College of Agriculture and Natural Resources at Michigan State University and the College of Agriculture Science and Natural Resources at Oklahoma State University (Oklahoma State University Office of University Assessment, 2000). The mission of the undergraduate teaching program in agronomy at Purdue University is to prepare students for productive roles in society by providing the foundation, motivation, and continual support for life-long learning. According to alumni the Agronomy Department is accomplishing that mission.

## Summary

Alumni have a high regard for the agronomy curriculum and academic advising at Purdue. However, in response to our request alumni prioritized recommendations they believed would improve the quality and value of the educational program. They suggested that more emphasis be placed on problem solving and that equal emphasis be placed on the practical and theoretical aspects of the undergraduate curriculum. Their rankings indicated that emerging areas such as biotechnology need to be more completely incorporated into the curriculum and undergraduates should participate in an international experience. They ranked friends as the factor that most influenced them to major in agronomy. Overall 98% of the responding alumni were satisfied with the education received in the Department of Agronomy.

The Department of Agronomy continues to produce job-ready graduates who are prepared to solve complex technical problems in agriculture. Recent curricular changes are intended to provide an even balance of basic and applied experience for undergraduate students. Biotechnology and environmental issues are being addressed in the genetics curriculum and in new courses in soil ecology, environmental science, and environmental soil chemistry. Our departments' academic advisors have promoted increased student registration in civil engineering courses related to natural resource issues and have encouraged students to enroll in a broader range of biotechnology and environmental courses. Education in hazardous materials handling and occupational health and safety are now available to students.

An on-going exchange of information related to the work place needs is a vital component of employer/school liaison activities and will continue to ensure that agronomy graduates enter the work force ready to make immediate contributions.

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## Appendix I.2

### **Summary of K-12 Outreach Activities for 2007-2008**

Program	Participants	Number
Field Trips France Park	Cass Co. 5 <sup>th</sup> grade conservation day	726
	Environment Day 3-6th grade	22
	4-H soils work shop	18
Soils Invitational	H.S. 4-H FFA Area Fields	375
	State Contest (w/ Steinhardt	400
Crops Invitational	H.S. 4-H FFA Purdue	110
Spring Fest	All Ages Community	2100
Envirothon Competition FFA	H.S. State Contest(prepare visuals for exam)	130
	national contest (prepare visuals for exam)	?
Camp Nutrition	Jr. Sr. H.S. (Food Sci. Dept)	36
Camp Discovery	Minority Ag camp	24
FFA Conference	H.S. dept tour & hands on class	75
4-H Programs	H.S. Plant Science Work Shop	45
	Environmental Work Shop	24
	H.S. 4-H Round-up	60
	Scofield, Graveel ,Schulze	80
	Conserv. day Carroll C.	15
	Soil Conservation Tippecanoe in 3-409	20
Field Trips Meigs Farm w/Suzanne, Jay, Judy	3rd grade Sugar Creek	68
	3rd grade Frontier	80
	3rd Zionsville	58
	1st Vinton	78
	3 <sup>rd</sup> South Newton	76
	1 <sup>st</sup> Dayton	80
	3 <sup>rd</sup> Cumberland	135
Earth Science Day	East Tip 7th Grade Klondike	126
Make a Splash	Water camp with Tippe Park & rec	600
Tippecanoe Co Ag Day	4 <sup>th</sup> graders	925
Pond Day	Cole Elementary	82
Mentone	Kristi Delp kindergarten	54
Bartholomew Co.	Hauser 6 <sup>th</sup> – Soils & Field trip prep	90
Jennings Co.	Scipio 5 <sup>th</sup> Earth science Unit	64

Program	Participants	Number
In House with PU VIC	5th grade Boswell	27
	Advanced science class Frankfort	25
	Boniar Frankfort 5 <sup>th</sup>	22
School visits	Volenc, Tuinstra	<u>40</u>
		6809 youth
Eli Lilly Partners in Education	Teacher Training (Exploring Energy)	48
NSTA (Suzanne)	booth with Plant biologists	200
Master gardeners	Vanderburg Co	32
	Montgomery Co.	29
	Carroll Co.	28
Master Naturalist	Clinton Co.	27
Arborist, Lndscp.	Continuing ed.	20
IDEM St. dept of health	Continuing ed . w/ Brad Lee	150
IOPA	w/ Lee	24
Kiwanis	Lunch program for wives	<u>50</u>
		608 adults

## Appendix I.3

### Advanced Graduate Teaching Certificate

#### Advanced Graduate Teacher Certificate (AGTC) Purdue University, West Lafayette, Indiana

The mission of Purdue University is to serve the citizens of Indiana, the United States, and the world through **discovery, learning, and engagement**. Graduate teaching assistants (GTAs), as apprenticeship instructors, play vital roles in accomplishing this mission.

To assist graduate students in developing teaching skills while simultaneously documenting their teaching experiences and challenges for their resumes, Purdue offers the four following programs, i.e., the:

1. Graduate Teacher Certificate (GTC)
2. Graduate Teacher Certificate – Alternative (GTC-A)
3. Advanced Graduate Teacher Certificate (AGTC)
4. Graduate Teacher Technology Certificate (GT-C).

Overseeing these programs is the Center for Instructional Excellence (CIE), Committee for the Education of Teaching Assistants (CETA), the Lilly Endowment Retention Initiatives, and the Graduate School.

**The Advanced Graduate Teacher Certificate (AGTC)** program is centrally administered by the Center for Instructional Excellence (CIE). This program is designed for a select group of graduate students, who have achieved an advanced level of teaching experience, skill, and success.

The AGTC can assist graduate students who aspire to be excellent teachers in a number of ways. First, the AGTC helps prepare the future professoriate by approaching teaching from a discipline-based perspective, incorporating interaction with peers, and applying multiple tools in the assessment of teaching. Second, the AGTC honors graduate students who have made exceptional contributions in classroom teaching, inquiry into teaching, and service related to teaching. Finally, the AGTC equips graduate students to confidently advance into the professoriate.

To be certified, the graduate student must fulfill all nine *Tier 1* competency requirements, together with two *Tier 2* requirements. *Tier 2* competencies are chosen by the graduate students themselves, as areas of specialization. Assessing competency results is discussed later in the section: *Teaching Effectiveness Measures*.

Specific requirements for certification are:

Competency	Tier 1 required	Tier 2 any two
1. Classroom teaching experience	✓	□
2. Continuous improvement	✓	□
3. Teaching other GTAs	✓	□
4. Mentoring	✓	□
5. Service	✓	□
6. Investigation into teaching and learning utilization	✓	□
7. Instructional technology utilization	✓	□
8. Teaching portfolio	✓	□
9. Teaching effectiveness measures	✓	n/a

Graduate students who fulfill AGTC requirements and demonstrate excellence in teaching will have their applications reviewed by the AGTC committee.

#### 1. Classroom Teaching Experience

- Tier 1:** Teach a minimum of one class each semester on the Purdue campus for at least four semesters. Teaching a class is defined as having university scheduled teaching duties with students on a daily, semi-weekly, or weekly basis in a classroom, studio, or lab. Responsibilities consisting only of grading and/or writing tests/exams, holding office hours, and proctoring tests/exams do not fulfill this requirement.
- Tier 2:** Teach a class as the primary instructor, creating a syllabus, selecting reading

materials, designing student assessments, and developing creative, effective teaching and learning strategies.

#### 2. Continuous Improvement

- Tier 1:** Enrolling in and completing a CETA-approved, campus course on college teaching is the general requirement. In rare instances, participation in 18 or more hours of approved workshops or seminars on college teaching beyond the pre-semester orientation can be accepted. Graduate seminars on teaching and learning (such as *College Teaching Workshops Series* are examples. All courses, seminars, and workshops must be CETA-approved to apply to this requirement.
- Tier 2:** Participate in 30 or more hours of continuous education beyond the pre-semester orientation and the requirement for Tier 1.

#### 3. Teaching other Graduate Teaching Assistants (GTAs)

- Tier 1:** Work with other GTAs to support good teaching, both on campus and in the graduate student's department, for a minimum of 10 hours. Options include working as a head GTA, supervising other GTAs for a minimum of one semester; facilitating at a pre-semester orientation for GTAs and/or international GTAs; or facilitating continuous improvement seminars for other GTAs. The 10-hour minimum must include at least one activity teaching other GTAs in the graduate student's own department and at least one activity teaching GTAs outside the graduate student's department. Documentation must include a reflective narrative.
- Tier 2:** Facilitate and teach sessions for other GTAs on improving teaching techniques and issues related to teaching for an additional 10 hours. Documentation must include a reflective narrative.

#### 4. Mentoring

- Tier 1:** There are two components to this requirement: being mentored and being a mentor. Being mentored includes meeting with a faculty member on a specified basis. Being a mentor includes meeting one-on-one on a weekly or semi-weekly basis for a minimum of one semester with a junior GT. Documentation must include a reflective narrative.
  1. Being mentored: meeting with a faculty member on a weekly or semi-weekly basis for a minimum of one semester to discuss issues related to teaching. Academic units and/or the Center for Instructional Excellence (CIE) can assist graduate students in identifying mentors.
  2. Being a mentor: meeting one-on-one on a weekly or semi-weekly basis for a minimum of one semester with a junior GTA to discuss issues related to teaching and do reciprocal teaching observations.
- Tier 2:**
  1. Meet with a mentor for a minimum of two semesters.
  2. Mentor at least two other GTAs for a minimum of two semesters each. Documentation must include a reflective narrative.

#### 5. Service

- Tier 1:** Provide a minimum of 10 hours of discipline-based service on campus or in the community. Examples are accounting major helping community members with tax return, kinesiology majors coaching youth teams, english majors tutoring in literacy program, agronomy majors assisting with 4-H program, completing a for-credit Service Learning course, and serving on department, college-, campus-wide or professional committees. Documentation must include reflection.

- **Tier 2:** Provide an additional 10 hours of discipline-specific service(s). Documentation must include reflection.

**6. Investigation into Teaching and Learning**

- **Tier 1:** Investigate a minimum of one area related to your teaching and student learning and present results in a campus setting such as a graduate seminar, colloquium, or workshop. An example might be comparing two different teaching methods used with different sections of a course and comparing the differences in student learning outcomes.
- **Tier 2:** Present an investigative study on teaching and learning at a professional conference or in a refereed journal. Documentation must include a reflective narrative.

**7. Instructional Technology Utilization**

- **Tier 1:** Utilize technology to enhance the learning environment. Possible uses of technology for instruction are communicating regularly with students through e-mail, WebCT, or conferencing software.
- **Tier 2:** Adapt, develop, or implement a creative interactive use of technology for instructional settings such as interactive computer testing, videoconferencing and/or distributed or distance learning.

**8. Teaching Portfolio**

- **Tier 1:** Construct a teaching portfolio that includes a personal teaching philosophy, samples of lessons, tests, feedback to students, a sample syllabus, assessment and evaluation results, personal narratives reflecting on your progress, and if possible, student narratives selected from evaluations to support teaching effectiveness. Become knowledgeable about teaching portfolios by attending a Purdue teaching portfolio workshop sponsored by CIE and/or an academic unit.
- **Tier 2:** Include a concrete, creative, and original contribution to teaching in the portfolio that you have made (a survey and documentation of experiences are not enough).

Include careful analyses of semester-by-semester teaching improvement and list crucial stages of development in teaching.

**9. Teaching Effectiveness Measures (Tier 1 accepted only)**

Teaching effectiveness will be determined through a criterion-referenced assessment based on classroom observations, a PICES (Purdue Instructor and Course Evaluation System) global item score, and the teaching portfolio. A criterion-referenced system allows for the setting of a consistent standard of excellence rather than a comparison between individuals produced from a norm-referenced system.

**Teaching Observations** -- two observations will be conducted:

1. The GTAs course supervisor observes an actual classroom teaching session.
2. CETA will observe a videotaped classroom session

**PICES Scores:** The graduate student's two highest scores for the global item "Rate the instructor's overall teaching effectiveness", will be weighted. A minimum weighted average of 4.0 for the two highest rated classes is required for certification.

**Teaching Portfolio:** The contents of the teaching portfolio will be evaluated by CETA and rated on a pass/fail scale.

**AGTC Application**

Graduate students interested in the AGTC are encouraged to begin working on it upon starting their teaching assistantships. Upon application, a representative from CIE (Center for Instructional Excellence), CETA (Committee for the Education of Teaching Assistants), or a departmental faculty or staff member will assist the graduate student in individualizing the AGTC program and provide guidance through the process.

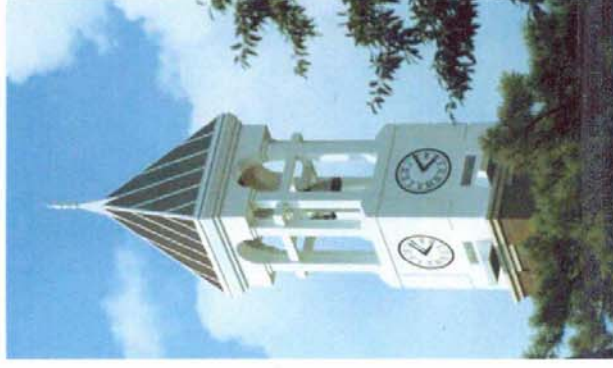
Graduate students who fulfill AGTC requirements and demonstrate excellence in teaching are eligible to have their applications reviewed by the AGTC committee.

## Advanced Graduate Teacher Certificate (AGTC)

While graduate students are encouraged to complete the Graduate Teacher Certificate (GTC) program prior to completing the AGTC, it is not mandatory to do so (see the companion brochure on the GTC). Requirements fulfilled for the GTC can be applied to the AGTC program. Application to begin the AGTC program can be made through CIE by e-mailing: [CIE@purdue.edu](mailto:CIE@purdue.edu), or by accessing the CIE website: [www.cie.purdue.edu](http://www.cie.purdue.edu).

**Graduate Teacher Celebration**

The annual Purdue Graduate Teacher Celebration will recognize exceptional Graduate Teaching Assistants, and will honor students who successfully complete the AGTC by March 1 of any given year. A certificate will be awarded to those graduate students who successfully complete the AGTC program.



Purdue University, West Lafayette

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## Appendix I.4A

### AGRONOMIC BUSINESS AND MARKETING (13G)

#### SCHOOL OF AGRICULTURE REQUIREMENTS\*

##### School of Agriculture Orientation

AGR 101 (1) \_\_\_\_\_

##### Social Sciences & Humanities (21 credits)

(see catalog for approved courses)

##### Math & Basic Sciences (28 credits)

BIOL 110 & 111 (8) \_\_\_\_\_  
CHM 111 & 112 (6) \_\_\_\_\_  
CHM 257 (4) \_\_\_\_\_  
MA 220/223 (3) \_\_\_\_\_  
STAT 301 (3) \_\_\_\_\_  
AGRY 320. (3) \_\_\_\_\_  
Science Elective (1) \_\_\_\_\_  
( ) \_\_\_\_\_

AGEC 217/ECON 210/251/252 (3) \_\_\_\_\_

Social Science \_\_\_\_\_ ( ) \_\_\_\_\_

Humanities (6)\*\*

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

##### Written & Oral Communication (10 credits)

COM 114 (3) \_\_\_\_\_  
ENGL 106 (4) \_\_\_\_\_  
Additional ENGL/COM/ASL at 200+ level  
\_\_\_\_\_ (3) \_\_\_\_\_

Add'l Social Science & Humanities (6)\*\*

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

##### International Understanding Electives

9 credit hours of International Understanding Electives are required. 6 of them may also be used to fulfill core or departmental requirements.

\_\_\_\_\_ (3) Intr'l Understanding Elective

\_\_\_\_\_ (3) \_\_\_\_\_ (3)

**\*\*12 credits must be earned outside of Agriculture.  
3 credits of Social Science or Humanities must be  
300+.**

**Multicultural Awareness (3)\_\_\_\_\_**

#### **Departmental Requirements\***

##### Agronomy (20 credits)

AGRY (crops) (3) \_\_\_\_\_  
AGRY 255 (3) \_\_\_\_\_  
AGRY 365 (3) \_\_\_\_\_  
AGRY 398 (1) \_\_\_\_\_  
AGRY 498 (1) \_\_\_\_\_  
AGRY Electives (9)  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

##### Business/Mgmt (18-19 credits)

AGEC330/311/MGMT200 (3) \_\_\_\_\_  
AGEC 331 (3) \_\_\_\_\_  
ENGL 420 (3) \_\_\_\_\_  
ECON/AGEC/MGMT  
OLS Electives (9)  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

##### Directed Electives (9 credits)

BTNY 301 (3) \_\_\_\_\_  
BTNY 304 (3) \_\_\_\_\_  
ENTM 306 (2) \_\_\_\_\_  
ENTM 307 (1) \_\_\_\_\_

##### Electives (15 credits)

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

##### Additional Math-Science Electives (Select 8 credits from list below)

BCHM 307 (3) \_\_\_\_\_  
AGRY 321 (1) \_\_\_\_\_  
BCHM 309 (1) \_\_\_\_\_  
BIOL 221 (4) \_\_\_\_\_

AGRY 525 (3) \_\_\_\_\_  
CHM 257L (1) \_\_\_\_\_  
MA 224 (3) \_\_\_\_\_  
PHYS 214 (3) \_\_\_\_\_

Capstone Experience

\_\_\_\_\_

TOTAL HOURS \_\_\_\_\_

(130 required)  
Effective Fall 2006

\*NOTE: Variance from above course requirements must be approved by the Agronomy Undergraduate Teaching Coordinator.

\*\*NOTE: Agronomic Business and Marketing Students may wish to choose elective courses, which will also facilitate the completion of requirements for a Minor in Farm Management or Food and Agribusiness Management. Please refer to the current School of Agriculture Catalog for details on these requirements.

Appendix I.4B  
APPLIED METEOROLOGY (13D)

Objective: to prepare students for a career in Weather and climate forecasting

SCHOOL OF AGRICULTURE REQUIREMENTS\*

School of Agriculture Orientation

AGR 101 (1) \_\_\_\_\_

Social Sciences & Humanities (21 credits)

(see catalog for approved courses)

Math & Basic Sciences (30 credits)

MA 161 (5) \_\_\_\_\_  
MA 162 (5) \_\_\_\_\_  
STAT 511 (3) \_\_\_\_\_  
CHM 111 & 112 (6) \_\_\_\_\_  
BIOL 110 & 111 (8) \_\_\_\_\_  
CS 158 (3) \_\_\_\_\_

AGEC 217/ECON 210/251/252 (3) \_\_\_\_\_

Social Science \_\_\_\_\_ ( ) \_\_\_\_\_

Humanities (6)\*\* \_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

Written & Oral Communication (10 credits)

COM 114 (3) \_\_\_\_\_  
ENGL 106 (4) \_\_\_\_\_  
Additional ENGL/COM at 200+ level  
\_\_\_\_\_ (3) \_\_\_\_\_  
**(Suggested ENGL420,421 or COM 314)**

Add'l Social Science & Humanities (6)\*\*

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

International Understanding Electives

9 credit hours of International Understanding Electives are required. 6 of them may also be used to fulfill core or departmental requirements.

\_\_\_\_\_ (3) Intr'l Understanding Elective

\_\_\_\_\_ (3) \_\_\_\_\_ (3)

**Multicultural Awareness (3)\_\_\_\_\_**

**\*\*12 credits must be earned outside of Agriculture. 3 credits of Social Science or Humanities must be 300+.**

**Departmental Requirements\***

Agronomy (11 credits)

**AGRY 375 (3) \_\_\_\_\_**  
AGRY 398 (1) \_\_\_\_\_  
AGRY 545 (3) \_\_\_\_\_  
AGRY 498 (1) \_\_\_\_\_  
AGRY 536 (3) \_\_\_\_\_

Meteorology (27 credits)

EAS 133 (0) \_\_\_\_\_  
AGRY 335 (3) \_\_\_\_\_  
AGRY 431/EAS 421 (3) \_\_\_\_\_  
AGRY 432/EAS 422 (3) \_\_\_\_\_  
AGRY 433/EAS 423 (3) \_\_\_\_\_  
AGRY 441/EAS 431 (1) \_\_\_\_\_  
AGRY 442/EAS 432 (1) \_\_\_\_\_  
AGRY 443/EAS 433 (1) \_\_\_\_\_  
EAS 434 (3) \_\_\_\_\_  
AGRY 535/EAS 525 (3) \_\_\_\_\_  
EAS 532 (3) \_\_\_\_\_  
EAS 535 (3) \_\_\_\_\_

Electives (10 credits)

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

Addtl. Math & Science (22 credits)

MA 261 (4) \_\_\_\_\_  
MA 262 (4) \_\_\_\_\_  
PHYS 152 (4) \_\_\_\_\_  
PHYS 241 (4) \_\_\_\_\_  
EAS 120 (3) \_\_\_\_\_  
CE 542 (3) \_\_\_\_\_

Capstone Experience  
\_\_\_\_\_

TOTAL HOURS \_\_\_\_\_  
(132 Required)  
**Effective Fall 2006**

\*NOTE: Variance from above course requirements must be approved by the Agronomy Undergraduate Teaching Coordinator.

Appendix I.4C  
ENVIRONMENTAL SOIL SCIENCE (13J)  
SCHOOL OF AGRICULTURE REQUIREMENTS\*

School of Agriculture Orientation

AGR 101 (1) \_\_\_\_

Math & Basic Sciences (28 credits)

MA 223 & 224 (6) \_\_\_\_  
STAT 301 (3) \_\_\_\_  
CHM 111 & 112 (6) \_\_\_\_  
CHM 257 & 257L (5) \_\_\_\_  
BIOL 110 & 111 (8) \_\_\_\_

Written & Oral Communication (12 credits)

COM 114 (3) \_\_\_\_  
ENGL 101 & 102 (6) \_\_\_\_  
Additional ENGL/COM/ASL at 200+ level  
\_\_\_\_ (3) \_\_\_\_

**\*\*12 credits must be earned outside of Agriculture.  
3 credits of Social Science or Humanities must be 300+.**

Social Sciences & Humanities (21 credits)

(see catalog for approved courses)

AGEC 217/ECON 210/251/252 (3) \_\_\_\_

Social Science \_\_\_\_ (3) \_\_\_\_

Humanities (6)\*\*

\_\_\_\_ ( ) \_\_\_\_  
\_\_\_\_ ( ) \_\_\_\_

Add'l Social Science & Humanities (6)\*\*

\_\_\_\_ ( ) \_\_\_\_  
\_\_\_\_ ( ) \_\_\_\_

International Understanding Electives

9 credit hours of International Understanding Electives are required. 6 of them may also be used to fulfill core or departmental requirements.

\_\_\_\_ (3) Intr'l Understanding Elective

\_\_\_\_ (3) \_\_\_\_ (3)

**Departmental Requirements\***

Core Requirements (34-35 credits)

Soil Science Courses (21 credits)

AGRY 255 (3) \_\_\_\_  
AGRY 290 (3) \_\_\_\_  
AGRY 349 or AGRY 580 (3) \_\_\_\_  
AGRY 465 (3) \_\_\_\_  
AGRY 399 E or AGRY 540 (3) \_\_\_\_  
AGRY 565 (3) \_\_\_\_

Additional Soil Science Elective (3)  
(Suggestions in A)

\_\_\_\_ ( ) \_\_\_\_

Crop Production Electives (6)

(Suggestions in B)

\_\_\_\_ ( ) \_\_\_\_  
\_\_\_\_ ( ) \_\_\_\_

Engineering Electives (3)

(Suggestions in C)

\_\_\_\_ ( ) \_\_\_\_

Physics Elective (3-4)

(Suggestions in D)

\_\_\_\_ ( ) \_\_\_\_

AGRY 498 (1) \_\_\_\_

Additional Math, Physics, Chemistry, Biology or

Biochemistry (9 credits) Suggestions in E

\_\_\_\_ ( ) \_\_\_\_  
\_\_\_\_ ( ) \_\_\_\_  
\_\_\_\_ ( ) \_\_\_\_

Directed Electives (12 credits)

Select from A through F

\_\_\_\_ ( ) \_\_\_\_  
\_\_\_\_ ( ) \_\_\_\_  
\_\_\_\_ ( ) \_\_\_\_  
\_\_\_\_ ( ) \_\_\_\_

Electives (15 credits)

\_\_\_\_ ( ) \_\_\_\_  
\_\_\_\_ ( ) \_\_\_\_  
\_\_\_\_ ( ) \_\_\_\_  
\_\_\_\_ ( ) \_\_\_\_  
\_\_\_\_ ( ) \_\_\_\_

Capstone Experience \_\_\_\_\_

TOTAL HOURS \_\_\_\_\_ (132-133 required)  
Effective Fall 2001

\*NOTE: Variance from above course requirements must be approved by the Agronomy Undergraduate Teaching Coordinator.



## Appendix I.4D

### INTERNATIONAL AGRONOMY (13C)

#### SCHOOL OF AGRICULTURE REQUIREMENTS\*

##### School of Agriculture Orientation

AGR 101 (1) \_\_\_\_\_

##### Math & Basic Sciences (30 credits)

MA 223 & 224 (6) \_\_\_\_\_  
STAT 301 (3) \_\_\_\_\_  
CHM 111 & 112 (6) \_\_\_\_\_  
CHM 257 (4) \_\_\_\_\_  
BIOL 110 & 111 (8) \_\_\_\_\_  
PHYS 214 (3) \_\_\_\_\_

##### Written & Oral Communication (10 credits)

COM 114 (3) \_\_\_\_\_  
ENGL 106 (4) \_\_\_\_\_  
Additional ENGL/COM/ASL at 200+ level  
\_\_\_\_\_ (3) \_\_\_\_\_

9 credit hours of International Understanding  
Electives are required. 6 of them may also be used  
to fulfill core or departmental requirements.

\_\_\_\_\_ (3) \_\_\_\_\_ (3)

**Multicultural Awareness (3) \_\_\_\_\_**

##### Social Sciences & Humanities (26 credits)

(see catalog for approved courses)

AGEC 217/ECON 210/251/252 (3) \_\_\_\_\_

##### International Understanding

Foreign Language (9 credits)

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

Conservation Language (2 credits)

\_\_\_\_\_ ( ) \_\_\_\_\_

##### International Practicum

AGRY 598 – Special Prob. (3) \_\_\_\_\_

Social Science \_\_\_\_\_ (3) \_\_\_\_\_

Add'l Social Science & Humanities (6)\*\*

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

**\*\*\*12 credits must be earned outside of  
Agriculture. 3 credits of Social Science or  
Humanities must be 300+.**

#### **Departmental Requirements\***

##### Agronomy (20 credits)

AGRY 255 (3) \_\_\_\_\_  
AGRY 320 (3) \_\_\_\_\_  
AGRY 285 (3) \_\_\_\_\_  
AGRY 335 (2) \_\_\_\_\_  
AGRY 350 (1) \_\_\_\_\_  
AGRY 365 (3) \_\_\_\_\_  
AGRY 398 (1) \_\_\_\_\_  
AGRY 498 (1) \_\_\_\_\_  
AGRY 570 (3) \_\_\_\_\_

##### Electives (17 credits)

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

##### Add. Science (7 credits)

AGRY 525 (3) \_\_\_\_\_  
BCHM 307 (3) \_\_\_\_\_  
BCHM 209 (1) \_\_\_\_\_  
BIOL 221 (4) \_\_\_\_\_  
AGRY 321 (1) \_\_\_\_\_  
CHM 257L (1) \_\_\_\_\_

Capstone Experience  
\_\_\_\_\_

##### Directed Electives (20 credits)

BTNY 301 or  
BTNY 304 (3) \_\_\_\_\_  
ENTM 306& 307 (3) \_\_\_\_\_  
AGEC 340 (3) \_\_\_\_\_  
AGEC 450 (3) \_\_\_\_\_

Science/AGR Elective (8)

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

**TOTAL HOURS** \_\_\_\_\_

**(131 required)**

Effective Fall 2006

\*NOTE: Variance from above course requirements must be approved by the Agronomy Undergraduate Teaching Coordinator.

## Appendix I.4E

### PLANT GENETICS AND PLANT BREEDING (13H)

#### School of Agriculture Requirements\*

**Purpose:** To prepare students for advanced degree studies in genetics and plant breeding, and for careers requiring a strong background in genetics and plant breeding.

#### School of Agriculture Orientation

AGR 101 (1) \_\_\_\_\_

#### Math & Basic Sciences (42-46 credits)

MA 161 & 162 or (6-10) \_\_\_\_\_  
 MA 223 & 224  
 STAT 503 (3) \_\_\_\_\_  
 CHM 115 & 116 (8) \_\_\_\_\_  
 CHM 257 & 257L (5) \_\_\_\_\_  
 BIOL 110 & 111 (8) \_\_\_\_\_  
 BCHM 307 & 309 (4) \_\_\_\_\_  
 PHYS 152 & 241 or (8) \_\_\_\_\_  
 PHYS 220 & 221

#### Written & Oral Communication (10 credits)

COM 114 (3) \_\_\_\_\_  
**ENGL 106 (4) \_\_\_\_\_**  
 Additional ENGL/COM/ASL  
 at 200+ level (3) \_\_\_\_\_  
 (preferred: ENGL 304, 305, 420, 421)

**\*\*12 credits must be earned outside of Agriculture. 3 credits of Social Science or Humanities must be 300+.**

#### Social Sciences & Humanities (21 credits)

(see catalog for approved courses)

AGEC 217/ECON 210/251/252 (3) \_\_\_\_\_  
 Social Science (3) \_\_\_\_\_  
 Humanities (6)\*\* ( ) \_\_\_\_\_  
 \_\_\_\_\_ ( ) \_\_\_\_\_  
 Add'l Social Science & Humanities (6)\*\* ( ) \_\_\_\_\_  
 \_\_\_\_\_ ( ) \_\_\_\_\_

#### International Understanding Electives

9 credit hours of International Understanding Electives are required. 6 of them may also be used to fulfill core or departmental requirements.

\_\_\_\_\_ (3) Intr'l Understanding Elective  
 \_\_\_\_\_ (3) \_\_\_\_\_ (3)

**Multicultural Awareness (3) \_\_\_\_\_**

#### Option Requirements (12 credits)

AGRY 320 (3) \_\_\_\_\_  
 AGRY 321 (1) \_\_\_\_\_  
 AGRY 398 (1) \_\_\_\_\_  
 AGRY 480 (3) \_\_\_\_\_  
 AGRY 498 (1) \_\_\_\_\_  
 AGRY 520 (3) \_\_\_\_\_

#### Additional Science (16-17 credits)

AGRY 255 (3) \_\_\_\_\_  
 AGRY 525 or HORT 301 (3-4) \_\_\_\_\_  
 BIOL 221 (4) \_\_\_\_\_  
 BIOL 231 (4) \_\_\_\_\_  
 BIOL 415 or HORT 350 (3) \_\_\_\_\_

#### Electives (10-15 credits)

( ) \_\_\_\_\_  
 \_\_\_\_\_ ( ) \_\_\_\_\_  
 \_\_\_\_\_ ( ) \_\_\_\_\_  
 \_\_\_\_\_ ( ) \_\_\_\_\_  
 \_\_\_\_\_ ( ) \_\_\_\_\_  
 \_\_\_\_\_ ( ) \_\_\_\_\_  
 \_\_\_\_\_ ( ) \_\_\_\_\_  
 \_\_\_\_\_ ( ) \_\_\_\_\_

Capstone Experience \_\_\_\_\_

**TOTAL HOURS \_\_\_\_\_ (132 required)**  
**Effective Fall 2006**

#### **Departmental Requirements\***

##### Directed Electives (Select at least 15 credits)\*\*

AGEC 220/330/331/530 (3) \_\_\_\_\_  
 AGRY 285 (3) \_\_\_\_\_  
 AGRY 335 (3) \_\_\_\_\_  
 AGRY 365 (3) \_\_\_\_\_  
 AGRY 375 (3) \_\_\_\_\_  
 AGRY 505 (3) \_\_\_\_\_  
 AGRY 530 (3) \_\_\_\_\_  
 AGRY 550 (3) \_\_\_\_\_  
 AGRY 572 (2) \_\_\_\_\_  
 AGRY 573 (1) \_\_\_\_\_  
 ANSC 511 (3) \_\_\_\_\_  
 BCHM 561 (3) \_\_\_\_\_  
 BCHM 562 (3) \_\_\_\_\_  
 BIOL 420 (3) \_\_\_\_\_  
 BIOL 441 (3) \_\_\_\_\_  
 BIOL 495B (3) \_\_\_\_\_  
 BIOL 542 (1-2) \_\_\_\_\_  
 BTNY 301 (3) \_\_\_\_\_  
 BTNY 304 (3) \_\_\_\_\_  
 BTNY 305 (3) \_\_\_\_\_  
 BTNY 316 (4) \_\_\_\_\_  
 BTNY 517 (1) \_\_\_\_\_  
 BTNY 525 (3) \_\_\_\_\_  
 BTNY 535 (3) \_\_\_\_\_  
 BTNY 553 (3) \_\_\_\_\_  
 ENTM 306 (2) \_\_\_\_\_  
 ENTM 307B (1) \_\_\_\_\_  
 ENTM 510 (3) \_\_\_\_\_  
 HORT 401 (3) \_\_\_\_\_  
 HORT 413 (1) \_\_\_\_\_  
 HORT 414 (1) \_\_\_\_\_  
 HORT 491M (1) \_\_\_\_\_  
 HORT 515 (1) \_\_\_\_\_  
 MA 265 (3) \_\_\_\_\_

**\*\*Students may not use more than 9 cr of BTNY and 6 cr of HORT toward the 15 credits.**

\*NOTE: Variance from above course requirements must be approved by the Agronomy Undergraduate Teaching Coordinator.

Appendix I.4F  
SOIL AND CROP MANAGEMENT (13B)  
SCHOOL OF AGRICULTURE REQUIREMENTS\*

School of Agriculture Orientation

AGR 101 (1) \_\_\_\_\_

Social Sciences & Humanities (21 credits)

(see catalog for approved courses)

Math & Basic Sciences (28 credits)

MA 220/223 (3) \_\_\_\_\_  
STAT 301 (3) \_\_\_\_\_  
CHM 111 & 112 (6) \_\_\_\_\_  
BIOL 110 & 111 (8) \_\_\_\_\_  
CHM 257 (4) \_\_\_\_\_  
AGRY 320 (3) \_\_\_\_\_  
AGRY 321 (1) \_\_\_\_\_

AGEC 217/ECON 210/251/252 (3) \_\_\_\_\_

Social Science \_\_\_\_\_ (3) \_\_\_\_\_

Humanities (6)\*\*

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

Add'l Social Science & Humanities (6)\*\*

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

Written & Oral Communication (10 credits)

COM 114 (3) \_\_\_\_\_  
ENGL 106 (4) \_\_\_\_\_  
Additional ENGL/COM/ASL at 200+ level  
\_\_\_\_\_ (3) \_\_\_\_\_

International Understanding Electives

9 credit hours of International Understanding Electives are required. 6 of them may also be used to fulfill core or departmental requirements.

\_\_\_\_\_ (3) Intr'l Understanding Elective

\_\_\_\_\_ (3) \_\_\_\_\_ (3)

**\*\*12 Credits must be earned outside of Agriculture. 3 credits of Social Science or Humanities must be 300+ level.**

**Multicultural Awareness (3)** \_\_\_\_\_

**Departmental Requirements\***

Agronomy (26 credits)

AGRY 105 (3) \_\_\_\_\_  
AGRY 255 (3) \_\_\_\_\_  
AGRY 335 (3) \_\_\_\_\_  
AGRY 365 (3) \_\_\_\_\_  
AGRY 398 (1) \_\_\_\_\_  
AGRY 498 (1) \_\_\_\_\_

Add. Science (9 credits)

AGRY 525 or (3-4) \_\_\_\_\_  
HORT 301 \_\_\_\_\_  
BCHM 307 or (3-4) \_\_\_\_\_  
BIOL 221 \_\_\_\_\_  
PHYS 214 (3) \_\_\_\_\_  
Science Elective \_\_\_\_\_  
\_\_\_\_\_ (3) \_\_\_\_\_

Directed Elective (21 credits from the 24 below)

BTNY 301 (3) \_\_\_\_\_  
BTNY 304 (3) \_\_\_\_\_  
ENTM 306 & 307 (3) \_\_\_\_\_  
EAS 111 (3) \_\_\_\_\_  
AGEC/MGMT/ECON (6) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
Written Com. Elective (3) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
GPS/GIS/Remote Sensing (3)\*\* \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

AGRY Electives (12)

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

Electives (14 credits)

\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_  
\_\_\_\_\_ ( ) \_\_\_\_\_

Capstone Experience \_\_\_\_\_ **TOTAL HOURS** \_\_\_\_\_ **(130 required)**  
**Effective Fall 2006**

\*NOTE: Variance from above course requirements must be approved by the agronomy Undergraduate Teaching Coordinator.

\*\* GPS/GIS/Remote Sensing: Suggested courses include ABE 322, 591A, AGRY 545, FNR 357 or others as approved.

## Appendix I.4G

### SOIL AND CROP SCIENCE (13E)

#### SCHOOL OF AGRICULTURE REQUIREMENTS\*

##### School of Agriculture Orientation

AGR 101 (1) \_\_\_\_\_

##### Math & Basic Sciences (30 credits)

MA 223 & 224 (6) \_\_\_\_\_

STAT 301 (3) \_\_\_\_\_

CHM 115 & 116 (8) \_\_\_\_\_

CHM 257 & 257L (5) \_\_\_\_\_

BIOL 110 & 111 (8) \_\_\_\_\_

##### Social Sciences & Humanities (21 credits)

(see catalog for approved courses)

AGEC 217/ECON 210/251/252 (3) \_\_\_\_\_

Social Science \_\_\_\_\_ (3) \_\_\_\_\_

Humanities (6)\*\* \_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

Add'l Social Science & Humanities (6)\*\* \_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

##### Written & Oral Communication (10 credits)

COM 114 (3) \_\_\_\_\_

ENGL 106 (4) \_\_\_\_\_

Additional ENGL/COM/ASL at 200+ level \_\_\_\_\_ (3) \_\_\_\_\_

\_\_\_\_\_ (3) \_\_\_\_\_

**(Suggested: Engl 304, 305, 420, 421)**

**\*\*12 credits must be earned outside of Agriculture. 3 credits of Social Science or Humanities must be 300+.**

##### International Understanding Electives

9 credit hours of International Understanding Electives are required. 6 of them may also be used to fulfill core or departmental requirements.

\_\_\_\_\_ (3) Intr'l Understanding Elective

\_\_\_\_\_ (3) \_\_\_\_\_ (3)

**Multicultural Awareness (3) \_\_\_\_\_**

#### **Departmental Requirements\***

##### Agronomy (27 credits)

AGRY 105 (3) \_\_\_\_\_

AGRY 255 (3) \_\_\_\_\_

AGRY 320 & 321 (4) \_\_\_\_\_

AGRY 335 (3) \_\_\_\_\_

AGRY 365 (3) \_\_\_\_\_

AGRY 398 (1) \_\_\_\_\_

AGRY 498 (1) \_\_\_\_\_

AGRY Electives (9)

\_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

Agriculture Elective (3) \_\_\_\_\_

\*\*Crop Protection Elective (3) \_\_\_\_\_

Econ/Agec/Mgmt Elec.(3) \_\_\_\_\_

##### Add. Science (24-25 credits)

AGRY 525 or HORT 301(3-4) \_\_\_\_\_

BCHM 307& 309 or

BIOL 221 (4) \_\_\_\_\_

PHYS 220/218 (4) \_\_\_\_\_

PHYS 221/219 (4) \_\_\_\_\_

BTNY 302 (3) \_\_\_\_\_

Science Elective (6)

\_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

##### Electives (9-10 credits)

\_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

Capstone Experience

\_\_\_\_\_

TOTAL HOURS \_\_\_\_\_ **(132 required)**  
**Effective Fall 2006**

\*NOTE: Variance from above course requirements must be approved by the Agronomy Undergraduate Teaching Coordinator.

\*\* ENTM 306 & 307, BTNY 301, BTNY 304, or equivalent

## Appendix I.4H

### TURF SCIENCE (13F)

Upon completion of the turf science program, a student is prepared to manage and provide technical information for golf courses, home lawns, athletic fields, commercial lawns, parks, recreation areas, and sod farms.

### **COLLEGE OF AGRICULTURE REQUIREMENTS\* (62 credits)**

College of Agriculture Orientation  
AGR 101 (1) \_\_\_\_\_

Social Sciences & Humanities (21 credits)  
(see catalog for approved courses)

#### Math & Basic Sciences (30 credits)

MA 220/223 (3) \_\_\_\_\_

STAT 301 (3) \_\_\_\_\_

CHM 111 & 112 (6) \_\_\_\_\_

CHM 257 (4) \_\_\_\_\_

PHYS 214 or 3 of 4 cr. fr. PHYS 220 (3) \_\_\_\_\_

BIOL 110/BTNY 210 (4) \_\_\_\_\_

BIOL 111/HORT 301 (4) \_\_\_\_\_

AGRY 320/FNR 305/ (3) \_\_\_\_\_

BTNY/HORT 350 or other College of Ag. Approved Math & Basic Science

AGEC 217/ECON 210/251/252 (3) \_\_\_\_\_

Social Science \_\_\_\_\_ (3) \_\_\_\_\_

Humanities (6)\*\* \_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

Add'l Social Science & Humanities (6)\*\* \_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

#### Written & Oral Communication (10 credits)

COM 114 (3) \_\_\_\_\_

ENGL106 (4) \_\_\_\_\_

Additional ENGL/COM/ASL at 200+ level

\_\_\_\_\_ (3) \_\_\_\_\_

Intl. Understanding and Multi-Cultural Awareness

\_\_\_\_\_ (3) Intr'l Understanding Elective

9 credit hours of International Understanding Electives are required. 6 of these 9 may also be used to fulfill core or departmental requirements.

\_\_\_\_\_ (3) \_\_\_\_\_ (3)

#### **Multicultural Awareness (3) \_\_\_\_\_**

May also be used to fulfill core or departmental requirements.

**\*\*12 credits must be earned outside of Agriculture.**

**3 credits of Social Science or Humanities must be at the 300+ level**

### **Departmental Requirements\* (70 credits)**

#### Agronomy (25 credits)

AGRY 110 (1) \_\_\_\_\_

AGRY 210 (3) \_\_\_\_\_

AGRY 211 (1) \_\_\_\_\_

AGRY 255 (3) \_\_\_\_\_

AGRY 365 (3) \_\_\_\_\_

AGRY 398 (1) \_\_\_\_\_

AGRY 498 (1) \_\_\_\_\_

AGRY 510 (3) \_\_\_\_\_

AGRY 512 (3) \_\_\_\_\_

AGRY 525 (3) \_\_\_\_\_

AGRY Soils Directed<sup>1</sup> (3) \_\_\_\_\_

#### Suggested Turf Elec. (3 credits)

AGRY 311 (1-2) \_\_\_\_\_

AGRY 335 (3) \_\_\_\_\_

AGRY 399 (1-3) \_\_\_\_\_

AGRY 598 (1) \_\_\_\_\_

HORT 217 (4) \_\_\_\_\_

HORT 218 (3) \_\_\_\_\_

ASM 201 (3) \_\_\_\_\_

#### Unrestricted Electives (9 credits)

\_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

\_\_\_\_\_ ( ) \_\_\_\_\_

#### Addl. Bus./Mgmt./Spv. (Choose 9 credits)

AGEC 202 (1) \_\_\_\_\_

AGEC 220 (3) \_\_\_\_\_

AGEC 352 (3) \_\_\_\_\_

AGEC 424 (3) \_\_\_\_\_

AGEC 431 (3) \_\_\_\_\_

CSR 268 (1) \_\_\_\_\_

CSR 282 (3) \_\_\_\_\_

CSR 342 (3) \_\_\_\_\_

ENTR 200 (3) \_\_\_\_\_

ENTR 201 (3) \_\_\_\_\_

MGMT 455 (3) \_\_\_\_\_

OLS 252 (3) \_\_\_\_\_

OLS 274 (3) \_\_\_\_\_

OLS 284 (3) \_\_\_\_\_

OLS 386 (3) \_\_\_\_\_

OLS 388 (3) \_\_\_\_\_

#### Turf Related (12 credits)

BTNY 301 (3) \_\_\_\_\_

BTNY 304 (3) \_\_\_\_\_

BTNY/ENTM 443 (3) \_\_\_\_\_

[ENTM 206 and 207] or (3) \_\_\_\_\_

ENTM 446

#### Bus./Mgmt./Spv. (12 credits)

AGEC 311 or MGMT 200 (3) \_\_\_\_\_

AGEC 330 (3) \_\_\_\_\_

AGEC 331 (3) \_\_\_\_\_

AGEC 426 or HORT 435 (3-4) \_\_\_\_\_

Capstone Experience \_\_\_\_\_

<sup>1</sup>AGRY Soils Directed: One of the following AGRY 337: Environ. Hydrology, AGRY 349: Soil Ecology, AGRY 385: Environ. Soil Chem., AGRY 450: Soil Conservation, AGRY 465: Soil Physics, AGRY 565: Soil Classification/ Genesis/Survey, AGRY 585: Soils and Land Use

TOTAL HOURS \_\_\_\_\_ (132 required)

**Effective Fall 2008**

\*NOTE: Variance from above course requirements must be approved by the Agronomy Undergraduate Teaching or Advising Coordinator.

Appendix I.4I

Advisor \_\_\_\_\_

Student \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

**AGRONOMY DEPARTMENT  
TYPE "B" ASSOCIATE DEGREE – 13K  
Academic Progress Checklist**

**SCHOOL CORE REQUIREMENTS:**

Mathematics & Basic Sciences

MATH 223 or STAT 301 (3) \_\_\_\_\_

BTNY 210 or BIOL 110/111 (3) \_\_\_\_\_

CHM 111 (3) \_\_\_\_\_

CHM 112 (3) \_\_\_\_\_

Math & Basic Science Electives (6) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Written & Oral Communication

ENGL 106 (4) \_\_\_\_\_

COM 114 (3) \_\_\_\_\_

Additional ENGL/COM/ALS at 200+ Level

\_\_\_\_\_ (3) \_\_\_\_\_

Broadening Electives

ECON 210 or AGECE 217 (3) \_\_\_\_\_

HUM/SOC (3) \_\_\_\_\_  
(See catalog)

**DEPARTMENTAL REQUIREMENTS:**

Agronomy Core

AGRY 255 (3) \_\_\_\_\_

AGRY 398 or AGRY 498 (1) \_\_\_\_\_

AGRY (CROPS/TURF) (3) \_\_\_\_\_  
\_\_\_\_\_

AGRY (SOILS) (3) \_\_\_\_\_  
\_\_\_\_\_

AGRY elective (3) \_\_\_\_\_  
\_\_\_\_\_

Electives in Agriculture (9 credits)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Free Electives (9 credits)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

TOTAL HOURS \_\_\_\_\_ (65 required)

## Appendix I.5

### **Capstone Course or Experience - (0-3) credits**

Baccalaureate degree plans of study must include a capstone course or experience. Capstone course credits also may be used to fulfill core curriculum requirements or departmental requirements or electives.

In a capstone experience, students will be challenged to integrate their accumulated knowledge and technical and social skills in order to identify and solve a problem relevant to issues encountered by professionals in their chosen discipline, and to communicate the results of their efforts to their peers. In doing so, students will have the opportunity to demonstrate their ability to adapt to professional situations. It is hoped that this experience will stimulate students' appreciation of the need for lifelong learning and initiate professional and personal liaisons.

The following capstone courses and experiences have been approved by the Agricultural Faculty.

(4) <b>ABE 485</b> (Agricultural and Biological Engineering Design)	(4) <b>ABE 556</b> (Biological and Food Process Design)
(4) <b>AGEC 411</b> (Farm Management)	(2) <b>AGEC 429</b> (Agribusiness Marketing Workshop)
(3) <b>AGEC 430</b> (Agricultural and Food Business Strategy)	(1-6) <b>AGEC 499H</b> (Honors Thesis)
(1) <b>AGRY 498</b> (Agronomy Senior Seminar) and (3) <b>AGRY 585</b> (Soils and Land Use)	(1) <b>AGRY 498</b> (Agronomy Senior Seminar) and (3) <b>AGRY 512</b> (Integrated Turfgrass Systems)
(1) <b>AGRY 498</b> (Agronomy Senior Seminar) and (1-3) pre-approved faculty supervised research, an Engineering Projects in Community Service (EPICS) project, or an industry or government internship.	(1) <b>ANSC 481</b> (Contemporary Issues in Animal Sciences) and one production/management course selected from <b>ANSC 440</b> , <b>ANSC 441</b> , <b>ANSC 442</b> , <b>ANSC 443</b> , <b>ANSC 444</b> , <b>ANSC 445</b> , or <b>ANSC 446</b>
(3) <b>ASM 495</b> (Agricultural Systems Management)	(1-2) <b>C E 496</b> (Senior Participation in Engineering Projects in Community Service)
(1) <b>BCHM 490</b> (Undergraduate Seminar) and 2-3 credits of <b>BCHM 498</b> (Undergraduate Thesis), or <b>BCHM 499H</b> (Honors Thesis), or (3) <b>BCHM 572</b> (Advanced Biochemical Techniques)	(1) <b>BTNY 497</b> (Undergraduate Seminar) and (1-3) <b>BTNY 498</b> (Research in Plant Science), or with prior approval of the Botany and Plant Pathology faculty, a study abroad, course project, supervised internship, or other supervised work-related experience equivalent to <b>BTNY 497</b> and <b>BTNY 498</b> .
(8-10) <b>EDCI 498E</b> (Supervised Teaching of Agricultural Education)	(1) <b>ENTM 491</b> (Capstone Experience in Entomology)
(3) <b>FNR 408</b> (Ecosystem Management Practice)	(3) <b>FS 443</b> (Food Processing III)
(3) <b>HORT 425</b> (Landscape Horticulture Capstone Project)	(1) <b>HORT 440</b> (Management Strategies in Public Horticulture)
(1) <b>HORT 445</b> (Strategic Analysis of Horticultural Production and Marketing)	(1) <b>HORT 492</b> (Horticultural Science Capstone Seminar)
(3) <b>NRES 581</b> (Ecological Impact Analysis)	(3) <b>YDAE 480</b> (Agricultural Communication Capstone Seminar)

## Appendix I.6

### **Agronomy Advisory Council Minutes – Undergraduate Education Focus Groups April 2, 2008**

Attending: Joe Keaschall, Tammy Lawson, Roger Hadley, Karen Scanlon, Jim King,  
Brad Inman, Tom Bradford, Tony Bailey, Kent Harris, Sue Shadley, Cress Hizer  
Faculty/Staff: Craig Beryouty, Joe Anderson, Herb Ohm, George Van Scoyoc,  
Jeff Volenec, Corey Gerber, Mike Pedley, Kelly Delp, Lori Snyder, Sandy Spitznagle  
Not available: Gina Sheets, Molly Stalker, J.T. Turner, Gary Reding

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#### **Focus Group Discussion Group - Undergraduate Student Topics**

Group 1: Council members: Tony Bailey, Roger Hadley, Cress Hizer  
Undergraduate Students: Eric Miller, Dan Emmert, Phillip Fischer, Nate Herman  
Group 2: Council members: Tom Bradford, Tammy Lawson, Karen Scanlon  
Undergraduate Students: Jared Nemitz, Tracey Tudor, Sam Ambrose  
Group 3: Council members: Kent Harris, Joe Keaschall, Sue Shadley  
Undergraduate Students: Brad Paulus, Charlie Zila, Ben Campbell, Betsy Webb  
Group 4: Council members: Jim King, Brad Inman, Mike Pedley  
Undergraduate Students: Joyce Lok, Samantha Downey, Jenny Campbell, Katie Hardy

#### **Group 1:**

- 1. Why they chose agronomy as their home department - recruitment, visits, interests, etc.**
  - Students were very impressive and a diverse group - turf, science, Agronomy, family farm
  - 3-4 students were transfers to program - Butler, Southern Indiana, Wabash
  - Web was first gateway; alumni second and family
  - Not enough information provided in high schools
  - Need to have a better marketing kit.
- 2. Orientation to Purdue through Boiler Gold Rush and AGR 101.**
  - Enjoyed Gold Rush, Circle of friends - great.
  - AGR 101 Freshman - most new students go through this program. Should transfer students be included and shorten up some of the general information.
- 3. Assistance from Advisors with regard to course scheduling, career goals and interests, campus resources, university policies, etc.**
  - Advisory system - in tune. Very complimentary on getting information. Very complimentary on Clubs and Sherry Fulk-Bringman on helpfulness.
  - Internship program – progression; should be encouraged.
  - Encourage freshmen to attend Career Fair.



#### **4. Availability of courses for their major and supporting interests.**

- Availability of courses:
  - Butler and Wabash are better at accepting credit from other institutions
  - Prefer more labs as an elective, especially visiting farms.
  - In Agronomy, very diverse class choices - this is a plus.
  - Physics, Math, Science - well rounded - recognize values.
- Missing:
  - Need more immersion in computer skills. A short course especially teaching Excel is needed.
  - Should have class writing resumes in sophomore semester to help with job fair. Not enough detail in AGR 101.
  - Some students felt the department not promoted - need to get message out. When students did come to visit the department, they were impressed and liked what they saw.
  - Students emphasized that all should join clubs. The activity was a major value to them.

#### **Group 2:**

#### **5. What do they think of the curriculum in their major - discuss potential types of courses to be added or deleted.**

- All students felt curriculum challenging in real world and pertinent. Depth was important.
- When you graduate you need to have standards and grades reflect a perception in work area. Set standard of grades to indicate level of competency.
- Very positive experiences.
- Questioned importance of Chemistry and Genetics - but some felt it important.
- Need to go outside and interface with other parts of the university by taking different classes.
- Statistics needs to be added to Ag offered courses.
- Recommend Physics and Statistics at undergrad level that pertains to the Ag industry.
  - A business and marketing class that applied knowledge to workforce.

#### **6. Quality of instruction by Agronomy faculty, other agriculture faculty, and non agriculture faculty; if improvement is needed, what suggestions do they have.**

- Regarding quality of instruction - Agronomy a plus, glowing reports. Instructors, graduate student staff know the students and relate to them.

#### **7. Computer resources available to them in the department and across campus.**

#### **8. Use of computers by students and faculty in their courses.**

- Very good computer resources.
- Computer accessibility and use is excellent, not an issue in Ag. May run into problems outside Ag, especially in large University classes.
- Problems with Organic Chemistry - if a smaller class size available, may make a difference.
- Students just accept it as the way it is in large lecture hall setting.
- If computers were available in every classroom, would be very helpful.
- Impressed with the availability of internships.

#### **Group 3:**

#### **9. Value of the Soils and Crops Resource Centers.**

- Gave the centers a ranking of 9 or 10.
- What could be improved:
  - Waiting time. The centers are open during good times and received positively.
- The resource centers are a social network Mecca.
  - A place for tutoring, "hand out" and discuss Club activities.
  - TA's, and professors are available.

#### **10. Professional Clubs in the Department and the club support by advisors and other faculty**

- Clubs in the department:
  - Very positive about the Agronomy Club. Ranked it an 8 out of 10.
  - The NRES club not taking off as the Agronomy and Turf Clubs.
  - Place value on the clubs - social and a network.
  - Agronomy Club #1 in making contacts.

#### **11. Professional development through clubs, Agronomy Ambassadors, and the Ag Leadership Certificate.**

- Students did not know or were aware of the Ag Leadership Certificate. This is a two-year program. Seemed interested, need to promote this in Sophomore Seminar and mention in AGR 101.

#### **12. Support from the Undergraduate secretaries.**

- Undergraduate secretaries - very helpful. Gave them a 10!
- A lot of nice things were said - warm, welcoming, encouraged - very collegial.

#### **Group 4:**

#### **13. Breadth of their education.**

- Group of students interviewed were exceptional.
- In Jr. and Senior years - classes exceptional and very flexible.
- Upper level courses should/could be more difficult.
- Easy to double major because of curriculum.

#### **14. Opportunities for and experiences in conducting research.**

- Many opportunities
- Ask and opportunities are available with graduate students and professor projects.
- Getting experience and can work 8+ hours.

#### **15. Opportunities and actual experience with internships**

- Internships:
  - Many opportunities.
  - Career fair - can pick and choose.
  - Only negative: jobs are in sales and research. Would like to get out in the field.
  - Program doing well.

#### **16. Student abroad experiences and/or availability of study abroad experiences**

- Study Abroad:
  - Many opportunities; very available.
  - Trip to Europe - good preparation. Was a tremendous experience.
  - Money issue determines what you can attend and participate.
  - Most or all of the students will do an internship or study abroad.
  - Students emphasized work they did to prepare - background, culture, etc - prior to experience was very helpful.

#### **Discussion:**

Hadley - Have we written grants or scholarships to Ag Companies to help defray student abroad expenses. Contact organizations like Pioneer or Monsanto asking for assistance. This may help defray some of the costs.

Lawson - Take flyers and send to companies, may help obtain funding. Have students report on their experience. Give package to company (Dow, Monsanto for a Maymester experience). Company could sponsor the group, but organized by Purdue.

Harris - Way to package - identify top students in trainee program - work with internship program.

- Target industry of where we go, specifically visit their company. Target student and then provide internship next year.
- Propose in October for Maymester activity - send program, cost - present to industry contact.
  - Corn and Soybean Check-off
  - Potential contacts: Keaschall, Harris

**17. Obstacles that might be affecting their progress toward their degree.**

- Some difficulty in scheduling classes. AGRY 520 was mentioned - may need to offer some classes both semesters.
- Even with scheduling problems, students could complete in 4 years.

**18. General morale and feelings among the students with regard to their education at Purdue.**

- Students could always find help. Some course have undergone name changes and find it difficult to identify course when registering.
- Department is welcoming, very open and community opportunity.
- Transportation may be a problem, especially off campus and at night.
- Time management - prioritizing what the students want to do - so many opportunities.
- Finding a 'balance'.
- Good communication regarding internships and jobs.

## Appendix I.7

### **Outcomes Based Program Improvement**

The Purdue Agronomy Department is a full participant in College of Agriculture and Purdue University Outcomes Based Program Improvement initiatives targeted at regular review and enhancement of teaching and learning effectiveness. An ongoing process, implementation of the first steps of assessment began in the 2007/2008 academic year. Eight core learning outcomes were defined for students in Agronomy and College of Agriculture baccalaureate programs. Agronomy courses and curricula are mapped to these outcomes when reviewed and revised.

1. Professional Preparation: Demonstrate proficiency in their chosen disciplines that incorporates knowledge, skills, technology and professional conduct.
2. Scientific Principles: Demonstrate use of the scientific methods to identify problems, formulate and test hypotheses, conduct experiments and analyze data, and derive conclusions.
3. Communication: Demonstrate the ability to write and speak with effectiveness while considering audience and purpose.
4. Teamwork: Demonstrate the ability to work effectively as part of a problem-solving team.
5. Cultural Understanding: Demonstrate knowledge of a range of cultures and an understanding of human values and points of view of other than their own.
6. Social Science Principles: Demonstrate ability to apply social, economic, political, and environmental principles to living in a global community and society at large.
7. Civic Responsibility: Demonstrate awareness of civic responsibility to community and society at large.
8. Lifelong Learning: Demonstrate skills necessary for lifelong learning.

#### 2007/2008 Program Assessment And Future Plans

Assessment of two outcomes began in the Agronomy undergraduate program in academic year 2007/2008; Scientific Principles (departmental selection) and Communication (College of Agriculture selection). Detailed descriptions of assessment activities, evidence, instrumentation and findings are listed below. Critical Thinking has been selected by the College of Agriculture for initial work on assessment beginning in 2008/2009. The process of assessing these eight learning outcomes is in early stages of development and will be ongoing and rotated in emphasis across years as needed to best enhance and maintain quality teaching and learning in the Agronomy baccalaureate program. Assessment planning and results are shared with the Agronomy Teaching Committee and with the Agronomy faculty. Feedback recommending curricular and / or course changes is routed through these bodies as well as through the curriculum committee as appropriate for action.

Scientific Principles and Communications outcomes will again be assessed by Agronomy faculty in academic year 2008/2009 and Critical Thinking is being added as a new College of Agriculture outcome to be assessed also in 2008/2009.

## DETAILS OF 2007/2008 ASSESSMENT ACTIVITIES, EVIDENCE, INSTRUMENTATION AND FINDINGS

I. Scientific Principles: Demonstrate use of the scientific method to identify problems, formulate hypothesis tests, analyze data and derive conclusions.

### A. Activities

Problem Based Learning: Students collect or are given data to analyze, interpret and apply in areas of a) crop production systems (AGRY 105, 255, 365, 375) b) turf science (AGRY 210, 510, 512), c) weather and climate (AGRY 335), genetics (AGRY 320), d) environmental science (AGRY 290), e) crop physiology (AGRY 525), f) microbiology (AGRY 349), and soil science (AGRY 255, 365, 465). Group and individual reports are presented orally in class and in written form followed by discussion.

### B. Evidence

Assessment of Student Learning Outcome: Scientific Principles outcome assessment is accomplished by measurement of student performance on exams, case studies and other projects in several Agronomy courses. For reporting in the 2007-2008 academic year student performance in AGRY 365T was measured because this course is taken by nearly all Agronomy undergraduate students in their Junior or Senior year. This assessment will be repeated in 2008 - 2009.

### C. Instrumentation

Exams: Students are assessed on their ability to interpret and apply data provided in hourly and final exams in AGRY 105, 210, 255, 290, 320, 365, 375, 385, 465, 510, 512, and 525).

Project: Student data analysis, interpretation and application within the context of one to several case studies per semester (AGRY 290, 349, 385, 512) and homework or in-class projects at intervals during the semester (AGRY 105, 290, 335, 365, 385, 465).

In Class Response System: Electronic in - class student response is assessed formatively in AGRY 255 and 365.

### D. Findings

In the Spring 2008 semester COA 1 Scientific Thinking outcome achievement was assessed using AGRY 365T exam performance by 25 students. Student performance on the scientific thinking questions was well correlated with overall AGRY 365T exam performance ( $R^2 = 0.82$ ) so overall AGRY 365T exam performance was used as a meaningful measure of

outcome achievement. Class average exam scores were 72%, 80%, 81% and 80% respectively for three-hour exams and the final.

II. Communication: Demonstrate the ability to write and speak with effectiveness while considering audience and purpose.

### A. Activities

Discussion: Discussion activities involve a) group classroom exercises to solve practical problems related to lawn management and then communicating and discussing their proposed solutions with the class (AGRY 210), b) weekly discussion activities and teaching soil science concepts to their peers (AGRY 255), c) small group discussions related to golf course and athletic field management (AGRY 510), and d) informal discussions focused on data or issues raised in class (AGRY 525).

An AGRY 365 semester project requires data analysis, interpretations, and fertilizer recommendations calculations. A letter to the landowner justifying their recommendations is also required.

Writing Exercises: Writing exercises include a) writing assignments (ENGL 106/108, COM 114, AGRY 285), b) written report on term project and short reports (AGRY 335), c) weekly lab reports (AGRY 365), d) written reports (AGRY 498), e) written reports of field studies (AGRY 510), and f) written reports which integrate and apply diverse aspects of their professional preparation in management and problem solving situations. (AGRY 512).

Oral Presentations: Oral presentations involve a) reports (COM 114), b) class presentations related to current affairs found in public media (AGRY 105); c) short PowerPoint presentation synthesizing and interpreting information from research papers and class presentation.

### B. Evidence

In Basic Composition (ENGL 106/108), Oral Communication (COM 114), and a Written or Oral Communication elective (200+ level) students receive formative assessment on written compositions and reports and speech preparation and presentation by the respective faculty teaching these courses.

The Agronomy department proposes to participate fully in uniform standardized testing of the communications capabilities of our Freshman and Senior students should this opportunity become available (i.e. should a contract be established between Purdue University and agencies delivering MAAP, CAAP, or CLA tests).

AGR 101 and AGRY 498 are required for all Agronomy students so these classes are proposed as entry and exit environments in which students' communications capabilities can be assessed using standardized tests for reporting purposes. If MAAP, CAAP, or CLA standardized tests are not available uniform rubrics will be utilized to assess student communications in selected classes.

### C. Instrumentation

Exam/Test: The standardized CAAP test.

#### D. Findings

The CAAP test result summary indicated that the Purdue Agronomy student written communication median percentile at or below other students at Purdue was 25 while their median percentile was 21 at or below other students nationally.

If available CAAP exams will be repeated each year to provide a longitudinal measure of general written communications outcome achievement. Ideally Freshman Agronomy students in the Agronomy Division of AGR 101 and Senior Agronomy students in the Agronomy Senior Seminar AGRY 498 will participate in additional written and oral communications assessment as quantified using College of Agriculture rubrics.

#### Faculty Feedback and Outcomes – Based Program Direction

Assessment results have been shared with the Agronomy Teaching Committee and with the Agronomy faculty. Feedback recommending curricular or course changes is to be routed through these bodies as well as through the curriculum committee as appropriate for action.

## **College of Agriculture Leadership Certificate Program**

### **Expectations of the Student**

The following is an overview of the various requirements for the Leadership Development Certificate Program. The specifics of each requirement will be addressed more fully in following sections of this manual.

1. **Submit Statement of Intent Form with a Résumé:** This is the first step in being admitted into the Leadership Development Certificate Program.
2. **Select a Coach:** A list of qualified coaches can be obtained from the Leadership Development Certificate Program office, which is located in Room 121 of the Agricultural Administration Building.
3. **Complete a Leadership Skills and Attributes Self-Assessment:** All participating students will complete a self-assessment as described in another section of this manual
4. **Complete a Personal Development Plan:** Following completion of a self-assessment, you will complete a [Personal Development Plan](#). This will include the establishing self-improvement goals in at least **four** of the **eleven** leadership skills and attributes. Personal growth is expected in all **eleven** skills and attributes and to be reflected in the portfolio.
5. **Participate in On-Campus University Recognized Group Experiences:** You are expected to be an active participant in **two** non-classroom group or team experiences for at least one semester, contributing to the goals of that group and documenting those experiences and growth in the portfolio.
6. **Participate in an Off-Campus Community Group Experience:** You are expected to be an active participant and contribute to the goals of at least **one** off-campus, non-university recognized, community group for at least **one semester**. Growth in the leadership skills and attributes must be documented in the portfolio through involvement in positions of employment and civic organizations, mission programs, international experiences, or other activities.
7. **Participate in Leadership Programs and Workshops:** You will participate in a minimum of **two** College of Agriculture-sponsored leadership programs and workshops. In addition, you must participate in an additional **two** leadership programs, either on or off campus. The leadership growth experienced (reflection) from the **four** programs will be documented in the portfolio.
8. **Complete Six Credit Hours of Academic Course Offerings:** Documentation of growth in the leadership skills and attributes areas will be required through at least six credit hours of academic course offerings. All courses included must be justified and you must indicate how each course applies to your personal development plan and the four major self-improvement goals. NOTE: The courses do not have to have “leadership” as the main focus but you must justify to your coach the course’s relevance.
9. **Develop a Portfolio:** Working with a leadership coach, you will develop a [portfolio](#) that documents your progress on the four major self-improvement goals identified in your personal development plan as well as personal growth in all leadership skills and attributes.



## Appendix I.9

### **Honors Programs and Policies in the College of Agriculture**

#### **Honors Program**

The College of Agriculture Honors Program can help you pursue an individually designed curriculum by working with a faculty mentor to do research or pursue other creative activities. In the Honors Program you'll find challenges and rewards.

Honors programs let you work with a faculty mentor to design your curriculum and set up additional research and learning activities.

For an application, [click here](#)

#### **Honors Program Operating Policies**

- Students must have completed a minimum of 32 semester credits and have attained a minimum graduation index of 3.25 at the time of admission. Transfer students must complete a minimum of 16 credits at Purdue University before applying for admission. Individual departmental honors programs may establish higher criteria for admission.
- Students will apply for admission to the Honors Program through their departmental honors committee. Before applying for admission, the student is expected to identify an Honors Program adviser who has agreed to serve as a mentor and to determine a mutually acceptable honors project. Admission is contingent upon the approval of the departmental honors committee and the College of Agriculture Director of Academic Programs.
- Within the first semester after admission to the Honors Program, the student is expected to develop a plan of study in cooperation with his or her mentor. Plans of study are to be submitted to the departmental honors committee for approval. While in the Honors Program, students must achieve minimum 3.0 semester grade indexes. Participants who fail to meet the semester index requirement may continue in the Honors Program upon recommendation of the departmental honors committee and with the approval of the College of Agriculture Director of Academic Programs.
- Students in the Honors Program must complete a minimum of 30 credits in residence at the Purdue University West Lafayette Campus.
- Under the direction of his or her Honors Program mentor, the student must complete an honors project of scholarly activity associated with research, teaching, extension, or another area acceptable to the departmental honors committee. A written summary report of the honors project must be submitted to the departmental honors committee for approval. At the discretion of the departmental honors committee, the student may also be required to conduct a seminar regarding his or her honors project.
- To achieve certification as a College of Agriculture Honors Program graduate, the student must successfully complete the approved plan of study and submit a written honors project report which is approved by the departmental honors committee.
- Honors Program graduates will receive an appropriate certificate upon graduation, and the academic transcript will indicate successful completion of the Honors Program in the student's major program of study.

The Dean's Scholars Program is a College of Agriculture honors program for students with at least 60 credits to fulfill before graduation. Students take honors courses, complete an honors thesis or project, and participate in events. For more information and other criteria visit the [Dean's Scholars Program](#).

## Appendix I.10

### **College of Agriculture - Core Requirements Multicultural Awareness – (3) credits**

All undergraduate plans of study leading to the degree of Bachelor of Science, Bachelor of Science in Agricultural and Biological Engineering, Bachelor of Science in Forestry, or Bachelor of Science in Landscape Architecture must include a minimum of three credits of multicultural awareness electives.

Students must broaden their awareness of the United States domestic, multicultural environment. The objective of the multicultural awareness component of the core curriculum is to stimulate students to become aware of self and others to be better prepared for the workplace and participatory citizenship.

This requirement may be fulfilled through:

- (3) **AGR 201** (Communicating Across Culture) . The AGR 201 course coordinator and lead instructor will be the Assistant Dean and Director of the College of Agriculture Office of Diversity Programs. The course coordinator is responsible for validating the competency of faculty members responsible for laboratory sections. AGR 201 credits may be used to fulfill written and oral communication, social science and humanities, or departmental requirements. [Note – AGR 201 is projected to be offered for the first time in the 2007 Spring Semester.]
- Selection from the multicultural electives course list. All courses must go through a validation process to be added to the list. Courses that include multicultural awareness components developed by College of Agriculture departments will follow this process.
- (0) **AGR 496** ( Multicultural Professional Experience). Successful completion of an approved non-credit multicultural awareness work experience (AGR 496) of a minimum of 4 weeks duration may be used in lieu of three credits of multicultural awareness electives to fulfill the multicultural awareness requirement. The Assistant Dean for Diversity will be the instructor of record for AGR 496. Course proposals that address the learning objectives of the experience and define how the culture in which the immersion will take place is different from their native culture will be evaluated for approval by the Assistant Dean for Diversity. Approval is required as a condition for registration.

#### **Multicultural Awareness Electives**

Additional courses may be added to this list via approval by the Agricultural Faculty Curriculum and Student Relations Committee of the course syllabus, to determine that it meets the objective of the multicultural requirement in the College of Agriculture . “The objective of the multicultural awareness component of the core curriculum is to stimulate students to become aware of self and others to be better prepared for the workplace and participatory citizenship.” Students are encouraged to explore coursework outside their own culture.

- |   |   |
|---|---|
| (3) <b>ANTH 303</b> (Gender Across Cultures)                                  | (3) <b>ANTH 379</b> (Indians of North America )                   |
| (3) <b>COM 376</b> (Communication and Gender)                                 | (3) <b>COM 381</b> (Gender and Feminist Studies in Communication) |
| (3) <b>EDCI 285</b> (Multiculturalism and Education)                          | (3) <b>ENGL 257</b> (Literature of Black America )                |
| (3) <b>ENGL 358</b> (Black Drama)   | (3) <b>ENGL 360</b> (Gender and Literature)                       |
| (3) <b>HIST 365</b> (Women in America )                                       | (3) <b>HIST 366</b> (Hispanic Heritage of the United States )     |
| (3) <b>HIST 377</b> (Hist. and Culture of Native America )                    | (3) <b>HIST 396</b> (Afro-American to 1865)                       |
| (3) <b>HIST 398</b> (The Afro-American since 1865)                            | (3) <b>HK 226</b> (Contemporary Women's Health)                   |
| (3) <b>IDIS 271</b> (Introduction to Afro-American Studies)                   | (3) <b>IDIS 280</b> (Women's Studies: An Introduction)            |
| (3) <b>IDIS 330</b> (Introduction to Jewish Studies)                          | (3) <b>IDIS 370</b> (Black Women Rising)                          |
| (3) <b>IDIS 375</b> (Black Family)  | (3) <b>IDIS 376</b> (African American Male)                       |
| (3) <b>IDIS 481</b> (Women of Color in the United States )                    | (3) <b>PHIL 225</b> (Philosophy of Women)                         |
| (3) <b>PHIL 242</b> (Philosophy, Culture and the African American Experience) | (3) <b>PHIL 330</b> (Religions of the East) *                     |
| (3) <b>POL 222</b> (Women, Politics and Public Policy)                        | (3) <b>POL 326</b> (Black Political Participation in America )    |
| (3) <b>POL 360</b> (Women and the Law)  | (3) <b>POL 456</b> (African American Political Thought)           |

- (3) **PSY 225** (Stereotyping and Prejudice)
- (3) **PSY 335** (Stereotyping and Prejudice)
- (3) **SOC 220** (Social Problems)
- (3) **SOC 450** (Gender Roles in Modern Society)
- (3) **YDAE 385** (Urban Service-Learning)

- (3) **PSY 239** (The Psychology of Women)
- (3) **PSY 368** (Children's Development in Cross-Cultural Perspective)
- (3) **SOC 310** (Racial and Ethnic Diversity)
- (3) **SPAN 235** (Mexican and Latino Culture) \*