COMMISSION FOR HIGHER EDUCATION
Friday, August 13, 2010

DECISION ITEM B-4: **Master of Science and Doctor of Philosophy in Statistical Science To Be Offered by Indiana University Bloomington at Bloomington**

Staff Recommendation
That the Commission for Higher Education approve the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) in Statistical Science to be offered by Indiana University Bloomington at Bloomington, in accordance with the background discussion in this agenda item and the *Abstract*, July 30, 2010; and

That the Commission recommend no new state funds, in accordance with the supporting document, *New Academic Degree Program Proposal Summary*, July 30, 2010.

Background
Two public campuses – Indiana University Bloomington and Purdue University West Lafayette – currently offer Ph.D. programs in Mathematics. In FY2009, IUB enrolled 130 headcount or 89 FTE students and graduated 25 students. During that same year, Purdue West Lafayette enrolled 152 headcount or 126 FTE students and had 36 graduates. The West Lafayette campus also offers a Ph.D. in Statistics, which enrolled 65 headcount or 64 FTE students in FY2009, and produced 16 graduates that same year.

The IU Bloomington Ph.D. in Mathematics has always had a specialization in Statistics, but the campus now seeks to offer a separate degree in this area, which is more common at major research campuses. In fact, IU Bloomington is the only Big Ten campus that does not offer a separate Ph.D. in Statistics. Graduates of the proposed program are expected to have excellent job prospects and will be positioned to apply their expertise in a variety of research areas, ranging from business and industry to cognitive science, the social and behavioral sciences, and the life sciences.

The proposal for a Ph.D. also includes a request to authorize an M.S. in Statistical Science. In August 2009, the Commission approved an M.S. in Applied Statistics for the Bloomington campus, but that program was expressly designed for interdisciplinary research and actually required a student to be admitted for graduate studies in another field before the student could enroll in Applied Statistics program.

Supporting Documents

(1)   *Abstract* - Master of Science and Doctor of Philosophy in Statistical Science, July 30, 2010.

(2) *New Academic Degree Program Proposal Summary* – M.S. and Ph.D. in Statistical Science, July 30, 2010.

Abstract

Master of Science and Doctor of Philosophy in Statistical Science
To Be Offered by
Indiana University Bloomington at Bloomington
July 30, 2010

Objectives: The M.S. program will train future applied statisticians who will collaborate with researchers in various disciplines to design experiments and analyze data. The Ph.D. program will train future research statisticians who will develop new statistical methodology.

Clientele to be Served: Full-time graduate students who seek terminal degrees in statistics and who want to obtain positions as applied statisticians in academia, government, or industry.

Curriculum: A total of 31 credit hours are required to complete the M.S. program, and a total of 90 credit hours are required for the Ph.D. program, distributed as follows:

M.S.

Core Courses (16)
- Introduction to Probability I (3)
- Introduction to Statistical Theory (3)
- Applied Linear Models I & II (6)
- Statistical Consulting (4)

Electives (6; two from the following)
- Nonparametric Theory (3)
- Bayesian Data Analysis (3)
- Categorical Data Analysis (3)
- Multivariate Data Analysis (3)
- Exploratory Data Analysis (3)

Of the remaining three courses (9 hours), at least two should be taken from 500-level or above statistics courses, with the remaining course coming from a list spanning more than a dozen disciplines.

Ph.D.

Statistical Core Courses (16 credit hours)
- Theory of Probability I (3)
- Introduction to Statistical Theory (3)
- Applied Linear Models I & II (6)
- Statistical Consulting (4)

Statistical Theory Courses (12 credit hours)
- Advanced Statistical Theory I & II (6)
- At least two from the following:
  - Theory of Probability II (3)
  - Theory of Linear Models (3)

- Multivariate Statistical Theory (3)
- Topics in Mathematical Statistics (3)
- Advanced Topics in Mathematical Statistics (3)

Statistical Computing Courses (6 credit hours)
- Fundamental Computer Concepts for Informatics (3)
- Statistical Computing (3)

Applied Statistics and Collaborative Research Courses (26 credit hours)

Students can fill this requirement by any combination of the following (as approved by the department's Director of Graduate Studies)

a) Traditional courses on statistical methodology:

- Nonparametric Theory (3)
- Bayesian Data Analysis (3)
- Categorical Data Analysis (3)
- Multivariate Data Analysis (3)
- Exploratory Data Analysis (3)
- Covariance Structure Analysis (3)
- Time Series (3)
- Longitudinal Data Analysis (3)
- Sampling (3)
- Statistical Learning & High-Dimensional Data Analysis (3)
- Topics in Applied Statistics (3)
- Advanced Topics in Applied Statistics (3)

b) Reading courses customized to the student's interests in collaboration with core or adjunct faculty in the IU Department of Statistics

c) Internship at the Indiana Statistical Consulting Center

Dissertation Research (30 credit hours)

Employment Possibilities: Graduates will be able to gain employment in government agencies, business and industry, health and medicine, and academia.

NEW ACADEMIC DEGREE PROGRAM PROPOSAL SUMMARY

July 30, 2010

I. Prepared by Institution

Institution/Location: Indiana University Bloomington at Bloomington

Program: M.S. in Statistical Science

	Year 1 FY2011	Year 2 FY2012	Year 3 FY2013	Year 4 FY2014	Year 5 FY2015
Enrollment Projections (Headcount)					
Full-Time	5	10	10	10	10
Part-Time	0	0	0	0	0
Total	5	10	10	10	10
Enrollment Projections (FTE)					
Full-Time	4	6	6	6	6
Part-Time	0	0	0	0	0
Total	4	6	6	6	6
Degree Completions Projection	0	4	4	4	4
New State Funds Requested (Actual) *	-0-	-0-	-0-	-0-	-0-
New State Funds Requested (Increases) *	-0-	-0-	-0-	-0-	-0-

II. Prepared by CHE

	Year 1 FY2011	Year 2 FY2012	Year 3 FY2013	Year 4 FY2014	Year 5 FY2015
New State Funds To Be Considered For Recommendation (Actual) *	-0-	-0-	-0-	-0-	-0-
New State Funds To Be Considered For Recommendation (Increases) *	-0-	-0-	-0-	-0-	-0-

CHE Code: 10-20
Campus Code: 1809
County: Monroe
Degree Level: 07
CIP Code: Federal - 270501; State - 270501

* Excludes new state dollars that may be provided through enrollment change funding.

NEW ACADEMIC DEGREE PROGRAM PROPOSAL SUMMARY

July 30, 2010

I. Prepared by Institution

Institution/Location: Indiana University Bloomington at Bloomington

Program: Ph.D. in Statistical Science

	Year 1 FY2011	Year 2 FY2012	Year 3 FY2013	Year 4 FY2014	Year 5 FY2015
Enrollment Projections (Headcount)					
Full-Time	2	4	6	8	10
Part-Time	0	0	0	0	0
Total	2	4	6	8	10
Enrollment Projections (FTE)					
Full-Time	2	3	5	6	8
Part-Time	0	0	0	0	0
Total	2	3	5	6	8
Degree Completions Projection	0	0	0	0	4
New State Funds Requested (Actual) *	-0-	-0-	-0-	-0-	-0-
New State Funds Requested (Increases) *	-0-	-0-	-0-	-0-	-0-

II. Prepared by CHE

New State Funds To Be Considered For Recommendation (Actual) *	-0-	-0-	-0-	-0-	-0-
New State Funds To Be Considered For Recommendation (Increases) *	-0-	-0-	-0-	-0-	-0-

CHE Code: 10-20
Campus Code: 1809
County: Monroe
Degree Level: 10
CIP Code: Federal - 270501; State - 270501

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