

LSC Use Only
Number: _____
Action: _____
Date: _____

UWUCC Use Only
Number: 92-20
Action: _____
Date: _____

CURRICULUM PROPOSAL COVER SHEET
University-Wide Undergraduate Curriculum Committee

I. Title/Author of Change

Course/Program Title: Major in Mathematics/Economics
Suggested 20 Character Course Title: _____
Department: Economics and Mathematics
Contact Person: Mathematics: Dr. Ronald McBride
Economics: Dr. Robert Stonebreaker

II. If a course, is it being Proposed for:

_____ Course Revision/Approval Only
_____ Course Revision/Approval and Liberal Studies Approval
_____ Liberal Studies Approval Only (course previously has been approved by the University Senate)

III. Approvals

<u>Robert Davis</u> Department Curriculum Committee	<u>Genevieve Burish</u> Department Chairperson
<u>Harriet</u> College Curriculum Committee	<u>W. J. Cole</u> College Dean *
_____ Director of Liberal Studies (where applicable)	_____ Provost (where applicable)

*College Dean must consult with Provost before approving curriculum changes. Approval by College Dean indicates that the proposed change is consistent with long range planning documents, that all requests for resources made as part of the proposal can be met, and that the proposal has the support of the university administration.

IV. Timetable

Date Submitted to LSC: _____	Semester to be implemented: _____	Date to be published in Catalog: _____
to UWUCC: _____		

PROPOSED JOINT MAJOR IN MATHEMATICS/ECONOMICS

CURRICULUM REQUIREMENTS:

MAJOR: 54-56 s.h.

Core: EC121 Principles I	3
EC122 Principles II	3
EC421 Macroeconomic Analysis	3
EC422 Microeconomic Analysis	3
MA127 Calculus I	4
MA128 Calculus II	4
MA227 Calculus III	4
MA171 Intro to Linear Algebra	3
MA216 or EC355 Statistics	3-4

Economics electives: 12

Students are especially encouraged to take EC334 Economics of Corporate Decisions and EC356 Econometrics, but any EC course except EC101 Basic Economics may be used. EC493 Internship may be counted only with the approval of the program coordinator.

Mathematics electives: 12-13

At least one of the following two-semester sequences:

MA241 Differential Equations and MA371 Linear Algebra

MA363 and MA364 Mathematical Statistics I and II

MA445 and MA446 Programming and Probabilistic Models in O.R.

Two additional courses either from the above or from the following:

MA271 Introduction to Algebraic Structures

MA342 Advanced Mathematics for Applications (4 s.h.)

MA417 Statistical Applications or MA418 Sampling Survey Theory

MA421 Advanced Calculus I

MA422 Advanced Calculus II

MA423 Complex Variables I

MA425 Applied Mathematical Analysis I

MA427 Topology

MA465 Topics in Statistics

MA476 Abstract Algebra I

MA477 Abstract Algebra II

LIBERAL STUDIES: 48 s.h.

Core courses MA127 and EC121 double as Liberal Studies courses. Students must complete a foreign language intermediate sequence.

FREE ELECTIVES: 20-22 s.h.

PROGRAM ADMINISTRATION:

STEERING COMMITTEE:

1. **COMPOSITION:** The committee will be composed of four members, two from each department, with four-year rotating terms. Initially the Department of Economics will choose members for one and three-year terms; the Department of Mathematics will choose members with two and four-year terms. Departments may choose members by any method they deem appropriate.
2. **CHAIRPERSON:** The committee will elect its chairperson annually by whatever method it deems appropriate.
3. **RESPONSIBILITIES:** The committee will be in charge of general oversight of the major. It will recommend appropriate changes in the major and see that approved changes are implemented. It will advertise the major as appropriate, handle freshmen orientation, and, at least initially, advise the program majors. It will also rule on any requested course substitutions.

PROGRAM CHANGES: The Steering Committee will consider all suggested changes. Changes recommended by the committee will be forwarded to both departments. If both departments agree, the Steering Committee will forward the changes to the appropriate College and/or Senate committees for consideration. No change will be made without the approval of both departments.

DEGREE: Graduates will receive a B.A. degree.

COLLEGE: Students may choose to be either in the College of Humanities and Social Sciences or in the College of Natural Sciences and Mathematics. Students with no preference will be assigned a college by the Steering Committee in a way that balances numbers in the two colleges as closely as possible.

ADVISING:

1. Student advising will be handled by Steering Committee members. If a member leaves the committee, he/she will continue advising his/her current students until graduation.
2. Students will be assigned an advisor in each department. The primary advisor of record will be the one in the student's college.

Proposal for New Credit-Based Program

Institution: IUP

Proposed program: Bachelor's degree in Mathematics and Economics

Overview

Mathematics and economics complement each other in many ways. We are proposing a joint degree in mathematics and economics that (1) allows students to pursue both disciplines together and (2) guides students to the set of courses which complement each other most closely. Students in the program would complete IUP's Liberal Studies program, a package of 54-56 credits in selected mathematics and economics courses, and 20-22 credits of free electives. A detailed description of requirements is attached.

The program will be administered by a joint committee from the two departments (details are attached) and will utilize courses already being offered. No new courses or faculty will be needed.

Appropriateness to Mission

1. Program goal. The goal is to provide a high-quality undergraduate education that integrates mathematics and economics. Graduates should have an enhanced appreciation for the complementarity of the two disciplines and be better prepared to apply mathematical and statistical tools for the solution of economic problems.

2. University mission. The program goal is consistent with IUP's mission of providing "offering quality undergraduate programs in which students acquire and develop the necessary skills for success in their careers."

3. SSHE mission. Our goals are also consistent with the SSHE mission of "excellence in education" and providing programs that meet "student aspirations and regional, state, national, and international needs."

Need

Graduate training in economics requires a thorough grounding in undergraduate mathematics as well as economics. The 1991 report by the Commission on Graduate Education in Economics (COGEE) indicates that students with a strong background in both are needed. Our own IUP alumni agree. We have contacted a variety of recent alumni who have attended graduate programs in economics. All respondents agreed there is a need for joint program like the one being proposed. Students not pursuing graduate education will also find the joint program of value. Students with a knowledge *both* of economics and mathematical/statistical techniques are more marketable to a wide variety of government and private employers.

1. Intellectual value. The program will benefit students pursuing graduate education in economics or related fields such as business, public policy, management science or operations research. It will also benefit students wishing to apply economic analysis with quantitative

techniques. Given the rigorous nature of the program and course requirements, it is likely to appeal only to above-average students.

2. Student demand. The program is likely to be quite small; at least in the initial years. However, it will attract the types of students described above. A number of our alumni have indicated they would have enrolled in such a program had it been available.

3. Opportunities. The 1991 COGEE report indicates this type of training is absolutely critical for students enrolling in programs in economics. Over the years a number of our alumni have stated that this type of training would enhance our undergraduates' employability.

4. Enhancement. Other than the above, since the program involves no new courses, it adds little to student breadth, faculty vitality, or community enhancement.

Academic Integrity

All courses in the program already are being offered. The integrity of the courses and the quality of the faculty to offer those courses have already been deemed appropriate. There is no external accrediting body or organization.

Coordination

Incoming students meeting normal IUP admission standards may be admitted to the program directly. Any IUP student in good academic standing (including those transferring from IUP branch campuses) may transfer into the program at any time by processing a change of major form available from either the Department of Economics or the Department of Mathematics.

Periodic Assessment

The program will be evaluated in the course of normal departmental evaluations for the departments of mathematics and economics. The departments will use the same types of criteria and data used to evaluate their other major programs.

Resources

Since the program only uses courses that already are being offered, no additional staff, learning resources, instructional equipment or facilities are needed. Minimal expenditures for promotional literature (less than \$50 per year) could be funded through existing departmental budgets.

Impact on Educational Opportunity

No impact is anticipated.