

OKLAHOMA STATE UNIVERSITY
ACADEMIC PROGRAM REVIEW
EXECUTIVE SUMMARY

DEPARTMENT OR DEGREE PROGRAM: Statistics

Address items specified in OSRHE policy on program review (VI-Content of Program Review Reports): description of review process, program objectives, analysis and assessment, program recommendations.

Content of Program Review Reports

A. Description of Review Process

The Department of Statistics initiated the review process by obtaining information from the University Institutional Research Department and examination of Departmental records. One faculty member coordinated the preparation of the review by assigning tasks to the six permanent faculty members and the clerical staff to collect and prepare the document. The final review document was approved by the department head and faculty as a whole.

B. Program Objectives

A major objective of the Statistics Department is to provide effective teaching and analytical development for students in all three levels of degree programs. An additional objective is to promote the general understanding of statistics through superior teaching in the service courses provided for various colleges on campus.

C. Review of Duplicated Programs

The Department of Statistics at Oklahoma State University is the only statistics department in the State of Oklahoma. It is the only academic unit in the state educating students in all three of the essential areas of statistical preparation, including the practice of statistics, the theoretical foundation of statistics and the skills necessary for research consulting.

D. Analysis and Assessment

The program provided by the Statistics Department is essential to the University's mission and academic plan. The SCH taught by the department per semester is very high with student to faculty ratios of 118 to 140 over the period. The bachelor's degree program usually has between 10 and 15 active majors, but requires no courses specifically taught for statistics majors alone. The graduate programs have produced graduates who have achieved prominent statistical careers for more than 40 years. Based upon the success of the graduates and the extreme job demand for their skills the assessment of the Department is very positive.

E. Institutional Program Recommendations

Procurement of additional funds for graduate assistantships would provide the Department with the ability to obtain more high-quality graduate students. The assistance of graduate students is essential to perform the massive amount of service teaching accomplished by the Department. An additional faculty member to relieve the current demands on the faculty is desirable, as well as an additional faculty member to further develop the offerings of the department at OSU Tulsa (currently 3 courses per AY) and to develop a statistical consulting service for the College of Osteopathic Medicine.

Dean _____

(Signature)

Date _____

Note: If your program is accredited by an outside agency, the self-study and subsequent comments from the review team can be submitted to fulfill requirements of this program review. This review can be scheduled to coincide with your accreditation process. You **must** complete page 1 and 2 of this document to submit with your accreditation materials.

OKLAHOMA STATE REGENTS FOR HIGHER EDUCATION

2003- 2004

ACADEMIC PROGRAM REVIEW

BACCALAUREATE, MASTERS & DOCTORAL DEGREES

OKLAHOMA STATE UNIVERSITY

Department of Statistics

Title of unit or degree program reviewed (Level III)

With options (Level IV) in: _____

Degree designation as on diploma (Level II)

Formal degree abbreviation (Level I)

Degree-granting academic unit _____ 218
(Name) (Cost Center)

CIP code _2_ _7_ _0_ _5_ _0_ _1_

HEGIS code _1_ _7_ _0_ _2_

Instructional Program code Ph.D. _193_
M.S. _192_
B.S. _230_

Name of department head
(person who oversees degree program listed above) _____ William D. Warde _____

Program holds specialized accreditation from _____

Name and title of contact person _____
(Name)

(Title)

Date of Institutional Governing Board Review: _____

President _____ Date: _____
(Signature)

OVERVIEW

A. Description of the Departmental/Program Review Process (*Briefly describe how the review was conducted and who was involved*)

All permanent faculty were involved in addressing questions or aspects related to their function in the department. Responses were collected, discussed and organized into the form.

B. Recommendations from Previous Program Reviews. (*Discuss actions taken to address the recommendations from the last program review.*)

CRITERION I Program Centrality

A. Goals & Objectives of Degree Programs (*List each degree option, its clientele, objectives, and expected student outcomes. For program clientele, briefly describe the students in the program, e.g., are they primarily full-time traditional college-age students in Stillwater or part-time nontraditional students in Tulsa? Expected student outcomes for the degree program are described in the program's Student Outcomes Assessment Plan*)

M.S.: The clientele consists full-time traditional college-age students, and full-time non-traditional students (that is students who have been in the workplace for a few years and then have decided to come back to school full-time. We do have a few non-traditional students who are not full-time students. The objectives would be to provide graduates will a strong foundation in basic statistical theory, methods, and computing techniques. The expected student outcomes would be for them to obtain jobs as statistical programmers, data analysts, entry-level statisticians or biostatisticians for industry or government.

Ph.D.: The clientele is the same as above. The objectives would be to provide graduates with the skills to develop appropriate statistical theory and methods to address new data collection/analysis scenarios. This could be via development of new methods for industry-specific issues or via the research arena. The expected student outcomes would be for them to obtain jobs as upper-level statisticians or biostatisticians for industry or government or as tenure-track assistant professors in statistics or mathematics departments.

B. Linkage of the Program to Institution's Mission *(Use the mission “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” or the final version of the OSU mission).*

Through undergraduate service courses the Statistics Department fulfills important aspects of the OSU mission. Students’ lives are enriched, and certainly their knowledge is advanced, when they grasp the scientific methods and the research skills required for estimation and decision making. In addition to educating the (graduate) students formally in the classroom, the Department of Statistics is an active part of the Oklahoma Agricultural Experiment Stations (OAES). The Department works with members of OAES providing statistical consulting in the forms of experiment planning, data analysis and interpretation, and the written published report of the findings of the experiment and recommendations. These experiences are not limited to OAES. The Statistics faculty has also formed associations with departments in the Colleges of Arts and Sciences, Engineering, Human Environmental Sciences, and Business. In the collaborations with OAES, the financial benefit observed in the state is experienced when the findings of the experiments and/or recommendations are communicated to the agriculture producer. OSU statistics faculty have also been involved in research projects concerned with the preservation and enhancement of wildlife habitats in the state.

CRITERION II

Program Curriculum and Structure

- A. Program Structure** (*Attach copies of the current degree requirements sheet*)
- B. Distance Education** (*List the courses offered by electronic or other distance delivery methods*)

STAT 2013, 2023, 3013, and 4033 by correspondence

- C. Articulation Agreement** (*Identify the articulation (2+2) agreements the program has with community colleges*)
Whatever OSU currently has in effect.

- D. Multidisciplinary programs** (*Briefly describe how program faculty participate in multidisciplinary programs with other OSU departments or other institutions*)

Within OSU faculty members not only provide classroom instruction but also serve on the graduate committees from these programs. As a part of the committee involvement, the statistics faculty member provides many of the same consulting services that are indicted in Item I-B. Outside of OSU, the statistics faculty continues to participate in USSES (University Statisticians from Southern Experiment Stations) and the NCR-170 (North Central Region) research groups. These groups are dedicated to the further statistics education of researchers in statistics and in other disciplines.

CRITERION III Program Resources

Program Finances:

- Departmental Expenditures: Regular Funds (state appropriations, student fees, and miscellaneous institutional income)
- Departmental Expenditures: Special Funds (from grants, contracts, and gifts, or any sources other than those regularly appropriated by the state or provided by student fees, e.g. college foundation. E & G Part II)

DO NOT CROSS-REFERENCE FINANCIAL INFORMATION TO OTHER STANDARD INFORMATION FORMS

Statistics

Name of Department

Annual Expenditures		Regular Funds			Special Funds		
		(estimate)			(estimate)		
		2000-2001	2001-2002	2002-2003	2000-2001	2001-2002	2002-2003
Salaries and Wages:							
wages							
Administration	Amount	42,868	44,370	42,633			
	Number of FTE*	.50	.50	.50			
Faculty	Amount	583,162	595,277	577,074	6129	6547	15,232
	Number of FTE	7.83	7.83	7.66			
Regular	Amount	583,162	595,277	577,074			
	Number of FTE	7.83	7.83	7.66			
Adjunct	Amount	0	0	0			
	Number of FTE	0	0	0			
Student Assistants	Amount	187,689	164,910	162,177	5729	10,910	17,584
	Number of FTE	9.5	9.2	9.2			
Clerical	Amount	39,531	37,143	40,278			
	Number of FTE	2	2	2			
Other (Specify)	Amount						
	Number of FTE						
Fringe Benefits:		139,212	160,012	150,596			
Equipment:		0	0	150.00			
Supplies:		4,559	4896	2,540			
Travel:		6,733	5,546	8,550	500	500	
Other (Specify):							
TOTALS:		1,003,754	1,102,154	1,006,671	12,358	17,957	32,816

Explanatory Notes:

**1 FTE equals 1 full-time position, or the equivalent in part-time positions.*

Program Finances

- Grants, Contracts, and Gifts Awarded to Program Faculty.

External Funds			Dollar Amount		
Name of Grant, Contract, or Gift	Principal Investigator	Source of Funds	1998-1999	1999-2000	2000-2001
Dean's Incentive Grant	Chris Bilder	A&S Dean			
Revising Time Series,	Mark Payton	Charles Machine W.	2800		
Marginal Independenc	Chris Bilder	Nat'l Sci. Found.			
Extending Time Series	Mark Payton	Charles Machine Wks			7,500
Dean's Incentive Grant	Joshua Tebbs	A&S Dean			
Summer Research	Chris Bilder	A&S Dean			
Summer Research G.	Joshua Tebbs	A&S Dean			
Quantitative Lit Work.	Jeanne Hill	D. Eisenhower Math.		25,221	
A&S DIG	Jeanne Hill	A&S Dean	3000		

Mark Payton:

GRANTS:

“Extending Time Series Models Utilizing International Sales Data”, The Charles Machine Works, Inc., \$7,500, 2000-2001.

“Revising Time Series Models for Predicting Sales”, The Charles Machine Works, Inc., \$2,800, Spring 1999.

GRANTS (CO-PI):

“Evaluation of Intravenous Administration of Phenylbutazone and Flunixin Meglumine n Combination Therapy in Horses with navicular Syndrome Using Force Plate Analysis, USA Equestiran, \$24,398, 2003-2004.

“A Study to Determine the Clinically Effective Dose of Etodolac Administered Orally, Once Daily in Horses with Chronic Navicular Syndrome”, Fort Dodge Animal Health, \$24,845, 2003.

“A Laboratory Study to Determine the Analgesic Effect of a 1% Diclofenac Sodium Liposomal Cream Applied Topically to Horses with Chronic Navicular Syndrome”, IDEXX Pharmaceuticals, \$35,475, 2003-2004.

“Phase IV Efficacy Study for the Equine Influenza Fraction of Fort Dodge Animal Health’s Fluvac Innovation Double EFT Killed Virus Vaccine”, Fort Dodge Animal Health, \$146,138, 2003-2004.

“Animal Models of Cold Air-induced Airway Disease”, National Institute of Health, \$867,919, 2002-2005.

“Insecticide Residues in Stored Wheat: Measurements, Estimates and Alternatives”, OSU Food and Agricultural Products Research Initiative Program, \$46,000, 2002-2003.

“Comparison of Intravenous Administration of Phenylbutazone and Flunixin”, CVM Internal Grant, \$32,717, 2002.

“Laser Lithotripsy for Treatment of Canine Uroliths”, ACVS Research and Education Foundation, \$9,796, 2001.

“Enhanced Analgesia During and After Surgery in Dogs by Combining Butorphanol and Etogesic”, Fort Dodge, \$55,075, 2000.

“Controlling Nutrient Runoff from Golf Course Fairways Using Vegetative Filter Strips”, OSU OAES Targeted Research Initiative Program, \$24,000, 2000-2002.

“Controlling Nutrient Runoff from Golf Course Fairways Using Vegetative Filter Strips”, United States Golf Association, \$75,000, 2000-2002.

“Flaxseed Phytoestrogens May Positively Affect Bone”, National Institute of Health, \$71,650, 1999.

“Microwave Radiation as a Pesticide Alternative for Stored Products”, United States Department of Agriculture, \$230,000, 1998-2000.

“Feasibility of Endoscopic-assisted Carbon Dioxide Laser Ablation of Polymethylmethacrylate from the Femoral Canal during Revision Cemented Total Hip Arthroplasty”, OSU CVM Research Advisory Council, \$5,650, 1998-1999.

“Wound Sterilization and Sepsis Control Using Laser Energy”, Office of Naval Research/Beckham Laser Institute Grant, \$69,169, 1997-1999.

New facilities and major equipment (Describe major changes in facilities and major equipment added in the past 5 years)

Josh Tebbs – Office Computer purchased from Dell. R118980. \$1886. Start up funds
Dell laptop purchased 8/2/01 from Dell. Req. #118989 for \$2832.80. DIG Grant

Chris Bilder – Office Computer purchased 9/29/00 from Dell. Req. # 73824. Cost \$2794.57
Dell Laptop purchased October 2001. \$2953.00 DIG Grant

2 computers for our Lab in 2002– from CIS

2 new staff computers in 2000 from A&S Computer Services

2 new Faculty computers in 2001 from A&S Computer Services

3 new Faculty computers in 1999 from A&S Computer Services

1 new Faculty computer in 2000 from A&S Computer Services

2 new lab computers (1 in 99 and 1 in 2002) from A&S Computer Services

Leasing Canon Imagerunner Copier for almost 4 years. SN: NNT27078

A. Academic and administrative efficiencies (*In the past 5 years, what strategies has the program used to achieve greater academic and administrative efficiencies?*)

CRITERION IV
Productivity

A. Enrollment

Fall	Headcount Enrollment			Grade Point Average of Majors	
1999	BS: 13	MS: 11	PhD: 7	3.25-MS	3.25 PhD
2000	BS: 9	MS: 13	PhD: 6	3.78-MS	3.74 PhD
2001	BS: 9	MS: 11	PhD: 7	3.57-MS	3.83 PhD
2002	BS: 11	MS: 16	PhD: 6	3.70-MS	3.88 PhD
2003	BS: 13	MS: 15	PhD: 9	3.59-MS	3.63 PhD

B. Degrees Conferred

Year	Degrees Conferred		
1998-1999	BS-2	MS-2	PhD-3
1999-2000	BS-2	MS-3	PhD-0
2000-2001	BS-3	MS-3	PhD-2
2001-2002	BS-2	MS-6	PhD-1
2002-2003	BS-2	MS-5	PhD-0

C. Program Non-Completers (*Identify the number of students, average number of hours attempted and earned, and average GPA of students who completed at least 100 credits but did not graduate within 6 years – we will provide this data later*).

Fall	Number of	Number of Hours		Grade Point
	Non-completers	Attempted	Earned	Average
1999				
2000				
2001				
2002				
2003				

D. Student Demand for Academic Unit's Offerings

Year	Student Credit Hours				No. of Courses/Sections (Lecture/Discussion Only)				Average Section Size (Lecture/Discussion Only)	% Classes Taught By Tenure/Tenure Track Faculty		
	Lower Division	Upper Division	Graduate	Total	Lower Division	Upper Division	Graduate	Total		Lower Division	Upper Division	Graduate
1998-1999	5733	3514	1203	10540	2	10	13	25		31%	62%	100%
1999-2000	6147	2878	1159	10184	2	10	13	25		26%	59%	100%
2000-2001	5916	2875	1293	10084	2	10	14	26		36%	56%	100%
2001-2002	6028	3034	1213	10275	3	12	14	29		34%	39%	97%
2002-2003	6285	3104	1462	10851	3	12	12	27		41%	53%	87%

CRITERION V
Quality

A. Program Faculty

1. Faculty Qualifications

Name	Faculty Status (Regular or Adjunct)	Faculty Program FTE	Degrees Earned			
			Highest		Highest in Teach Area	
			Type	HEGIS	Type	HEGIS
P. Larry Claypool	Regular	100%	PhD	1702	PhD	1702
Carla L. Goad	Regular	100%	PhD	1702	PhD	1702
Chansoo Kim	Regular	100%	PhD	1702	PhD	1702
Brenda Masters	Regular	37.5%	PhD	1702	PhD	1702
Melinda McCann	Regular	100%	PhD	1702	PhD	1702
Abu Minhajuddin	Regular	100%	PhD	1702	PhD	1702
Mark E. Payton	Regular	100%	PhD	1702	PhD	1702
Gilbert Shanga	Regular	100%	PhD	1702	PhD	1702
William Warde	Regular	100%	PhD	1702	PhD	1702
Robert Darcy	Regular	33%	PhD	2207	PhD	1702
Richard Dodder	Regular	33%	PhD	2208	PhD	1702

B. Evidence of regional / national reputation and ranking

C. Methods used to evaluate student achievement of program outcomes for each degree program

Degree Program	Assessment Methods Used	Years
B.S., Statistics	Undergraduate program alumni survey	1998, 2000, 2002
	Senior Interviews	2002, 2003
	Course Embedded Assessment	1999, 2000, 2001, 2002, 2003
M.S., Statistics	Electronic Student Surveys	2000, 2001
	Course Embedded Assessment	1999, 2000, 2001, 2002, 2003
	Comprehensive Exams/Oral Exams	1999, 2000, 2001, 2002, 2003
Ph.D. Statistics	Electronic Student Survey	2000, 2001
	Course Embedded Assessment	1999, 2000, 2001, 2002, 2003
	Comprehensive Exams/Oral Exams	1999, 2000, 2001, 2002, 2003

D. Overview of results from program outcomes assessment *(Summarize the results from program outcomes assessment and describe how the findings have been interpreted relative to student achievement of expected program outcomes. For example, what do the assessment results indicate in terms of curricular strengths or areas for improvement / program development? To what extent are students achieving each expected student outcome for the degree program?)*

The assessment results indicate that the students at all degree levels are technically and analytically well prepared for the workplace. Biostatistics is one area of graduate education that needed to expand based on jobs/positions procured by graduates.

E. Feedback from program alumni / documented achievements of program graduates *(Describe achievements of program graduates obtained from other sources such as department-sponsored alumni surveys, alumni advisory boards, professional societies, etc. Summarize alumni survey results for the degree program, including, if available, information on employment and continued education of program graduates and graduates perceptions of program quality)*

F. Other Program Evaluations *(Comment on the results of any outside reviews of the program or any institutional reviews within the last 5 years.)*

CRITERION VI
Program Demand/Need

A. Occupation Manpower Demand (If applicable)

1. Advisory Committee Membership
2. Advisory Committee Recommendations
3. School Response to Recommendations
4. Other sources and documents indicating demand

B. Societal Needs for the Program

The need in the current society for great understanding of information and for clear comprehension of evidence based on data is escalating rapidly in this information society. Statistics is a vital tool in the processes of information management and analysis of that information and is therefore critical to the basic education of all well-prepared graduates.

CRITERION VII

Program Duplication

A. Identify other degree programs at OSU with similar titles or functions

REMS (Research, Evaluation, Measurement, and Statistics) have only four statistics courses which are in no way comparable to our courses.

B. Describe how your degree program is unique *(A program may be unique because of the subject matter treated, the students served, the educational methods employed, the effect of the achievements of the program on other institutions or agencies, etc.)*

There are no other statistics programs in the state.
OU Health Sciences offers MS/PHD in Biostatistics.

Summary and Recommendations

Note-information for this section may come from a variety of sources and should include information about program strengths and areas for improvement that have been described in the program's outcomes assessment reports.

A. Strengths –smaller class sizes, approachable faculty, experienced TA's teaching classes, high number of service hours to colleges across campus, faculty involvement in committee assignments.

B. Areas for Improvement– continued faculty education, need a larger faculty with more diverse training or specialization

C. Recommendations for Action – be granted permission to fill all tenure-track vacancies and seek dedicated and qualified statisticians for those vacancies, encourage faculty participation as a student in (short) courses in new or evolving areas of statistics.

D. Five-Year Goals for the Program- expand the faculty by one or two members over its current size thus being able to provide new course offerings, note an increase in the number of students completing the statistics degree programs at all three levels.