

NEW, REVISED, OR DELETED PROGRAM COVER SHEET
2002-2003
University Curriculum Committee
Undergraduate Programs (Majors, Minors, Sequences)

DEPARTMENT/SCHOOL _ Mathematics

DATE September, 25, 2002

A. **Proposed Action:** (more than one item may be checked if a revision).

- _____ New Major CIPS CODE _____ (obtain from Planning, Policy Studies and Info Systems)
- _____ New Minor CIPS CODE _____ (obtain from Planning, Policy Studies and Info Systems)
- X New Sequence
- _____ Change in requirements for major
- _____ Change in requirements for minor
- _____ Change in requirements for sequence
- _____ Other program revisions
- _____ More than 50% of courses in this program are distance education.
- _____ Program deletion

B. **Summary of proposed action** (see Part A), including title and exact *Undergraduate Catalog* copy for a new or altered program. (See *Catalog* and Program Checklist for format and examples.) Provide a summary of the revisions in addition to the exact current *Catalog* copy.

Statistics sequence

This sequence of the major is designed to prepare students for statistical work in industry and government. In addition to learning the mathematical foundation in statistics, the students will get experience in at least two cognate areas of application of statistics from Biometrics, Econometrics, and Psychometrics. This will allow the students to experience many fields of statistical applications and select a field of their choice for a career.

C. **Routing and action summary:**

1. _____ Date Approved Department/School Curriculum Committee Chair	4. _____ Date Approved College Dean
2. _____ Date Approved Department Chair/School Director	5. _____ Date Approved Teacher Education Council Chair if appropriate (10 copies to the Dean of the College of Education)
3. _____ Date Approved College Committee Chair	6. _____ Date Approved University Curriculum Committee Chair (8 copies to the Undergraduate Studies)

Submit 20 copies of **NEW** Undergraduate proposals to University Curriculum Committee

Submit 8 copies of **REVISED** Undergraduate proposals to University Curriculum Committee

All new and deleted programs (majors, minors, sequences) are routed by the U.C.C. to the Academic Senate. **The Senate rules mandate electronic submission (in MS Word or HTML format) of all materials for Web site posting.**

5/02

Illinois State University
Department of Mathematics
Undergraduate Statistics Sequence
To be implemented in the Fall of 2003

Prepared by: Fuxia Cheng and Jinadasa Gamage.

This sequence of the major is designed to prepare students for statistical work in industry and government. In addition to learning the mathematical foundation in statistics, the students will get experience in at least two cognate areas of application of statistics from Biometrics, Econometrics, and Psychometrics. This will allow the students to experience many fields of statistical applications and select a field of their choice for a career.

Required courses:

MAT 145, MAT 146, MAT 147, MAT 175, MAT 260, MAT 350, MAT 351

At least two courses from the following list:

MAT 353, MAT 356, MAT 450, MAT 453, MAT 455, MAT 456, MAT 458

[Only senior students with good standing will be allowed to take a graduate level course provided the graduate school gives the approval.]

One computer-programming course from

Introduction to Micro Computers ACS 155.01, or ACS 155.02

Select at least two of the following areas and complete at least two courses from the list of approved courses for each area.

Biological Sciences:

BSC 201: Ecology

BSC 203: Cell Biology

BSC 219: Genetics

BSC 297: Biological Evolution

BSC 321: Molecular and Developmental Genetics

Economics: ECO 225: Labor Economics and Labor Problems

ECO 235: Telecommunications Economics and Public Policy

ECO 238: Using Econometrics

ECO 239: Managerial Economics

ECO 240: Intermediate Microeconomic Theory

ECO 241: Intermediate Macroeconomic Theory

ECO 320: Industrial Organization

ECO 339: Organizational Economics

ECO 331: Intermediate Economic Statistics.

Psychology: PSY 231 Research Methods in Psychology

PSY 331 Laboratory in Research Methods in Psychology

PSY 334 Psychological Measurement

PSY 230 Business and Industrial Psychology

PSY 232 Personality

It is to the advantage of the student to have a minor or double major in one of the above areas. However, it is not a requirement for the sequence. Senior students in good standing are encouraged to take upper level applied statistics courses from selected cognate areas.

Suggested Schedules for the Statistics Sequence:

Schedule (a) Students beginning with pre-calculus

Schedule (b) Students beginning with Calculus I

Schedule (c) Students intending to pursue graduate studies

Semester	(a)		(b)		(c)	
	Courses	Senior hours	Courses	Senior hours	Courses	Senior hours
1	144		145		145	
2	145		146		146	
3	146		147, 260	4	147, 350	4
4	147, 350	4	175, 350	4	175, 351	4
5	175, 351	4	351	4	260, 353	8
6	260, 353	8	353, ST*	7	356, ST*	7
7	356, ST*	7	356, ST*	7	ST*, ST*	6
8	ST*, ST*, ST*	9	ST*, ST*	6	ST*	3

* In the above schedule ST stands for selected courses from cognate areas.

Expected impact of proposal on existing campus programs

This program will not have any adverse effect on any existing programs in the University.

No additional resources are needed for this program. All the courses are selected from the existing courses in different departments.

Sample Four Year Program representing cognate areas Biometrics and Econometrics.

Year 1: Semester 1

IDS 100: Foundation of Inquiry
 ENG 101: Language and Composition (3)
 MAT 145: Calculus I (4)
 General Education, Inner Core (6–8)

Year 1: Semester 2

MAT 146: Calculus II (4)
 ECO 105: Principles of Economics (3)
 BSC 196: Biological Diversity (4)
 COM 110: Language and Communication (3)

Year 2: Semester 1

MAT 147: Calculus III (4)
 MAT 260: Discrete Mathematics (4)
 ACS 155.02: Introduction to Micro Computers (3)
 BSC 197: Molecular and Cellular Basis of Life (4)

Year 2: Semester 2

MAT 175: Elementary Linear Algebra (4)
 MAT 350: Applied Probability Models (4)
 ECO 225: Labor Economics and Labor Problems (3)

Year 3: Semester 1

MAT 351: Statistics and Data Analysis (4)
 ECO 331: Intermediate Economic Statistics (3)
 BSC 201: Ecology (4)

Year 3: Semester 2

STAT Elective*
 ECO 238: Using Econometrics (4)
 ST**

Year 4: Semester 1

STAT Elective*
 BSC 219: Genetics (4)

Year 4: Semester 2

STAT Elective*
 ST**

* Must elect at least two courses from the following list

MAT 353, MAT 356, MAT 450, MAT 453, MAT 455, MAT 456, MAT 458

** May elect an upper level applied statistics courses from one of the cognate areas.

Only senior level students with good standing will be allowed to take a graduate level course with the

permission from the respective department and the graduate school.

Note that ECO 138 is a prerequisite for most of the Economics courses. A mathematical statistics course can be substituted for this requirement.

Sample Four Year Program representing cognate areas Biometrics and Psychometrics.

Year 1: Semester 1

IDS 100: Foundation of Inquiry
 ENG 101: Language and Composition (3)
 MAT 145: Calculus I (4)
 General Education, Inner Core (6–8)

Year 1: Semester 2

MAT 146: Calculus II (4)
 PSY 110: Explaining Human Behavior (3)
 BSC 196: Biological Diversity (4)
 COM 110: Language and Communication (3)

Year 2: Semester 1

MAT 147: Calculus III (4)
 MAT 260: Discrete Mathematics (4)
 ACS 155.02: Introduction to Micro Computers (3)
 BSC 197: Molecular and Cellular Basis of Life (4)

Year 2: Semester 2

MAT 175: Elementary Linear Algebra (4)
 MAT 350: Applied Probability Models (4)
 PSY 230: Business and Industrial Psychology (3)

Year 3: Semester 1

MAT 351: Statistics and Data Analysis (4)
 PSY 231: Research Methods in Psychology (3)
 BSC 201: Ecology (4)

Year 3: Semester 2

STAT Elective*
 PSY 331: Laboratory in Research Methods for Psychology (3)
 ST**

Year 4: Semester 1

STAT Elective*
 BSC 219: Genetics (4)

Year 4: Semester 2

STAT Elective*
 ST**

* Must elect at least two courses from the following list

MAT 353, MAT 356, MAT 450, MAT 453, MAT 455, MAT 456, MAT 458

** May elect an upper level applied statistics courses from one of the cognate areas.

Only senior level students with good standing will be allowed to take a graduate level course with the permission from the respective department and the graduate school.

Hidden Prerequisites: Note that BSC 196, BSC 197, ECO 105, and PSY 110 are prerequisites to take upper level courses from the respective cognate areas.

Rationale:

Statistics is the science and art of making inferences from data, under conditions of uncertainty. The practice of statistics requires not only the understanding of the statistical techniques, but also understanding of the problem requiring statistical analysis, whether it is in the liberal arts, the sciences, health sciences, or business. The proposed statistics sequence has an interdisciplinary component so that this program will help develop skills in the application of statistics to a variety of disciplines. Also this proposal is consistent with a number of recommendations found in the University's Educating Illinois Action Plan item number 16.

There are job opportunities available in the government and private sector for individuals with training in statistical skills. Census Bureau, Bureau of Labor Statistics, US Environmental Protection Agency, National Center for Health Statistics, National Institute of Health, and Food and Drug Administration are some government agencies having ever-growing demand for employees with statistical training. In the private sector pharmaceutical and agricultural industry and marketing are always in need for employees with statistical training. Given the present market demand for statisticians, graduates with bachelor's degree with a statistics sequence have a variety of options of choosing careers in the public sector, pharmaceutical industry, or agribusiness. Job listings for B.S. level statisticians are numerous in any issue of Amstat News (the news magazine of the American Statistical Association). The proposed program will take advantage of this demand.

Catalog Description

Statistics Sequence:

This sequence of the major is designed to prepare students for statistical work in industry and government. In addition to learning the mathematical foundation in statistics, the students will get experience in at least two cognate areas of application of statistics from Biometrics, Econometrics, and Psychometrics. This will allow the students to experience many fields of statistical applications and select a field of their choice for a career.

Required courses: MAT 145, MAT 146, MAT 147, MAT 175, MAT 260, MAT 350, MAT 351

At least two courses from the following list:

MAT 353, MAT 356, MAT 450, MAT 453, MAT 455, MAT 456, MAT 458

[Only senior students with good standing will be allowed to take a graduate level course provided the graduate school gives the approval.]

One computer-programming course from Introduction to Micro Computers ACS 155.01, or ACS 155.02

Select at least two of the following areas and complete at least two courses from the list of approved courses for each area.

Biological Sciences: BSC 201, BSC 203, BSC 219, BSC 297, BSC 321

Economics: ECO 225, ECO 235, ECO 238, ECO 239, ECO 240, ECO 241, ECO 320, ECO 331, ECO 339

Psychology: PSY 230, PSY 231, PSY 232, PSY 331, PSY 334

It is to the advantage of the student to have a minor or double major in one of the above areas. However, it is not a requirement for the sequence. Senior students in good standing are encouraged to take upper level applied statistics courses from selected cognate areas.

Suggested Schedules for the Statistics Sequence:

Schedule (a) Students beginning with pre-calculus

Schedule (b) Students beginning with Calculus I

Schedule (c) Students intending to pursue graduate studies

Semester	(a) Courses	(b) Courses	(c) Courses
1	144	145	145
2	145	146	146
3	146	147, 260	147, 350
4	147, 350	175, 350	175, 351
5	175, 351	351	260, 353
6	260, 353	353, ST*	356, ST*
7	356, ST*	356, ST*	ST*, ST*
8	ST*, ST*, ST*	ST*, ST*	ST*

* In the above schedule ST stands for selected courses from cognate areas.

Senior students with good standing are encouraged to take upper level statistics courses. However in order to take a graduate level courses they must get the approval form the respective departments and the graduate school.

**DEPARTMENT/SCHOOL CURRICULUM COMMITTEE AND COLLEGE CURRICULUM COMMITTEE
REVIEW CHECKLIST 2002-2003
NEW/REVISED/DELETED PROGRAMS (MAJORS, MINORS, SEQUENCES) PROPOSALS**

Check the following information for INCLUSION and QUALITY. If items are not included, the program proposal must be returned to the department for revision.

Cover Sheet

- Correct cover sheet: 2002-2003 New, Revised, or Deleted Program Cover Sheet
- Department/school name, and date
- Title of program
- Exact catalog copy for new or altered program attached
- Summary of changes (may reference to attachment)
- Proposed action correctly checked
- DCC Chair and Department Chair or School Director signatures
- CCC Chair and Dean signatures
- 20 copies provided (one original signature copy) for new programs; 8 copies for revised programs

Part A: Program Description and Explanations (New or Revised Programs)	Deleted Programs
<input checked="" type="checkbox"/> Institution	<input type="checkbox"/> Institution
<input checked="" type="checkbox"/> Responsible department/school or administrative unit	<input type="checkbox"/> Responsible department/school or administrative unit
<input checked="" type="checkbox"/> Proposed program title	<input type="checkbox"/> Program title
<input type="checkbox"/> Previous program title (if applicable)	<input type="checkbox"/> CIPS classification (if applicable)
<input type="checkbox"/> CIPS classification (applicable to new programs)	<input type="checkbox"/> Anticipated date of implementation
<input checked="" type="checkbox"/> Date of implementation	<input type="checkbox"/> Rationale
<input checked="" type="checkbox"/> Description of proposed program or name change	<input type="checkbox"/> Arrangements to be made for program faculty and students
<input checked="" type="checkbox"/> Rationale for proposal	<input type="checkbox"/> Anticipated impact on other campus programs
<input type="checkbox"/> If for Teacher Education, include reference to COE Conceptual Framework	<input type="checkbox"/> Anticipated budgetary effect
<input checked="" type="checkbox"/> Expected impact of proposal on existing campus programs	
<input type="checkbox"/> Expected curricular changes including new courses	
<input type="checkbox"/> Milner contacted to determine sufficient resources	
<input type="checkbox"/> Anticipated staffing arrangements	
<input type="checkbox"/> Anticipated funding needs and source of funds	

Part B: Other Requirements

- Letter(s) of concurrence from affected departments/schools (e.g., where subjects overlap or prerequisite changes affect other departments/schools), or statement that letter(s) could not be obtained.
- Program does not require more than 124 semester hours of course work; **if 125 or more hours, proposal must go beyond UCC for final action.**
- Major for B.A., B.S., B.E.Ed. should not require more than 55 semester hours in major.
- Major should not mandate more than 76 semester hours excluding General Education.
- Major programs may stipulate specific general education courses offered in the major department/school as a part of the major requirements only if such courses serve as prerequisites for other courses required by the major.
- A minor, including all required prerequisite hours, may include 18-36 hours.
- A minor may not include more than 24 hours from any major department/school.
- No more than 9 hours from major program of study may be applied to minor.

Note: Items like course title, semester hours, semesters offered, etc., must match exactly each time they are mentioned.

Note: New and deleted programs (including sequences), as opposed to changes in existing programs, must go beyond UCC for final action and require all materials be submitted in electronic format for posting on the Academic Senate Web site.

Signature of DCC, CCC, or UCC Reviewer / Date
Reviewers' Comments: