OKLAHOMA STATE UNIVERSITY
ACADEMIC PROGRAM REVIEW
EXECUTIVE SUMMARY

DEPARTMENT: Entomology and Plant Pathology

The Program Review for the Department of Entomology and Plant Pathology was coordinated by the Interim Department Head and reviewed and revised by the co-chairs and members of the Department's Curriculum Committee. Data used for the review covers the years 1999 – 2004. Status of the Program and achievement of goals was compared with the most recent Program Review of the Department as conducted in 1998.

The Department of Entomology and Plant Pathology is primarily a research and extension funded department with approximately 12.3 faculty FTE with the Agricultural Experiment Station (research), 5.0 faculty FTE with the Cooperative Extension Service and 2.7 faculty FTE assigned to teaching (FY 04). B.S., M.S. and Ph.D. programs are science based with a strong emphasis in basic biology and pest management. The department accepts fewer graduate students than apply to the programs because the programs are research intensive and all applicants must have a faculty advisor and funding through Research Assistantships, Teaching Assistantships and/or scholarships or fellowships before their applications are approved.

Assessment of programs and student's learning experience is conducted using a written survey and oral interview at graduation. Additionally, students in the M.S. program must pass an oral examination. Ph.D. students must pass a written examination and an oral examination of their general scientific and specific disciplinary knowledge and an oral examination defending their Ph.D. thesis research. Students graduating from the B.S. entomology program typically move into technical positions in academia, federal government or industry or on to graduate school. Graduates from the M.S. and Ph.D. programs typically move into technical positions or post-doctoral positions. Within the disciplines, most academic positions are currently filled with scientists having post-doctoral experience.

Over the past five years the number of student credit hours taught by the faculty has increased dramatically due to the development of a General Education course that currently enrolls 500 students per year. Over the next five years we plan to develop additional joint offering courses between entomology and plant pathology that will be of interest to graduate students across the university. Additionally, we plan to review and develop plans for offering a program degree or option in pest management at the B.S. and/or M.S. level. We would like to develop an additional General Education course focusing on plant pathogens but are currently limited by available faculty resources.

Dean _____ Date 3/3/2005

Note: Complete one of these forms for each degree program

OKLAHOMA STATE REGENTS FOR HIGHER EDUCATION

2004 - 2005
ACADEMIC PROGRAM REVIEW

BACCALAUREATE, MASTERS & DOCTORAL DEGREES

OKLAHOMA STATE UNIVERSITY

BACHELOR OF SCIENCE IN ENTOMOLOGY
Title of unit or degree program reviewed (Level III)

With options (Level IV) in: N/A

BACHELOR OF SCIENCE
Degree designation as on diploma (Level II)

B.S.
Formal degree abbreviation (Level I)

Degree-granting academic unit **Entomology & Plant Pathology** (Name) **108** (Cost Center)

CIP code **2 6 0 7 0 2**

HEGIS code **0 4 2 1**

Instructional Program code **0 8 8**

Name of department head
(person who oversees degree program listed above) **Dr. Jonathan Edelson (Interim Head)**

Program holds specialized accreditation from **N/A**

Name and title of contact person **Diana Ward**
(Name)
Administrative Assistant
(Title)

Date of Institutional Governing Board Review: _____

President _____ Date: _____
(Signature)

Note: Complete one of these forms for each degree program

OKLAHOMA STATE REGENTS FOR HIGHER EDUCATION

2004 - 2005
ACADEMIC PROGRAM REVIEW

BACCALAUREATE, MASTERS & DOCTORAL DEGREES

OKLAHOMA STATE UNIVERSITY

MASTER OF SCIENCE IN ENTOMOLOGY
Title of unit or degree program reviewed (Level III)

With options (Level IV) in: **N/A**

MASTER OF SCIENCE
Degree designation as on diploma (Level II)

M.S.
Formal degree abbreviation (Level I)

Degree-granting academic unit **Entomology & Plant Pathology** (Name) **108** (Cost Center)

CIP code **2 6 0 7 0 2**

HEGIS code **0 4 2 1**

Instructional Program code **0 8 9**

Name of department head
(person who oversees degree program listed above) **Dr. Jonathan Edelson (Interim Head)**

Program holds specialized accreditation from **N/A**

Name and title of contact person **Diana Ward**
(Name)
Administrative Assistant
(Title)

Date of Institutional Governing Board Review: _____

President _____ Date: _____
(Signature)

Note: Complete one of these forms for each degree program

OKLAHOMA STATE REGENTS FOR HIGHER EDUCATION

2004 - 2005
ACADEMIC PROGRAM REVIEW

BACCALAUREATE, MASTERS & DOCTORAL DEGREES

OKLAHOMA STATE UNIVERSITY

DOCTOR OF PHILOSOPHY IN ENTOMOLOGY
Title of unit or degree program reviewed (Level III)

With options (Level IV) in: **N/A**

DOCTOR OF PHILOSOPHY
Degree designation as on diploma (Level II)

Ph.D.
Formal degree abbreviation (Level I)

Degree-granting academic unit **Entomology & Plant Pathology** (Name) **108** (Cost Center)

CIP code **2 6 0 7 0 2**

HEGIS code **0 4 2 1**

Instructional Program code **0 9 0**

Name of department head
(person who oversees degree program listed above) **Dr. Jonathan Edelson (Interim Head)**

Program holds specialized accreditation from **N/A**

Name and title of contact person **Diana Ward**
(Name)
Administrative Assistant
(Title)

Date of Institutional Governing Board Review: _____

President _____ Date: _____
(Signature)

Note: Complete one of these forms for each degree program

OKLAHOMA STATE REGENTS FOR HIGHER EDUCATION

2004 - 2005
ACADEMIC PROGRAM REVIEW

BACCALAUREATE, MASTERS & DOCTORAL DEGREES

OKLAHOMA STATE UNIVERSITY

MASTER OF SCIENCE IN PLANT PATHOLOGY
Title of unit or degree program reviewed (Level III)

With options (Level IV) in: **N/A**

MASTER OF SCIENCE
Degree designation as on diploma (Level II)

M.S.
Formal degree abbreviation (Level I)

Degree-granting academic unit **Entomology & Plant Pathology** (Name) **108** (Cost Center)

CIP code **2 6 0 3 0 5**

HEGIS code **0 4 0 4**

Instructional Program code **1 6 8**

Name of department head
(person who oversees degree program listed above) **Dr. Jonathan Edelson (Interim Head)**

Program holds specialized accreditation from **N/A**

Name and title of contact person **Diana Ward**
(Name)
Administrative Assistant
(Title)

Date of Institutional Governing Board Review: _____

President _____ Date: _____
(Signature)

Note: Complete one of these forms for each degree program

OKLAHOMA STATE REGENTS FOR HIGHER EDUCATION

2004 - 2005
ACADEMIC PROGRAM REVIEW

BACCALAUREATE, MASTERS & DOCTORAL DEGREES

OKLAHOMA STATE UNIVERSITY

DOCTOR OF PHILOSOPHY IN PLANT PATHOLOGY
Title of unit or degree program reviewed (Level III)

With options (Level IV) in: **N/A**

DOCTOR OF PHILOSOPHY
Degree designation as on diploma (Level II)

Ph.D.
Formal degree abbreviation (Level I)

Degree-granting academic unit **Entomology & Plant Pathology** (Name) **108** (Cost Center)

CIP code **2 6 0 3 0 5**

HEGIS code **0 4 0 4**

Instructional Program code **1 6 9**

Name of department head
(person who oversees degree program listed above) **Dr. Jonathan Edelson (Interim Head)**

Program holds specialized accreditation from **N/A**

Name and title of contact person **Diana Ward**
(Name)
Administrative Assistant
(Title)

Date of Institutional Governing Board Review: _____

President _____ Date: _____
(Signature)

OKLAHOMA STATE UNIVERSITY – ACADEMIC PROGRAM REVIEW
Department of Entomology and Plant Pathology
Division of Agricultural Sciences and Natural Resources

OVERVIEW

Description of the Departmental Program Review Process. Background materials for conduct of the review were collected and summarized by the Interim Department Head and administrative staff. The Interim Department Head developed the text describing aspects of the Department as requested in the review. The Departmental Curriculum Committee co-chairs reviewed the documents as they were developed and after completion of the document the entire Curriculum Committee reviewed the document and met to discuss, edit and revise. The Interim Department Head then completed the revision prior to submission for consideration.

Recommendation from Previous Program Reviews.
Academic: Increase undergraduate and graduate enrollment.
Action: We have developed several new courses with the major effort in development of an undergraduate level General Education course, 'Insects and Society' that enrolls 200 students each Spring semester and 300 students each Fall semester. We plan to increase undergraduate and eventually graduate enrollment by introducing non-science students to the science of entomology through this course. We have developed several graduate level courses as joint offerings between Entomology and Plant Pathology and integrated them into each of the disciplinary M.S. and Ph.D. program requirements. This has increased our teaching efficiency which is required due to faculty number reductions over the past three years. These courses also attract non-majors from other programs from throughout the university.

Research: Increase extramural funding support and explore the development of new partnerships and/or research teams.
Action: We have encouraged faculty to submit proposals for funding through additional sources and reorganized duties and responsibilities of office staff to help support faculty efforts. However, at the time of the last review (1998) many of the faculty were well funded and operating at a high efficiency level and thus had little time or lab or office space to support additional projects. This and the fact that we have lost faculty through retirements has resulted in level extramural grants funding being received over the past five years.

Extension: Develop the diagnostic center to incorporate state-of-science methods.
Action: We have greatly improved the plant and insect diagnostic facilities, and equipped it with state-of-science materials and technical support. This lab in conjunction with the computer based video cameras and identification materials now available in all Cooperative Extension county offices has dramatically improved our abilities to identify plant diseases and insects and improved our education abilities by providing real-time support to educators throughout the state.

CRITERION I
Program Centrality

A. Goals and Objectives of Degree Programs.
Degree Program: B.S., Entomology
Program Clientele: These are primarily traditional college-age students from Oklahoma that reside in Stillwater while pursuing a strongly science based degree.
Program Objectives: Prepare students for careers in science and/or graduate school. Provide basic understanding and knowledge of classification, biology and behavior of arthropods and their impacts on ecosystems.
Expected Student Outcomes: Students are expected to graduate with a broad knowledge of the humanities and science and the ability to search for information, synthesize information to solve problems and to be able to communicate science based information to the public. Specific knowledge of the basics of arthropod biology and ecology is expected.

Degree Program: M.S., Entomology
Program Clientele: These are primarily college-age students from throughout the U.S. and abroad that reside in Stillwater while pursuing disciplinary specific degrees with goals of obtaining professional career positions or progressing into a Ph.D. program after graduation.
Program Objectives: Prepare students for careers in science and/or doctoral programs. Provide a detailed knowledge of the structure, function, biology and behavior of arthropods and develop the ability to conduct scientific research.
Expected Student Outcomes: Students are expected to graduate with an ability to formulate hypotheses, conduct literature reviews to determine previous knowledge relative to the problem, develop an experimental approach to test hypotheses, to successfully conduct the necessary research and to develop a technical report of the research results. Specific knowledge of arthropod biology, systematics and ecology is expected.

Degree Program: Ph.D., Entomology
Program Clientele: These students vary from college-age to mature adult students from throughout the U.S. and abroad that reside in Stillwater with specific goals of obtaining terminal degrees in order to pursue their goals of developing careers in science.
Program Objectives: Provide the knowledge basis and training for students to become research scientists, educators and specialists in the discipline of entomology. Prepare students for careers in education, science or technical management dealing with development or dissemination of knowledge of arthropod biology and/or managing pests.
Expected Student Outcomes: Students are expected to develop a creative approach to identification and solving a significant problem using the scientific method and to thereafter publish the results in a scientific journal. Specific knowledge of an area of specialization in arthropod biology, systematics and/or ecology is expected.

Degree Program: M.S., Plant Pathology

These are primarily college-age students from throughout the U.S. and abroad that reside in Stillwater while pursuing disciplinary specific degrees with goals of obtaining professional career positions or progressing into a Ph.D. program after graduation.
Program Objectives: Prepare students trained in the science of plant pathology and associated disciplines, who are qualified for careers in the discipline with academia, industry or government and/or to progress to Ph.D. programs in Plant Pathology or related disciplines.
Expected Student Outcomes: Students are expected to graduate with an ability to synthesize a hypothesis, conduct literature reviews to determine previous knowledge relative to the problem, develop an experimental approach to test a hypothesis, to successfully conduct the necessary research and to develop a technical report of the research problem. Specific knowledge of plant pathogen biology, genetics, etiology and ecology is expected.

Degree Program: Ph.D., Plant Pathology
Program Clientele: These students vary from college-age to mature adult students that reside in Stillwater with specific goals of obtaining terminal degrees in order to pursue their goals of developing careers in science.
Program Objectives: Produce trained plant pathologists capable of conducting independent research in the biological sciences, teaching courses in plant pathology, conducting extension education programs or managing technical programs in the biological sciences.
Expected Student Outcomes: Students are expected to develop a creative approach to delimiting and solving a significant problem using the scientific method and to thereafter publish the results in a scientific journal. Specific knowledge of plant pathogen biology, genetics, etiology and ecology is expected.

B. Linkage of the Program to Institution's Mission.
Mission statement: The Department of Entomology and Plant Pathology discovers, develops and disseminates scientific knowledge concerning arthropods and plant pathogens.

Linkage: The academic programs are an integral part of the land-grant mission of Oklahoma State University. *"Proud of its land grant heritage, Oklahoma State University advances knowledge, enriches lives, and stimulates / enhances economic development through instruction, research, outreach, and creative activities".*

The B.S., M.S., and Ph.D. programs of the Department of Entomology and Plant Pathology are an integral part of the mission of the College of Agricultural Sciences and Natural Resources and the land grant mission of the University. The M.S. and Ph.D. programs are intensive, high quality research based degree programs comparable to and competitive with similar degree programs at other major universities throughout the U.S.A. The undergraduate degree program is a strong science-based degree from which the majority of graduates enter postgraduate training in medical and veterinary professions or graduate school. Our programs provide outstanding academic training and

research experience in the unique sciences of arthropod and plant pathogen biology not offered in any other university or college in Oklahoma.

Research programs in the department develop knowledge regarding arthropods and plant pathogenesis. This information is used to educate and train students that will develop professional careers that enhance their lives through knowledge. Knowledge gained from this research and the students enhances the economic ability of the citizens of Oklahoma. The information developed through research and the students trained disseminate through the state through the efforts of our Cooperative Extension programs to provide life-long education to youth and adults.

CRITERION II
Program Curriculum and Structure

A. Program structure. Degree requirements sheets attached.

B. Distance education. PLP 5724, Physiology of Host-Pathogen Interactions, is offered in conjunction with the University of Nebraska, Kansas State University and/or Colorado State University and is taught by faculty at each institution interacting with students at each of the universities through PolyCom video systems. This course serves a specialized core of students using faculty from the various universities.

C. Articulation agreements. None

D. Multidisciplinary programs.
Faculty in the Department of Entomology and Plant Pathology participate in the multidisciplinary Environmental Science and the Plant Science degree programs. The Environmental Science and Plant Science programs are interdisciplinary and science-oriented, the student takes basic courses in biology, chemistry, math, physics, statistics, and several social sciences. The Environmental Science and Plant Science majors are directly supported by faculty from the departments of Agricultural Economics, Entomology and Plant Pathology, Forestry, Horticulture and Landscape Architecture, and Plant and Soil Sciences. Additionally, the faculty members offer numerous service or support courses for students in Plant and Soil Science, Forestry, Horticulture and Animal Science.

OKLAHOMA STATE UNIVERSITY

GENERAL REQUIREMENTS

For students matriculating:

Academic Year 2004-2005

COLLEGE OF AGRICULTURAL SCIENCES AND NATURAL RESOURCES

BACHELOR OF SCIENCE IN AGRICULTURAL SCIENCES AND NATURAL RESOURCES
DEGREE

Total hours 130

ENTOMOLOGY
MAJOR

Minimum overall grade-point average 2.00
Other GPA requirements, see below.

(GENERAL)
OPTION

General Education Requirements 61 Hours

Area	Hrs	To Be Selected From
English Composition and Oral Communication	12	ENGL 1113 or 1313; 1213 or 1413 and 3323*. (See Academic Regulation 3.5 in Catalog.) SPCH 2713*
American History and Government	6	HIST 1103; POLS 1113
Analytical and Quantitative Thought (A)	5	MATH 1715* (or higher MATH, recommend calculus; MATH 1483*, 1513*, 1613; 3 hrs of STAT approved for (A))
Humanities (H)	6	Any courses designated (H); must include one lower-division course
Natural Sciences (N)	25	BIOL 1114*, BOT 1404*, CHEM 1215* (or 1314*), 1225* (or 1515*), ZOOL 1604*; 4 hrs organic chemistry
Social and Behavioral Sciences (S)	7	AGEC 1114* and any course designated (S)
International Dimension (I)	--	ANSI 3093 or GEOG 2253 or NSCI 3543 or any course designated (I)
Scientific Investigation (L)	--	Any course designated (L)

* College and Departmental Requirements that may be used to meet General Education requirements.

College/Departmental Requirements 13 Hours

Agricultural Courses	8	AG 1011; PLNT 1213 or HORT 1013; SOIL 2124 or ANSI 1124
Entomology Courses	3	ENTO 2023
Communications	2	AG 2112 or CS 1113 or MSIS 2103

Major Requirements 42 Hours

Core Courses 14 Hours

General Biology:

3 hrs from: ANSI 3423, BIOL 3024, PLNT 3554

4 hrs from: CLML 3014, MICR 2125, ZOOL 3104

Entomology:

7 hrs from: ENTO 3043, 3644, 4464, or 4223

Controlled Electives 28 Hours

Choose from one of the following areas of empahsis:

General Entomology

12 hrs from: ENTO 3003, 3021, 3331, 3421, 3461, 3663, 4854, 4800 (3 hrs), 4922, or ENTO courses not taken as part of Core Courses

6 hrs from: HORT 3153, PLNT 2013, 3111, 3112, 4113, 4123, 4353, SOIL 3893, 4363

3 hrs from: BOT 3463 or PLP 3344

7 hrs from: BIOC 3653, MATH 2103, 2144, PHYS 1014, 1114 or STAT 2013, 3013, 4013

Biotechnology

6 hrs from: ENTO 4800 (3 hrs), 4854, 4922, 5003, or ENTO courses not taken as part of Core Courses

3 hrs from: BOT 3463 or PLP 3344

12 hrs from: BIOC 3653, 4113, MICR 2125 (if not used above), 3154, 3254, 4123; ZOOL 3133, 4103 or 4264

7 hrs from: CHEM 2113, 2122, MATH 2103, 2144; PHYS 1114 or STAT 2013, 4013, 4023

Electives 14 Hours

Hours to complete required total.

Other Requirements:
A minimum of 40 semester credit hrs and 100 grade pts must be earned in courses numbered 3000 or above. A 2.00 GPA or higher in upper-division hours.

Students will be held responsible for degree requirements in effect at the time of matriculation (date of first enrollment) & any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.

DEAN

DEPARTMENT HEAD

ENTOMOLOGY & PLANT PATHOLOGY
CREDIT REQUIREMENTS

MASTERS DEGREE PROGRAM

Major: **Entomology**

Major Requirements: 30 credit hours

15 hours of 5000 & 6000 level classes at Oklahoma State University
6 hours of Research and Thesis (Ento 5000)
9 hours of level 3000 & 4000 classes that have been approved for graduate credit

An astrick in the OSU course catalog identifies courses taken at the 3000 & 4000 level that are approved for Graduate Credit

REQUIRED COURSES

(A total of 9 credit hours)

ENTO	4464	Systematic Entomology
ENTO	5043/5044	Insect Physiology
ENTO	5644	Insect Morphology

(6 credit hours)

ENTO	5000	Research and Thesis *(do not include more than 6 hrs on your plan of study or the Grad college will not accept it)*

(2 credit hours)

ENTO	5870	Scientific Presentations (must be taken twice; short 10 min & 50 min presentations)

Major: **Plant Pathology**

Major Requirements: 30 credit hours

15 hours of 5000 & 6000 level classes at Oklahoma State University
6 hours of Research and Thesis (PLP 5000)
9 hours of level 3000 & 4000 classes that have been approved for graduate credit

An astrick in the OSU course catalog identifies courses taken at the 3000 & 4000 level that are approved for Graduate Credit

REQUIRED COURSES

Introductory Courses (one is required if not previously taken (cannot count toward the 30 credit hours)

PLP	3344	Introductroy Plant Pathology
		OR
PLP	5043	Principles of Phytopathology

Pathogens Courses (Two courses from the following)

PLP	5004	Plant Nematology
PLP	5012/3	Plant Virology w/Lab
PLP	5104	Mycology
PLP	5304	Phytobacteriology

Concepts Courses (Two courses - at least one from an area of disease control marked w/asterick)

PLP	4922*	Applications of Biotech. In Arthropod & Pathogen Control
PLP	5523*	Integrated Mgmt of Insect Pests and Pathogens
PLP	5613*	Host Plant Resistance
PLP	5724	Host-Pathogen Physiology
PLP	6303	Soilborne Diseases

(2 credit hours)

PLP	5870	Scientific Presentations (must be taken twice; short 10 min & 50 min presentations)

ENTOMOLOGY & PLANT PATHOLOGY
CREDIT REQUIREMENTS

DOCTOR OF PHILOSOPHY DEGREE PROGRAM

Major: **Entomology**

REQUIRED COURSES

ENTO	4464	Systematic Entomology
ENTO	5003	Insect Biochemistry
ENTO	5043/5044	Insects Physiology
ENTO	5644	Insect Morphology
ENTO	5870	Scientific Presentation (must be taken twice: short 10 min & 50 min. presentations)
ENTO	5992	Career Skills and Professionalism (recommended)

Major: **Plant Pathology**

REQUIRED COURSES

Introductory Courses (one is required if not previously taken)

PLP	3344	Introductroy Plant Pathology
		OR
PLP	5043	Principles of Phytopathology

Pathogens Courses

PLP	5104	Mycology
PLP	5724	Host-Pathogen Physiology

Additional Pathogen Courses - 2 required

PLP	5004	Plant Nematology
PLP	5012/3	Plant Virology w/Lab
PLP	5304	Phytobacteriology

Concepts Courses - 2 required (at least one from an area of disease control marked with asterisk)

PLP	4922*	Applications of Biotech. In Arthropod & Pathogen Control
PLP	5523*	Integrated Management of Insect Pests and Pathogens
PLP	5613*	Host Plant Resistance
PLP	6303	Soil-Borne Diseases of Plants

Professionalism

PLP	5992	Career Skills & Professionalism for Scientists (recommended but not required)
PLP	5870	Scientific Presentation (must be taken twice; short 10 min & 50 min presentations)

CRITERION III
Program Resources

A. New facilities and major equipment.
SPREC. The Stored Product Research and Education Center (SPREC) is a grain and bulk products storage research, education and technology-transfer facility dedicated to developing and testing applied methods of storing grain for Oklahoma and the southern region of the U.S. The facility is used for grain industry training and technology transfer schools including Oklahoma grain elevator workshops, grain grading schools, fumigation workshops, and other training programs. The facility is located off of the main campus and is comprised of a research lab, education rooms and replicated storage bins for research.

Hybridoma Center. The Hybridoma Center for Agriculture and Biological Sciences (HYCABS) was established to serve research and instruction needs in the areas of antibody based technologies: hybridoma technology and production of monoclonal and polyclonal antibodies. The facility is interdisciplinary to address the needs of individuals working in the human, animal, plant or microbial sciences. The facility is located in the Noble Research Center and covers approximately 600 sq. ft. Equipment available for hybridoma production and monoclonal antibody characterization and purification includes laminar flow hoods, CO_2 incubators, microscopes, centrifuges, an ultra-low temperature freezer, a liquid nitrogen storage system, electrophoresis equipment for immunoblot analysis and other standard laboratory equipment. Isolation of complex proteins by high-resolution preparative isoelectric focusing (Bio-Rad Rotofor Cell), continuous-elution electrophoresis (Bio-Rad preparative electrophoresis cell) or low-pressure chromatography (Bio-Rad Econo System) are also available.

PEF. The Pinkston Educational Facility is an education center with facilities developed specifically to train persons for certification for applying pesticides to structures to control termites and other structural pests. It is operated in conjunction with the Oklahoma Department of Agriculture and Forestry whose personnel test and certify students trained by faculty in our department at the facility.

PDIDL. The Plant Disease and Insect Diagnostic Laboratory is a service and education laboratory with facilities for identifying plant pathogens and insects. The primary goal of the PDIDL is to provide residents in Oklahoma with both accurate diagnoses of plant diseases and insect pests and recommendations for their control. The PDIDL operates throughout the year to provide plant disease and insect identification services to extension agents, individuals, consultants, and commercial producers. A professional staff trained in diagnostics handles specimens brought or mailed to the lab and/or through remote video with imaging systems provided at the lab and in County Extension offices throughout the state. Currently the lab is being refitted to contain a room for handling and identifying regulated plant pathogens.

B. Academic and administrative efficiencies. The Department of Entomology and the Department of Plant Pathology were merged into a single department in 1997. The

merging of academic and administrative functions has progressed since that time. The office staff was reduced by half since the merger. Merging of academic programs has continued with the latest change being the requested merging of the M.S. degree programs from the two disciplines into a single M.S. program with a shared core curriculum. The faculty continue to review programs and needs of students in efforts to create greater efficiencies required due to the significant loss of faculty over the past five years.

C. External funding. See Appendix A.

The Department has experienced over the past five years a decline from 21 to 17 tenure-track faculty members. During this same time it is estimated that sponsored research expenditures increased from $1.9 million to $2.0 million per year indicating continued efforts of the faculty to obtain funding from extramural grants programs.

CRITERION IV
Productivity

A. Number of majors (headcount), student credit hours and average time to graduation (See Five Year Academic Report Card as attached).

Year	2000	2001	2002	2003	2004
B.S.	14	14	11	13	16
M.S. & Ph.D.	26	31	33	34	33
Credit hours	1,301	1,344	1,374	1,376	1,389
Full time semesters	-	9.3	10	9	-

The training associated with the undergraduate and graduate programs is specific to entomology and plant pathology. Recent increased interest and concern regarding domestic biosecurity has increased the societal needs for science-based training for students to enter the work force in the areas of biosecurity and forensics biology. Arthropods and plant pathogens can be significant biosecurity threats. Therefore we project a greater need for students trained in these areas of science and technology.

Our graduate programs are research based and we do not typically admit graduate students into the programs unless they have support through a Graduate Research or Teaching Assistantship. The number of assistantships available has remained stable even though state funded support and number of faculty has declined. The majority of the research and teaching faculty have retained as many graduate students as their external funded grants can support with GRA's and that their lab and office facilities can support.

B. Faculty ratio and class size (See Five Year Academic Report Card attached).

Year	2000	2001	2002	2003	2004
Instructional FTE	3.74	3.27	1.78	3.00	2.88
Avg class size – B.S.	51.0	59.5	47.1	59.5	53.0
Avg class size – graduate	10.0	11.0	8.0	9.0	10.0
Credit Hours per Instructional FTE	347.9	411.0	771.9	458.7	482.3

Instructional faculty FTE's have declined over the past five years while number of Credit Hours has increased and average class size has remained constant. Because our department faculty positions are primarily funded by the Agricultural Experiment Station and Cooperative Extension Service the Student Faculty ratio as calculated for the OSU Academic Report Card is not indicative of the true ratio of students/credit hours per Instructional FTE. Therefore, in the above table we have included an indicator calculated based on annual Credit Hours per Instructional FTE. This ratio has increased over the past five years from 347 to 482 indicating the increasing demand on faculty with teaching

Oklahoma State University
FIVE-YEAR ACADEMIC REPORT CARD
ENT & PLANT PATH

Fall Semester	2000	2001	2002	2003	2004	Change Amount	Change Percent
Student Information							
Headcount							
Undergraduate	14	14	11	13	16	2	14.3%
Graduate	26	31	33	34	33	7	26.9%
Professional	0	0	0	0	0	0	-
Total	40	45	44	47	49	9	22.5%
Minority	16	19	22	23	25	9	56.3%
Non-minority	24	26	22	24	24	0	0.0%
Entry Information							
ACT Average	29	26	25	29	22.25	-6.75	-23.3%
ACT 25th - 75th Percentile	29-29	24-28	22-28	29-29	18-27		
Top 10% High Sch. Class(%)	50.0%	0.0%	0.0%	0.0%	25.0%	-25.0%	
Retention/Graduation Rates							
No. of Full-time Semesters	0	9.3	10	9	0	-9.3	-100.0%
Semester Credit Hours - State Funded							
Undergraduate	1,117	1,124	1,194	1,123	1,159	42	3.8%
Graduate	184	220	180	253	230	46	25.0%
Professional	0	0	0	0	0	0	-
Total	1,301	1,344	1,374	1,376	1,389	88	6.8%

Number of Lecture Classes Taught /Avg Class Size	Number	Avg.	Number	Avg.	Number	Avg.	Number	Avg.	Number	Avg.		
Undergraduate	7	51.0	6	59.5	8	47.1	6	59.5	7	53.0	0	0.0%
Graduate/Professional	6	10.0	5	11.0	6	8.0	7	9.0	5	10.0	-1	-16.7%
All Student	13	32.1	11	37.5	14	30.4	13	32.3	12	35.1	-1	-7.7%

Class Size							
% of Classes < 20	61.5%	45.5%	64.3%	61.5%	58.3%	-3.2%	
% of Classes > 50	23.1%	27.3%	21.4%	23.1%	25.0%	1.9%	
OSU-Tulsa							
Headcount	0	0	0	0	0	0	-
Student Credit Hours	0	0	0	0	0	0	-
NOC Gateway Program							
Headcount	0	0	0	0	1	1	-
Student Credit Hours	0	0	0	0	3	3	-
Faculty Information							
Instructional-FTE	3.74	3.27	1.78	3.00	2.88	-0.86	-23.0%
Professor-Lecturer	1.25	1.88	1.25	1.00	1.00	-0.25	-20.0%
Graduate Assistant	4.99	5.15	3.03	4.00	3.88	-1.11	-22.2%
Total							
Headcount							
Professor-Lecturer							
Total	42	42	38	40	32	-10	-23.8%
Minority	9	8	7	9	8	-1	-11.1%
Tenured/Tenure Track	47	46	44	45	38	-9	-34.6%
Tenured	21	20	19	20	17	-4	-19.0%
%Tenured	44.7%	43.5%	43.2%	80.0%	44.7%	0.1%	
% of Faculty Full - Time	100.0%	98.2%	100.0%	100.0%	100.0%	0.0%	
Student Faculty Ratio	1.6	1.6	1.3	1.9	1.6	0.0	-0.1%

Faculty Salaries vs. Peer Inst. (Full-time Faculty - 9 mos.)	OSU	Big 12	OSU	Big 12	OSU	Big 12	OSU	Big 12	OSU	Big 12	OSU	
Professor	$66,852	$71,601	$69,393	$75,511	$67,068	$76,612	$68,517	$79,655	$68,203		$1,351	2.0%
Associate	$50,171	$53,558	$53,452	$55,126	$52,217	$56,493	$52,311	$58,315	$57,147		$6,976	13.9%
Assistant	$43,749	$45,189	$45,599	$48,671	$45,599	$48,346	$45,313	$49,468	$48,553		$4,804	11.0%

Classes Taught by Tenured/Tenure Track										
% Lower Div. Classes	100%	0% *	0% *	0% *	0% *	-100.00%	
% Undergrad. Classes	100%	50%	63%	50%	89%	-11.00%	

* retired faculty on contract

Oklahoma State University
FIVE-YEAR ACADEMIC REPORT CARD
ENT & PLANT PATH

Fiscal Year	2000	2001	2002	2003	2004	Change Amount	Change Percent
Financial Information							
Faculty Salaries	$283,835	$262,594	$239,611	$149,639	$211,370	($72,465)	-25.5%
Other Salaries	$49,913	$51,408	$40,274	$37,197	$37,002	($12,911)	-25.9%
Fringe Benefits	$75,115	$77,330	$72,124	$45,929	$67,126	($7,989)	-10.6%
Travel	$134	$554	$336	$455	$213	$79	58.8%
Utilities	$0	$0	$0	$0	$0	$0	-
Supplies Other Oper. Exp.	$20,837	$18,447	$10,822	$9,832	$11,345	($9,493)	-45.6%
Property, Furniture Equip.	$1,979	$14,062	$1,596	$12,977	$8,357	$6,378	322.3%
Library Books Periodicals	$1,121	$0	$0	$427	$0	($1,121)	-100.0%
Transfers Other Disbur.	$0	$0	$0	$0	$0	$0	-
Total	$432,934	$424,396	$364,963	$256,456	$335,412	($97,522)	-22.5%
Cost per SCH	$187.34	$172.73	$143.29	$99.40	$132.89	($54.45)	-29.1%
Cost per SCH in Constant $	$187.34	$167.81	$136.90	$92.61	$119.23	($68.11)	-36.4%
Other Revenue							
Other Student Fees	$0	$0	$0	$0	$0	$0	-
Gifts and Grants	$0	$0	$0	$0	$0	$0	-
OSU-Tulsa Fac. Exp. Transfers	$0	$0	$0	$0	$0	$0	-
Fees Related to Educ. Depts.	$2,790	$2,990	$0	$0	$0	($2,790)	-100.0%
Other Income	$0	$2,000	$3,980	$5,655	$53,906	$53,906	-
Total	$2,790	$4,990	$3,980	$5,655	$53,906	$51,116	1832.1%
External Funding							
Sponsored Expenditures**	$1,994,717	$1,884,936	$2,080,596	$2,155,631	$2,032,188	$37,471	1.9%

**Excludes federal appropriations for College of Agriculture Sciences and Natural Resources.

responsibilities. The increased demand is due to the reduction in Instructional FTE along with the constant to increasing number of student credit hours.

C. Five year average number of degrees conferred and majors (1998-2002).

	Number of Degrees Conferred		Majors (Headcount) - Fall	
Degree	OSRHE standard	5 yr average	OSRHE standard	5 yr average
B.S. ENTO	5	2.0	12.5	13.2
M.S. ENTO	3	3.2	6.0	10.2
M.S. PLP	3	2.4	6.0	6.0
Ph.D. ENTO	2	1.4	4.5	7.4
Ph.D. PLP	2	0.8	4.5	7.4

Each of the programs meets or exceeds the minimum number of students enrolled in the Fall semester as a five year average. However, the graduation/retention numbers are low for each program in comparison to standards with the exception of the M.S. in entomology. The faculty have decided to merge the two M.S. programs into a single program and the request was submitted this year to do so. Because the Ph.D. program is typically a three to four year research based program there is cycle of up and down numbers of graduates from the program. The Curriculum Committee of the Department will be charged with reviewing the inconsistencies in numbers of majors versus graduation rates for the B.S. and Ph.D. programs and charged with developing recommendations to address any problems.

CRITERION V
Quality

A. Program faculty qualifications. Table attached.

B. Evidence of regional / national reputation and ranking.
The disciplinary professional societies, Entomological Society of America and the American Phytopathological Society, do not conduct surveys to rank professional programs and therefore none are available.

C. Scholarly activity. Appendix B attached.
Although the number of faculty FTE's has declined over the past five years, the productivity in terms of scholarly research as evidenced by publication of peer review manuscripts has been maintained or increased.

ENTO/PLP

CRITERION V
Quality

Name	Faculty Status (Reg or Adjunct)	Faculty FTE	Degrees Earned		Related Work Exp. (years)
			Highest Type	Teaching Area Type	
Barker, Robert W.	Emiterus Professor	0.0	Ph.D.	Ph.D.	31
Bender, Carol	Regents Professor	1.0	Ph.D.	Ph.D.	18
Berberet, Richard	Professor	1.0	Ph.D.	Ph.D.	33
Bolin, Patricia	Adjunct Assoc. Professor	1.0	Ph.D.	Ph.D.	5
Burd, John	Adjunct Assoc. Professor	1.0	Ph.D.	Ph.D.	23
Bruton, Benny	Adjunct Professor	1.0	Ph.D.	Ph.D.	28
Chenault, Kelly	Adjunct Assoc. Professor	1.0	Ph.D.	Ph.D.	7
Conway, Kenneth	Professor	1.0	Ph.D.	Ph.D.	32
Criswell, Jim	Professor	1.0	Ph.D.	Ph.D.	26
Damicone, John	Professor	1.0	Ph.D.	Ph.D.	19
Dillwith, Jack	Professor	1.0	Ph.D.	Ph.D.	25
Edelson, Jonathan	Interim Hd & Professor	1.0	Ph.D.	Ph.D.	22
Elliott, Norman	Adjunct Professor	1.0	Ph.D.	Ph.D.	20
Filonow, Alexander	Professor	1.0	Ph.D.	Ph.D.	20
Fletcher, Jacqueline	Sarkeys Dist. Prof	1.0	Ph.D.	Ph.D.	21
Giles, Kristopher	Assoc. Professor	1.0	Ph.D.	Ph.D.	8
Gramtham, Richard	Adjunct Assoc. Professor	1.0	Ph.D.	Ph.D.	15
Greenstone, Matthew	Adjunct Professor	1.0	Ph.D.	Ph.D.	28
Hunger, Robert	Professor	1.0	Ph.D.	Ph.D.	22
Jiang, Haobo	Asst. Professor	1.0	Ph.D.	Ph.D.	9
Kard, Bradford	Assoc. Professor	1.0	Ph.D.	Ph.D.	17
Kindler, S. Dean	Adjunct Professor	1.0	Ph.D.	Ph.D.	38
Marek, Stephen	Asst. Professor	1.0	Ph.D.	Ph.D.	3
Melouk, Hassan	Adjunct Professor	1.0	Ph.D.	Ph.D.	35
Mitchell, Forest	Adjunct Assoc. Professor	1.0	Ph.D.	Ph.D.	18
Mulder, Phillip	Professor	1.0	Ph.D.	Ph.D.	19
Mysore, Kiran	Adjunct Assoc. Professor	1.0	Ph.D.	Ph.D.	7
Neethling, Francisca	Adjunct Assoc. Professor	1.0	Ph.D.	Ph.D.	8
Phillips, Thomas	Professor	1.0	Ph.D.	Ph.D.	20
Roosinck, Marilyn	Adjunct Assoc. Professor	1.0	Ph.D.	Ph.D.	10
Royer, Tom	Assoc. Professor	1.0	Ph.D.	Ph.D.	13
Shufran, Kevin	Adjunct Assoc. Professor	1.0	Ph.D.	Ph.D.	17
Verchot-Lubicz, J.	Assoc. Professor	1.0	Ph.D.	Ph.D.	9
vonBroembsen, Sharon	Professor	1.0	Ph.D.	Ph.D.	15
Walker, Nathan	Asst. Professor	1.0	Ph.D.	Ph.D.	5
Wayadande, Astri	Adjunct Professor	1.0	Ph.D.	Ph.D.	11
Webster, James	Adjunct Professor	1.0	Ph.D.	Ph.D.	37
Wright, Russell	Emiterus Professor	0.0	Ph.D.	Ph.D.	38

D. Assessment of student achievement of expected learning outcomes for each degree.

Year /Degree Program	Method Used	Grads/No. Assessed
1999		
B.S. Entomology	Oral and written interviews	3/3
2000		
B.S. Entomology	N.A.	0
M.S./Ph.D. Entomology and Plant Pathology	Oral and written interviews	8/8
2001		
B.S. Entomology	Oral and written interviews	3/3
M.S./Ph.D. Entomology and Plant Pathology	Oral and written interviews	10/9
2002		
B.S. Entomology	Oral and written interviews	2/1
M.S./Ph.D. Entomology and Plant Pathology	Oral and written interviews	7/5
2003		
B.S. Entomology	Oral and written interviews	2/1
M.S./Ph.D. Entomology and Plant Pathology	Oral and written interviews	7/5
2004		
B.S. Entomology	Oral and written interviews	1/0
M.S./Ph.D. Entomology and Plant Pathology	Oral and written interviews	10/10

All students were given or mailed written survey forms to asses their experience at OSU and this was followed by an oral interview with the department head. The relatively small sample sizes preclude any meaningful statistical analysis of the data. All survey tool results and interviews were positive for the following assessment factors: quality of teaching, interest in intellectual growth, sensitivity to needs, quality of advising, quality of total curriculum, overall departmental quality of instruction and opportunities for creative development.

E. Overview of results from program outcomes assessment.

The most recent assessment was conducted for 2003-2004 and results indicated that students were positive about the education received and their research experiences at OSU. Major concerns of students included negative ratings for STAT 5013 and 5023 which are key service courses in biometrics. Several students expressed concern about the loss of key faculty positions and the resulting impact on graduate courses including Insect Toxicology and Insect Physiology. We were not able to offer Insect Toxicology in 2004 because there was no instructor available and this impacted several students that had the course on their Plan of Study. We are currently working with faculty in the department that may be able to teach Insect Toxicology and/or access a web-based offering of a similar course from another university.

F. Feedback from program alumni / documented achievements of program graduates.

All graduates participating in the most recent assessment (2003-2004) were placed in professional positions including post doctoral positions, graduate programs, research

technician, pest management technician and/or commissioned as a medical entomologist in the Army. Results of alumni surveys had so few responses as to be not valid for statistical analysis. However, most of our graduates at the B.S. level move on to graduate programs in a science area or are placed in technical positions in industry. M.S. level graduates primarily move into Ph.D. programs with a minor number moving into industry in technical positions. Ph.D. graduates primarily move into post-graduate programs as is common for students that desire academic appointments. A few Ph.D. graduates have attained academic appointments or jobs with industry.

G. Other program evaluations.

There have been no outside academic reviews of the department in the past five years. Prior to the merger of the two departments in 1997 both departments were due for a USDA/CSREES sponsored review. However, this was postponed due to the pending merger and after that time no reviews have been conducted.

CRITERION VI
Program Demand / Need

A. Occupation Manpower Demand

Advisory Committee Membership. There is no Advisory Committee.
Advisory Committee Recommendations. N.A., see above.
School response to Recommendations. N.A., see above.
Other sources and documents indicating demand.

There is a low but constant demand for trained professional entomologists and plant pathologists. Employment opportunities are diverse and sporadically available ranging from technicians in industry and research labs to academic positions at colleges and universities, to federal positions with Homeland Security and/or Department of Agriculture and the military.

B. Societal Needs for the Program.

Arthropods are abundant and vital parts of our ecosystem that often have a negative impact on society. Many are beneficial and others are nuisances or economically damaging impacting production of crops, forest products, stored products and livestock. Society expects that professional experts will have the knowledge and tools available to manage arthropods as they impact our lives. Therefore, there is a continual need for trained, professionals to help solve problems, develop new methods of management and to educate the public. Specifically, entomologists are needed for positions including pest control, advisory and regulatory in city, county, state and federal levels, teachers in colleges and universities and at federal and university research and extension levels.

Many microorganisms including fungi, bacteria, viruses and nematodes cause diseases of plants important as food, fiber and ornamental sources. Professional plant pathologists as with entomologists are needed in a variety of domestic and international programs and institutions including colleges, universities as teachers and research scientists, in federal, state and private industry labs as researchers and in advisory and regulatory personnel in city, state and federal agencies.

C. Graduate student applications and enrollment changes.

Generally our department has more applicants than are accepted into the graduate programs due to the programs intense research basis. First, we do not accept students unless a graduate faculty member accepts the role as mentor, and typically we do not accept students into the program unless they have been funded as a Graduate Research or Teaching Assistant. Thus, the funds available for assistantships and number of faculty advisors limits the number of students that will be accepted. Over the past five years we have had a significant reduction in faculty and therefore we are not likely to see an increase in numbers of graduate students as the lower faculty numbers result in limited funding for GRA's and lab and office facilities and time available to mentor students.

Entomology

GRADUATE STUDENT APPLICATIONS AND ENROLLMENT CHANGES
2002 - 2004

AG MS ENTO

	Enrolled			Applications			Acceptances			New Enrollments from Applications Accepted			Graduations (Summer, Fall, Spring totals shown)		
	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004
Domestic	5	5	2	3	1	1	3	1	0	3	1	0	3	1	1
		0	(3)		(2)	0		(2)	(1)		(2)	(1)		(2)	
International	3	2	2	5	3	3	2	0	1	0	0	1	1	2	1
		(1)	0		(2)	0		(2)	1		0	1		1	(1)
Totals	8	7	4	8	4	4	5	1	1	3	1	1	4	3	2
		(1)	(3)		(4)	0		(4)	0		(2)	0		(1)	(1)

AG PHD ENTO

Domestic	4	7	6	2	3	2	2	3	0	2	3	0	2	0	1
		3	(1)		1	(1)		1	(3)		1	(3)		(2)	1
International	5	5	6	7	5	3	2	2	0	0	1	0	1	1	1
		0	1		(2)	(2)		0	(2)		1	(1)		0	0
Totals	9	12	12	9	8	5	4	5	0	2	4	0	3	1	2
		3	0		(1)	(3)		1	(5)		2	(4)		(2)	1

Plant Pathology

GRADUATE STUDENT APPLICATIONS AND ENROLLMENT CHANGES
2002 - 2004

AG MS PLP

	Enrolled			Applications			Acceptances			New Enrollments from Applications Accepted			Graduations (Summer, Fall, Spring totals shown)		
	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004
Domestic	4	2	3	0	1	2	0	1	2	0	1	2	1	2	1
		1			1	1		1	1		1	1		1	(1)
International	2	1	2	3	5	0	1	2	0	0	1	0	0	1	1
		(1)	1		2	(5)		1	(2)		1	(1)		1	0
Totals	6	3	5	3	6	2	1	3	2	0	2	2	1	3	2
		(3)	2		3	(4)		2	(1)		2	0		2	(1)

AG PHD PLP

	Enrolled			Applications			Acceptances			New Enrollments from Applications Accepted			Graduations (Summer, Fall, Spring totals shown)		
	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004
Domestic	1	1	2	0	0	1	0	0	1	0	0	1	0	0	0
		0	1		0	1		0	1		0	1		0	0
International	9	11	10	5	4	7	2	1	2	1	1	1	0	0	2
		2	(1)		(1)	3		(1)	1		0	0		0	2
Totals	0	12	12	5	4	8	2	1	3	1	1	2	0	0	2
		12	0		(1)	4		(1)	2		0	1		0	2

CRITERION VII
Program Duplication

A. Program Duplication. There are no programs within the state of Oklahoma with significant overlap with any of the programs described; B.S. Entomology, M.S. Entomology, Ph.D. Entomology, M.S. Plant Pathology and/or Ph.D. Plant Pathology. Many of the other biological science degree programs require similar general courses in the sciences and/or humanities at the undergraduate level. However, no other departments offer the breadth and depth of course work in entomology. The M.S. and Ph.D. programs for both entomology and plant pathology are highly specialized and no other departments within OSU, or colleges or universities in Oklahoma offer the requisite courses for these degrees.

B. Other degree programs at OSU with similar titles or functions. None.

C. For similar programs, how does each program fulfill unique student needs. Not applicable.

SUMMARY AND RECOMMENDATIONS

A. Strengths. The faculty and staff are well trained and dedicated to the departmental mission. They are committed to offering an outstanding education to undergraduate and graduate students at OSU not only to those students enrolled in our departmental programs but they offer numerous 'service' courses in support of other departments throughout the university. The teaching faculty all have split appointments with significant responsibilities for research through the Agricultural Experiment Station and education through the Cooperative Extension Service. The faculty members continue to receive significant funding for research and extension efforts through external grants sources and these funds support the college programs through hiring of undergraduates in laboratories and by supporting Graduate Research Assistantships for the graduate programs. The majority of the department's graduate students are supported through Assistantships funded by grants. The department also has developed several scholarship funds that are used to attract and support outstanding undergraduate students. Department facilities in the Nobel Research Center are excellent and serve to attract and retain outstanding students and faculty.

B. Areas for Improvement.

1. Increase undergraduate and graduate enrollment.

2. Develop additional support courses in biotechnology, biosecurity, forensics and pest management.

Enrollment in undergraduate and graduate programs has been level for many years and continues to be a concern not only at OSU but at other universities offering professional degrees in entomology and plant pathology. These are highly specialized professional programs and we do not foresee any large increases in needs for trained professionals. However, there will continue to be constant demand for trained professionals to deal with societal needs for managing arthropods and plant pathogens. There are several areas of potential growth with societal needs and the faculty are developing plans to try to move students towards these areas – including biological forensics using arthropods and pathogens as indicators and/or biosecurity threats resulting in needs for tracking new and emerging pest arthropod and pathogen sources of entry into our society.

In the Academic Program Review conducted in 1999 we indicated that we had plans to develop an interdisciplinary option in pest management. However, the loss of significant numbers of faculty prevented us from continuing to develop plans that would encompass additional teaching efforts at this time when we are barely able to maintain the programs at hand.

C. Recommendations for Action (see item B. proceeding).

1. Hire one faculty member with primarily teaching responsibilities to teach ENTO 2003 – Insects and Society, a General Education course that enrolls 200 each spring semester

and 300 each fall semester. The faculty member that developed the course and taught it for five years retired in 2004 and it is currently being taught by a non-tenure track extension specialist whose primary responsibilities are for extension IPM programs. We have requested a new hire that will be responsible for continuing this course and developing new components including a night section and an on-line course for distance education. Additionally, this faculty member will be responsible for undergraduate advising and recruiting. Dependent upon enrollment in the undergraduate course this faculty member may also be assigned additional undergraduate courses in Introductory Entomology to relieve teaching responsibilities of research and extension faculty. We envision this as providing a recruiting tool by exposing large numbers of undergraduate students to entomology.

We are reviewing the possibility of developing a similar General Education course in Plant Pathology but this will be dependent upon university needs and available faculty to develop and teach such a course.

2. We continue to review the development of an integrated and multidisciplinary program or option in pest management for undergraduates and/or M.S. level graduate students. We believe such options would attract students interested in non-terminal programs to train for professions in pest management in farm and urban situations.

Faculty and staff in collaboration with the Plant Disease and Insect Diagnostics Lab are formulating research, extension and education programs dealing with plant pathogens and arthropods as biological threats from inadvertant or directed entry into the U.S. and the use of biological forensics to determine modes of entry.

We currently have a core of faculty with excellent research experience in the use of biotechnology tools and these faculty members are interested in developing undergraduate and lower level graduate courses to train students in the use of these tools in a lab setting. We are reviewing methods of setting up a teaching lab to handle 15-30 students to enable us to offer such a course. Currently we offer this course to graduate students but must limit its enrollment because it is taught in a research lab without multiple teaching stations.

The Department of Entomology and the Department of Plant Pathology were administratively merged in 1997. Over the past seven years the faculty have led in the evolution of the curriculum to offer students and clientele better programs by merging teaching, research and extension efforts. However, since the merger, faculty numbers have declined from 27 in 1999 to 21 in 2005. Therefore, all faculty, teaching, research and extension, have increased their teaching responsibilities and have had less time to devote to research and extension including the development of grant proposals to external funding sources. Additionally, the remaining faculty members have increased the number of graduate students per faculty to maintain a level enrollment. The faculty continue to search for innovative and/or new methods to deal with instruction needs but more and more this has resulted in loss of research and extension programs. At this time the department has critical needs for replacing teaching, research and extension faculty so

that we can continue to offer students necessary courses and continue to conduct and extend results of research.

We are committed to maintaining excellent teaching, research and extension programs. We have reached a critical point in our faculty appointments wherein we lack expertise in several major areas in entomology – toxicology, medical and veterinary entomology, and arthropod physiology. Some of our graduate and undergraduate level courses are now being taught on contract by retired faculty and/or research and extension personnel. There has been a negative impact on our research programs and this will impact our extension efforts as programs developed in the past years become dated with no one available to update recommendations and programs for our statewide clientele. We are in a similar situation with our teaching programs as faculty have had to increase teaching responsibilities with parallel impacts on research and extension. At this time we must hire additional faculty and/or continue to use research and extension faculty to teach and/or continue to hire retired faculty on contract. Certainly, we will be in no position to build programs and/or increase enrollment under these circumstances.

D. Five-year Goals for the Program(s).

1. Replace critical faculty including one FTE in teaching for an undergraduate General Education course and support courses in Introductory Entomology. This should result in increased enrollment.
2. Develop a night section and web-based online section of the General Education, Insects and Society course to increase interest in entomology.
3. Review the development of a similar (see above) course in plant pathology.
4. Replace critical faculty including one FTE in research and teaching for medical and veterinary entomology. This is necessary to maintain enrollment because students in Oklahoma desire this course – both in entomology and in animal science as a support course.
5. Replace critical faculty including one FTE in research and teaching for arthropod physiology and toxicology. This is necessary to maintain enrollment because graduate students demand associated courses.
6. Continue to review the development of an undergraduate and/or graduate level pest management program or option in cooperation with Plant and Soil Sciences, and courses or programs dealing with pathogens and arthropods as biosecurity concerns and forensic biology. This dependent upon hiring of additional faculty as noted above.
7. Develop plans for a biotechnology methods lab with stations for 15-30 students to enable us to provide undergraduate and/or graduate level courses in methods. This course will serve as a support course across campus.