

LSC Use Only
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UWUCC Use Only **93-4**
Number: ~~92-20~~
Action: App
Date: 10/12/93
Senate App 11/2/93

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: Economics: R. J. Stonebraker
Mathematics: R. McBride

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

Marius Huff
Department Curriculum Committee

D. A. ...
Department Chairperson

[Signature] 12/2/92
College Curriculum Committee

[Signature] No New Resour Needed
College Dean * *12/2/92*

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: _____
to UWUCC: _____

Semester to be
implemented: _____

Date to be
published
in Catalog: _____

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

UWUCC Use Only 93-4
Number: 92-207
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><i>Robert Davis</i></u> Department Curriculum Committee	<u><i>Gerald Berrick</i></u> Department Chairperson
<u><i>H. Kian</i></u> College Curriculum Committee	<u><i>W. & Cole</i></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 Degree in Mathematics/Economics
Proposed Catalogue Description:

Students with ability and interest in economics discover that a solid background in mathematics is an essential prerequisite for advanced theoretical and applied work in the discipline. Similarly, students with talent and interest in mathematics find economics an excellent field in which to employ their skills and knowledge. The Bachelor of Arts in Mathematics/Economics allows students to combine these complementary subjects in a joint degree program administered cooperatively by the Departments of Mathematics and Economics. Enrolled students will be assigned an advisor in each department.

Those completing the program will have an exceptional background for graduate study in economics and such related fields as business, public policy or operations research. They also will be ideally prepared to fill a wide variety of technical and quantitative positions in both government and private industry.

**Proposed Joint Degree in Mathematics/Economics
Rationale/Justification:**

There is an increasing demand for students trained in both economics and mathematics. Economics majors are already encouraged to take as much mathematics as possible and mathematics majors are typically advised to find a discipline, like economics, in which they can apply their mathematical and statistical tools. The proposed program allows students to pursue these fields together and guides students to the set of courses which complement each other most closely.

According to the 1991 Commission on Graduate Education in Economics, an undergraduate background like that provided by the proposed program is absolutely critical for students enrolling in graduate programs in economics. Our alumni also indicate that such training would enhance their employability for a wide variety of government and private sector positions.

PROPOSED JOINT MAJOR IN MATHEMATICS/ECONOMICS

CURRICULUM REQUIREMENTS:

LIBERAL STUDIES: 47-49 s.h.

As outlined in Liberal Studies section with the following specifications:

Social Science: EC121 (included in major)
Mathematics: MA127 (included in major)
Electives: intermediate foreign language,
no course with EC or MA prefix

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

FREE ELECTIVES: 19-23 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.

Proposed Joint Degree in Mathematics/Economics
Suggested eight-semester course sequence:

Semester #1:	MA 127 Calculus I	4
	EC 121 Principles of Economics I	3
	EN 101 English I	4
	Foreign language	<u>3-4</u>
		14-15
Semester #2:	MA 128 Calculus II	4
	MA 171 Intro Linear Algebra	3
	EC 122 Principles of Economics II	3
	HI 195 History Modern Era	3
	Foreign language	<u>3-4</u>
		16-17
Semester #3:	MA 227 Calculus III	4
	MA 216 or EC 355 Statistics	3-4
	Lab science I	4
	LS/free electives	<u>3-4</u>
		14-16
Semester #4:	EC elective	3
	Fine arts course	3
	Lab science II	4
	LS/free electives	<u>6</u>
		16
Semester #5:	EC 421 Macroeconomic Analysis	3
	MA elective	3-4
	LS/free electives	<u>9</u>
		15-16
Semester #6:	EC 422 Microeconomic Analysis	3
	MA elective	3
	LS/free electives	<u>9</u>
		15
Semester #7:	EC elective	3
	EC elective	3
	MA elective	3
	LS/free electives	<u>6-7</u>
		15-16
Semester #8:	EC elective	3
	MA elective	3
	LS/free electives	<u>9-10</u>
		15-16

Proposal for New Credit-Based Program

Institution: IUP

Proposed program: Bachelor's degree in Mathematics/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 "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 ability and interest in mathematics find economics an excellent field in which to apply their talents. Students with a knowledge *both* of mathematical/statistical techniques and economics 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 mathematical and quantitative techniques to real world issues. 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 anticipated enrollment is small and 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

The Departments of Economics and Mathematics at IUP are already quite successful at attracting women. Approximately 50 percent of IUP's mathematics majors are female and economics is not far behind. Of the last 104 graduates in economics, 40 are women. Both departments also attract a culturally diverse group of students, but most of the diversity comes from Asians rather than African Americans. For example, of the last 104 economics graduates, 17 were from other countries (14 were Asian), but only three were African-American.

However, there is a very strong demand for women and minority graduates with the skills provided by the proposed program. By advertising that fact and by using our promotional literature to encourage women and minority students to apply, we may be able to further increase the number of such students we serve.

ADDENDUM:

Before granting preliminary approval for this program, SSHE officials had it reviewed externally. The reviewer made two suggestions:

1. At least one of the economics electives should be an applied course -- eg. labor economics, international economics, etc.

We agree. However, the reviewer was unaware of the fact that, with the exception of Econometrics (EC 356), *all* of the course options for the economics electives are applied courses. Students will necessarily take at least three applied economics courses.

2. A course in the History of Economic Thought should be required.

We have chosen not to do this for two major reasons.

- (1) The reviewer apparently assumed that the program was designed solely to prepare students for graduate work in economics. But, this is not so. It is also designed to give mathematics students an area in which their skills can be applied in the work place. A course tracing the historical development of economic theories is not especially valuable for such students. Other courses, which detail what those theories are and how they can be applied to current issues and problems, are more important.
- (2) The importance of such a course is questionable even for those students who will pursue graduate work in economics. The field has been increasingly de-emphasized in many programs in recent years. We have sent a number of students to graduate programs in economics. Many tell us that they regret not having taken more math, but none has ever suggested they felt disadvantaged by not having taken History of Economic Thought.

Our department chairperson Dr. Donald Walker is one of the world's foremost authorities on the History of Economic Thought. He is a recent past-president of the Society for the History of Economic Thought and currently serves as editor of its international scholarly journal -- *Journal of the History of Economic Thought*. Dr. Walker, with the unanimous concurrence of the department's faculty, opposes requiring such a course in this program. His statement, along with an excerpt from an address by Nobel Laureate Paul A. Samuelson is attached.

We do, however, appreciate the need for consumer choice in such matters. We have a History of Economic Thought course (EC 320) on the books and students who take it will be allowed to count it as one of their economics electives.

cc: William Cale
Brenda Carter
4/9/93



APR 8 1993

I will set up a meeting to discuss this.

H. Richards

STATE SYSTEM OF HIGHER EDUCATION
The System Works for Pennsylvania
100th Anniversary

APR 13 1993

April 5, 1993

Dr. Hilda Richards
Provost and Vice President
for Academic Affairs
Indiana University of PA
Indiana, PA 15705-1087

Dear Hilda,

As we discussed earlier this year, I see no serious problem in creating a new major out of two existing programs, in terms of resources.

Academically, the combination may require a somewhat longer program, in order to assure sufficient strength in both areas. The initial proposal includes 24 credits in Economics and 30-32 in Math, for a total of 54-56 credits, which seems reasonable. Lacking expertise in the field, and recognizing the intent of preparing students for graduate study in economics, we had the draft briefly reviewed externally; the reviewer's only suggestions were that (1) one course in the History of Economic Thought should be required, because it is expected that graduate students have had it, and (2) at least one of the electives should be an applied course--e.g., labor economics, international economics, etc. I pass these suggestions along to your program proposers.

You will want to present a full proposal. I hope you will especially address criterion #7, showing how this program may appeal to and serve minority and women students who often bypass these fields.


Sincerely,

Emily Hannah

Department of Economics
Indiana University of Pennsylvania
Keith Hall
Indiana, Pennsylvania 15705-1087

(412) 357-2640

IUP

Subject: History of Economic Thought in Graduate School Curricula
To: Dr. Robert J. Stonebraker, Professor, Department of Economics
From: Donald A. Walker, Chairperson, Department of Economics; Editor,
Journal of the History of Economic Thought 
Date: June 7, 1993

This memorandum is in response to your question regarding the place of history of economic thought courses in graduate curricula in economics. I respond on this matter as someone who has been in the field of the history of economic thought for thirty-seven years, as a university teacher of economics, a research worker who has published dozens of articles in that field, a past president and present officer of the History of Economic Society, editor of the *Journal of the History of Economic Thought*, and advisor to hundreds of students regarding the undergraduate curriculum they should follow to prepare for graduate study in economics. As the editor of the *Journal of the History of Economic Thought*, I am very closely in touch with the general place of the study of the history of economic thought in current intellectual activity. I therefore respond as one who is deeply familiar with the place of history of economic thought in undergraduate and graduate curricula in economics.

The answer to your question is simple. If you have been informed that study of the history of economic thought is in any sense a prerequisite for graduate study in economics or a required or even normal part of graduate study in economics, you have been misinformed. With few exceptions, the history of economic thought is not a required

course in B.A. programs, and with virtually no exceptions is not required in master's or doctoral programs in economics. In many undergraduate programs, the history of economic thought is not offered as an elective, as is the case at our university. In all leading graduate schools, the history of economic thought has disappeared entirely from the curriculum. It is not a part of the comprehensive examinations for the Ph.D degree in any graduate school.

Recently Professor John Bethune of Bellarmine College submitted a paper to me for consideration for publication in *JHET* that documented statistically the virtual disappearance of history of economic thought from graduate programs in economics. You can pick up any graduate school catalog and examine the requirements for entry and the programs offered in economics, and you will find that the history of economic thought is not mentioned. The study of the history of economic thought is an active field, but its practitioners are not graduate students. With the explosion of modern knowledge in economics, there is simply not enough room in the graduate curricula for students to be able to afford the luxury of spending time with the past history of the discipline. Graduate students must be concerned with mathematics and statistics, with micro economic theory, with macro economic theory, and with the applied fields in economics.

I am accompanying this memorandum with a copy of the first two pages of an article by Professor Paul A. Samuelson, which he delivered as the keynote speaker at the History of Economics Society Conference which I organized at Harvard University in 1987. He begins by noting that the history of economic thought is no longer studied in economics graduate programs and is not considered relevant for them. His point is that in order to become relevant, studies of the history of economic thought would have to apply modern theory to the study of past doctrine.

OUT OF THE CLOSET:
A PROGRAM FOR THE WHIG HISTORY OF ECONOMIC SCIENCE
Keynote Address at History of Economics Society
Boston Meeting, June 20, 1987

by Paul A. Samuelson, MIT

A spectre haunts the history of economic thought. Someone is walking over our grave and we shudder involuntarily.

Like the press covering Mark Twain, do I exaggerate the death of our specialty? Yes I do. Our presence here belies the literal truth of any such pronouncement. But I exaggerate in a good cause and I repeat only what we all are complaining about in the privacies of our own boudoirs. And undoubtedly at those final family reunions of the dinosaurs, keynote speakers protested too much when claiming vaingloriously, "We're as good as we ever were." Better to run scared, I say, than to wind down with a whimper.

When I began graduate study a million years ago, history of thought was a dying industry. But it was still a presence in the required curriculum to be reckoned with. Jacob Viner was cracking the whip at the University of Chicago. Edwin Seligmann at Columbia and Jacob Hollander at Johns Hopkins occupied their professorial chairs. Edwin Cannan, though emeritus in London, carried into retirement his scorpion's bite.

The cash value of a subject in the curriculum is the ice it cuts in the examination ordeal. The general oral exams at Harvard in the 1930s were a game of Russian roulette: if you drew the lottery ticket of Leontief or Schumpeter in economic theory, you had better know how Frisch was able to measure cardinal utility and what adjusted demand concavity did to size of total output of a discriminating monopolist. [Aside: there's history of analysis for you.] If you drew Ed Chamberlin, there was of course only one subject you had to know. But if you drew Arthur Eli Monroe--or, just before my time, Frank Taussig or C.J. Bullock--your theory exam might well never get up to the time of Adam Smith.

It was even worse in the 1920s: Douglass V. Brown told me that Bullock asked him: "What economic texts would you assign in Fifth Century B.C. Athens? In Fourth Century? In Third Century?" I only repeat the story as it was told to me.

All this was more than the traffic would subsequently bear. The decadence of literary economics from 1910 to 1930 perhaps explains the atavistic survival of *Dogmengeschichte* until so late a date. When physics is in a vibrant state of progress, a Fermi is contemptuous of any preoccupation with history of the subject. Thus, after he wrote up his Columbia lectures on thermodynamics for publication, he assigned a junior assistant the chore of filling in a few references. In the time you wasted pondering over the paradoxes and foundations of the second law of thermodynamics, Fermi felt you might be discovering a new elementary particle or be theorizing concerning a neutrino that keeps total energy conserved.

I wish I could assert that the present disdain for history of economics was occasioned by on-going Kuhnian breakthroughs in current economic science. Alas, as attendance at National Bureau seminars will reveal, ours is not an age of heady accomplishments and new exciting syntheses. But that does not blunt the following point.

Shortly after 1930 economics burst out into new life. At least four revolutions erupted: the *monopolistic competition* revolution, the *Keynesian macro* revolution, the *mathematicization* revolution, and the *econometric inference* revolution. Graduate students need at least 4 hours a night of sleep: that is a universal constant. So something had to give in the economics curriculum. What gave, and gave out, was history of thought -- followed quickly by attrition of foreign language requirements and of minima for economic history.

As they say in the *Vogue* cigarette ads, "We've come a long way, Baby." Here's how far. A Scandinavian scholar has been spending a sojourn at Harvard. Undeterred by the leagues separating Littauer Center from the MIT Sloan Building, he has been auditing a macro course by one of my colleagues. "I did not expect that there would be copious assignments in Wickseil, Cassel, and Marshall," he confided to me. "But imagine my surprise that there were no items on the reading list earlier than 1985!" I answered him that, although the goatskins were brand new, some of the wine contained therein would have been recognizable to Harrod and Hicks and maybe to Ricardo as well.

So much for diagnosis of our subject's lack of Darwinian fitness in the struggle for existence.

I turn to prescribing what we might do about it.

PRESCRIPTION

I begin with the dogma that The Customer is always right. I take a leaf from the book of one of my contemporaries who, after being told by the Ford Foundation that it did not give grants for the kind of research he had proposed in his application, asked by return mail: "What *are* you giving grants for?"

I propose that history of economics more purposefully reorient itself toward studying the past from the standpoint of the present state of economic science. To use a pejorative word unpejoratively, I am suggesting Whig Economic History of Economic Analysis.¹

The history of humane letters involves only history. Sam Johnson's mistakes may be more interesting than his correct observations. To the antiquarian, antiquarianism is all there is to the history of the humanities.

The history of scientific thought is a two-fold matter. We are interested in Newton's alchemy and biblical prophecy because we are interested in Newton the man and scientist. At the same time his stepbrother's theology is likely to elicit a yawn from even the most besotted antiquarian. How Newton discerned that a homogeneous sphere of non-zero radius attracts as if all its mass were at its center point, that is part of the history of cumulative science. Say that this attitude involves an element of Whig history if you will, but remember that working scientists have some contempt for those historians and philosophers of science who regard efforts in the past that failed as being on a par with those that succeeded, success being measurable by latest-day scientific juries who

want to utilize hindsight and ex post facto. Macaulay judged the past completely in the present of his time.

Economics is in between belief and reality. The approach I am recommending, like the recent edition of David Ricardo's

Serious economists below the level of the general public, both for its antiquarian and its scientific value, judge it?

From an antiquarian view the enthusiasm has been unbounded for every scrap written by David Ricardo. This is a boon to scholars of thought for its own sake: the history of economics has now been made

Editorial emendations have added brevity. You might almost say that out of the act, letting David accompany the Greek Chorus

From the scientific viewpoint expressed here, there is something of Ricardo. It is not just that we and forward gropings of a microeconomics until his 1823 his self-created ambiguities and the whole picture would be a Herculean framings would be

There is, however, no point in it. It is the "road not taken" by the the scientists, rather than the antiquarian editor and commentator what James 1937 *Studies in the Theory of* supplied in his *Mercantilism*. It is to the collected works of Euler bringing off in his 1984 survey. Admittedly, old Edwin Cannan economic giants, not only faulting Cannan believed in 1928 but also not being so smart as himself. between Cannan's dominating

Fortunately, in the Introduction seem to let himself go a little have, in a lost 1814 manuscript in which the profit rate is determined speak corn to corn; and, Sraffa's theory is successfully emancipated who can be very hard indeed o

LIBERAL STUDIES

Director's Office: 353 Sutton Hall
Secretary's Office: 352 Sutton Hall
Telephone: 357-5715

February 18, 1993

SUBJECT: Mathematics-Economics Degree Program

TO: Robert Stonebraker

FROM: Charles Cashdollar



At its February 18, 1993, meeting, the Liberal Studies Committee reviewed the Liberal Studies component of the Mathematics-Economics degree program and found that it accurately fulfills the Liberal Studies program requirements.

We also concur with your recommendation that for this integrated dual-department program, students should be barred from using either MA or EC prefix courses to fulfill the Liberal Studies Elective category. The catalog should read "no courses with EC or MA prefixes."

cc: Fred Morgan, UWUCC Screening Committee

JUN 24 1993

Attached is a copy of our proposed for a new major in mathematics/economics. I have enclosed one copy for the provost and four additional copies for the Senate Curriculum Committee.

Bob Stonebraker
Economics
X4770

MAR 25 1993

Indiana, Pennsylvania 15705

Date: March 24, 1993
To: Dr. Hilda Richards
Provost
From: William G. Cale
Dean, NS&M
Subject: Curriculum Proposal

W. G. Cale

Attached please find a proposal of a Major in Mathematics /Economics submitted jointly by the Economics and Mathematics departments. The proposed program utilizes courses already being offered therefore, no additional staff, learning resources, instructional equipment or facilities are needed.

92-20