Numb	sion Date: Submission Date:	<u>5</u> 197
1.	University-Wide Undergraduate Curriculum Committee	9//
	Contact Person Gerald Buriok Phone 2608	
	DepartmentMathematics	
И.	ROPOSAL TYPE (Check All Appropriate Lines)	
	COURSE CALC I NAT/S S/BUS Suggested 20 character title	
	New Course *Course Number and Full Title	
	X Course Revision MA 121 Calculus I for Business, Natural and Social Course Number and Full Title Scien	
	Liberal Studies Approval + for new or existing course Course Number and Full Title	
	Course Deletion	
	Number and/or Title ChangeOld Number and/or Full Old Title	
	New Number and/or Full New Title X Course or Catalog Description Change MA 121 Calculus I for Business, Note to Course Number and Full Title and Social Science Number And Scien	
	PROGRAM: Major Minor Track	
	New Program *Program Name	
	Program Revision*	
	Program Deletion*	
	Title Change	
	Cld Program Name	
III. /	Poprovals (signatures and date) Hand Month 2-11-97 Partment Curriculum Committee Department Chair Soliege Curriculum Committee Odilege Dean	7
	Director of Liberal Studies (where applicable) *Provest (where applicable)	

Part II. Description of Curriculum Change.

- 1. New syllabus of record attached.
- 2. A summary of the proposed revision:

The current prerequisite for MA 121 Calculus I for Natural, Social Science, and Business is "MA 110 Elementary Functions or equivalent high school preparation". The Mathematics Department is requesting approval to change this prerequisite to "MA 105 College Algebra or MA 110 Elementary Functions or equivalent high school preparation."

3. Justification/rationale for the revision:

The Mathematics Department offers three calculus sequences. These are:

MA 121/122 Calculus for Natural, Social Sciences, and Business;

MA 123/124 Calculus for Physics and Chemistry;

MA 127/128/227 Calculus.

Although these calculus courses are quite different in their level of expectation, all three have the same prerequisite, namely MA 110 Elementary Functions. MA 105 College Algebra is being introduced as a replacement for MA 110 for students who are required to complete MA 121 rather than the more demanding courses. MA 123 and MA 127. With the addition of this new course, we will be able to concentrate on the specific topics that will better prepare students for the calculus course they are required to take.

- 4. Old syllabus of record attached.
- 5. Liberal Studies course approval form and checklist see attached memo.

Part III. Letters of Support. (Attached)

Mathematics Department Indiana University of Pennsylvania Indiana, PA 15705

Course Number:

MA 121

Course Title:

Calculus I for Business, Natural, and Social Sciences

Credits:

4 semester hours

Prerequisites:

MA 110 or equivalent high school preparation

Textbook:

Applied Calculus, 3rd ed.

by Dennis Berkey

Saunders College Publishing

Revised:

4/96

Catalog Description:

Introduces non-Math major to analytic geometry, elementary functions (including logarithmic and exponential functions), central ideas of the calculus (limit, derivative, and integral), applications of derivatives to business, social, and natural sciences.

Course Outline/Sample Time Schedule:

1. Numbers, Functions, and Graphs (4 hours)
Please note: Treat this as a review of precalculus/college algebra material. Don't encourage skipping precalculus by covering this material in detail.

- 1.1 Working with Real Numbers
- 1.2 Graphs of Equations
- 1.3 Distance in the Plane: Equations for Circles
- 1.4 Functions and Their Graphs
- 1.5 Some Special Types of Functions
- 1.6 Finding Zeroes of Functions
- 1.7 Combinations of Functions

2. Differentiation

2. i	The Slope of a Curve	(2 nours)
2.2	Limits of Functions	(1 hour)
2.3	One-Sided Limits and Continuity	(! hour)
2.4	The Derivative	(2 hours)
2.5	Applications of the Derivative:	(= 110d13)
	Position and Velocity	(i hour)
2.6	Business Applications of the Derivative	(I hour)
2.7	The Product and Quotient Rules	(1 hour)

	2.8	The Chain Rule	(1 hour)	
	2.9	Limits at Infinity	(1 hour) (1 hour)	
		•	(r nour)	
3.	Appi	ications of The Derivative		
	3.1	Increasing and Decreasing Functions	(1 hour)	
	3.2	Relative Maxima and Minima	(1 hour)	
	3.3	Concavity and the Second Derivative	(2 hours)	
	3.4	Curve Sketching I: Asymptotes	(2 hours)	
	3.5	Curve Sketching II	(2 hours)	
	3.6	Finding Absolute Extrema	(1 hour)	
	3.7	Applied Maximum-Minimum Problems	(1 hour)	
	3.8	Applications to Economics and Business	(1 hour)	
	3.9	Related rates and Implicit Differentiation	(2 hours)	
	3.10	Linear Approximations and Differentials	(1 hour)	
	3.11	The Mean Value Theorem	(1 hour)	
	_ ·		,	
4.		nential and Logarithmic Functions		
	4.1	Exponential Functions	(l hour)	
	4.2	Logarithmic Functions	(1 hour)	
	Reme	mber, these two sections should be a review of prec	alculus/college algebra material.	
	+. ⊅	Differentiating the Natural Logarithm Function	(2 hours)	
	This is 2 hours because this section contains logarithmic differentiation.			
	4.4	Differentiating the Exponential Function	(I hour)	
	4.5	Exponential Growth and Decay	(2 nours)	
	4.6	Mathematical Modelling	(2 hours)	
5.	Antide	privatives and the Definite Learner		
J.	5.1	erivatives and the Definite Integral Antiderivatives		
	5.2	More on Antiderivatives	(1 hour)	
	5.3		(1 hour)	
	5.4	Finding Antiderivatives by Substitution The Area Problems and the Defining Lawrence	(1 hour)	
	5.5	The Area Problems and the Definite Integral The Fundamental Theorem of Calculus	2 hours)	
	5.6	Finding Areas by Integration	·! hour)	
	5.7		(2 hours)	
	5.7	Applications of the Definite Integral to Economics and Business	(2 h)	
	5.8	Other Applications of the Definite Integral	(2 hours)	
	2.0	other reprications of the Definite integral	(1 hour)	

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This syllabus covers 50 hours of class time. This leaves 6 hours for tests and to do optional computer topics, do explorations, or to devote extra time to topics that may give your students difficulty.

Note: If you wish to use a graphing calculator in this course, you must notify the chairperson of the Service Courses Committee one semester in advance so that a note to this effect can be included on the Course Schedule for students.

Mathematics Department Indiana University of Pennsylvania Indiana, PA 15705

Course Number:

MA 121

Course Title:

Calculus I for Business, Natural, and Social Sciences

Credits:

4 semester hours

Prerequisites:

MA 105 College, Algebra or MA 110 or equivalent high school

preparation

Textbook:

Applied Calculus, 3rd ed.

by Dennis Berkey

Saunders College Publishing

Revised:

2/97

Catalog Description:

Introduces non-Math major to analytic geometry, elementary functions (including logarithmic and exponential functions), central ideas of the calculus (limit, derivative, and integral), applications of derivatives to business, social, and natural sciences.

Course Outline/Sample Time Schedule:

1. Numbers, Functions, and Graphs
Please note: Treat this as a review of precalculus/college algebra material. Don't

encourage skipping precalculus by covering this material in detail.

- 1.1 Working with Real Numbers
- 1.2 Graphs of Equations
- 1.3 Distance in the Plane; Equations for Circles
- 1.4 Functions and Their Graphs
- 1.5 Some Special Types of Functions
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- 1.7 Combinations of Functions

2. Differentiation

2.1	The Slope of a Curve	(2 hours)
2.2	Limits of Functions	(1 hour)
2.3	One-Sided Limits and Continuity	(I hour)
2.4	The Derivative	(2 hours)
2.5	Applications of the Derivative:	(2 110413)
	Position and Velocity	(l hour)
2.6	Business Applications of the Derivative	(1 hour)

	2.7 2.8 2.9	The Chain Rule	(1 hour) (1 hour) (1 hour)
3.	App 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11	i provincial district Cittals	(1 hour) (1 hour) (2 hours) (2 hours) (2 hours) (1 hour) (1 hour) (1 hour) (2 hours) (1 hour) (1 hour) (1 hour)
4.	4.1 4.2 Rem 4.3	Exponential Functions Exponential Functions Logarithmic Functions Logarithmic Functions ember, these two sections should be a review of Differentiating the Natural Logarithm Function is 2 hours because this section contains logarith Differentiating the Exponential Function Exponential Growth and Decay Mathematical Modelling	(1 hour) (1 hour) f precalculus/college algebra material.
5.	Antic 5.1 5.2 5.3 5.4 5.5 5.6 5.7	Antiderivatives More on Antiderivatives Finding Antiderivatives by Substitution The Area Problems and the Definite Integral The Fundamental Theorem of Calculus Finding Areas by Integration Applications of the Definite Integral to Economics and Business Other Applications of the Definite Integral	(1 hour) (1 hour) (1 hour) (2 hours) (1 hour) (2 hours) (1 hours)

This syllabus covers 50 hours of class time. This leaves 6 hours for tests and to do optional computer topics, do explorations, or to devote extra time to topics that may give your students difficulty.

Note: If you wish to use a graphing calculator in this course, you must notify the chairperson of the Service Courses Committee one semester in advance so that a note to this effect can be included on the Course Schedule for students.

From: GROVE::DRCHRDSN

"Darlene Richardson, Liberal Studies"

To:

JBURICK

CC: Subj: DRCHRDSN Question

Hi, Jerry. If the only change with regard to MA 121 is the change in prerequisite, a memo to the LS Committee telling us about the pre-reg change and the rationale behind it is all you need to do. The LS Committee does not need to see all the paper work involved in course revision which the Undergrad Curriculum Committee requires. Darlene

MAIL>

Department of Mathematics Indiana University of Pennsylvania 233 Stright Hall Indiana. Pennsylvania 15705-1072

(412) 357-2608

To: Department Chairpersons

From: Gerald Buriok, Chairman

Mathematics Department 5m B

Date: July 10, 1996

Subject: Support for Curriculum Change

This memo is being sent to inform you of our intention and to request your support for adding an alternative to MA 110 Elementary Functions as a prerequisite for MA 121 Calculus I for Business. Natural, and Social Sciences.

The Mathematics Department is preparing a new course, MA 105 College Algebra, for submission to the University-wide Undergraduate Curriculum Committee (UWUCC). We are also proposing a change in the prerequisite for MA 121 from "MA 110 or equivalent high school preparation" to "MA 105 or MA 110 or equivalent high school preparation." As you know, the UWUCC requires statements of support from departments affected by curricular changes and I am asking you to sign and return the enclosed form to indicate your support for this change in the prerequisite for MA 121.

The rationale for changing the prerequisite for MA 121 is as follows. The Mathematics Department currently offers three calculus sequences, MA 121/122 Calculus for Business, Natural, and Social Sciences, MA 123/124 Calculus for Physics and Chemistry, and MA 127/128/227 Calculus (for math majors). Although these calculus sequences are quite different in their level of expectations, all three now have the same prerequisite, namely MA 110 Elementary Functions. MA 105 is being introduced as an alternative to MA 110 for students who are required to complete MA 121 rather than the more demanding courses MA 123 and MA 127. With the addition of this new course, we will be able to concentrate on the specific topics that will better prepare students for the calculus course they are required to take.

I have attached a copy of the syllabus for the proposed MA 105 course. Please contact me if you have any questions. Otherwise, I would appreciate your returning the enclosed form by August 1, 1996.

Subject: Prerequisite for MA 121

I understand that the Mathematics Department is in the process of seeking approval of a new course, MA 105 College Algebra. I have been informed by the Mathematics Department of their proposal to change the prerequisite for MA 121 Calculus I for Business, Natural, and Social Sciences from "MA 110 or equivalent high school preparation" to "MA 105 or MA 110 or equivalent high school preparation". I have no objection to this change in prerequisite.

Name	, Department Chairperson
Department	
Date	

Subject: Prerequisite for MA 121

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Name : Donald A. Walker	, Department Chairperson
Department Economics	proon
Date 8 7 96	

Subject: Prerequisite for MA 121

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Name Department Chairperson

Department Diology

Subject: Prerequisite for MA 121

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Name - TWAM .	, Department Chairperson
Department Geoscience	•
Date 8-1-96	

Subject: Prerequisite for MA 121

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Name	James Doul	, Department Chairperson
Department	Health & Physial	Educ
Date 7/29/96		**
{ }		

Subject: Prerequisite for MA 121

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Name : Suon Frilee.	, Department Chairperson
Department Geography, Repul Plum	\Rightarrow
Date 7-23-9L	

Subject: Prerequisite for MA 121

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Name Richard D. Roberts Department Chairperson

Department Physics

Date July 16, 1996

Subject: Prerequisite for MA 121

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Name Jane B. Sleines, Department Chairperson

Department And & Mulsilian

Date 1/18/96

Subject: Prerequisite for MA 121

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THE RESERVE THE PROPERTY OF THE PARTY OF THE

Name Robert L. Whitmer	Department Chairperson
Department French	
Date 7/19/96	

Subject: Prerequisite for MA 121

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Name DR, W.W. OBLITEY Department Chairperson

Department COMPWER SCIENCE

Date 11696

Subject: Prerequisite for MA 121

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Name Jodell Kuznesini.	, Department Chairperson
Department Norsing and Allied HE	_
Date 7-16-96	

Subject: Prerequisite for MA 121

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Name Osem Cananza	, Department Chairperson
Department Spanish & Clamical	Carres
Date 7/17/96	_

Subject: Prerequisite for MA 121

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Name - Jothen Varughen	, Department Chairperson
Department Chemistry	
Date 7/18/96	

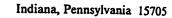
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Name DONNA STREIF 71 HAV Department Chairperson

Department HDES

Date 7.18,96





Date:

August 26, 1996

Subject:

Proposed Changes in MA121

To:

Dr. Jerry Buriok, Chairman

From:

Lon Ferguson, Chairman LoT

Safety Sciences Curriculum Committee

Sorry for the delay in responding to your previous request for feedback on the proposed changes to MA121. Members of the Safety Sciences Curriculum Committee as well as Dr. Soule, Chairman of the Safety Sciences Department, have reviewed the proposed changes and, consequently, support the changes for MA121.

Buriok; Ferguson3

Subject: Prerequisite for MA 121

I understand that the Mathematics Department is in the process of seeking approval of a new course, MA 105 College Algebra. I have been informed by the Mathematics Department of their proposal to change the prerequisite for MA 121 Calculus I for Business, Natural, and Social Sciences from "MA 110 or equivalent high school preparation" to "MA 105 or MA 110 or equivalent high school preparation". I have no objection to this change in prerequisite.

Name, Man J. Muller, Department Chairperson
Department Maturel Service Rogram

Date 10/15/97

[Please return this form to the Mathematics Department, 233 Stright Hall, by August 1.]



共同共享中主人民族公民和巴特英语的

Subject: Prerequisite for MA 121

I understand that the Mathematics Department is in the process of seeking approval of a new course, MA 105 College Algebra. I have been informed by the Mathematics Department of their proposal to change the prerequisite for MA 121 Calculus I for Business, Natural, and Social Sciences from "MA 110 or equivalent high school preparation" to "MA 105 or MA 110 or equivalent high school preparation". I have no objection to this change in prerequisite.

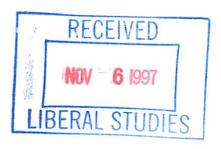


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Name AMTHUR HIS MARJES, Department Chairperson
Department DIBECTOR OF PRE-LAW PROGRAM

Date 10-21-97



To: Dr. Joyce Garrett, Associate Dean College of Education

From: Gerald Buriok, Chairman Mathematics Department

Date: November 3, 1997

Subject: Making You Aware

A Screening Subcommittee of the University-wide Undergraduate Curriculum Committee has informed me they will not forward a course revision for MA 121 Calculus I for Natural, Social Science, and Business to the full committee until I have received a memo from the Dean of the College of Education indicating I made you aware of the change. I spoke with Dr. Butzow on Saturday morning at the Admissions Office "Marketplace" in the Field House, and he told me to send this request to you since he would be on vacation for two weeks.

The course revision in question involves changing the prerequisite for MA 121 from "MA 110 Elementary Functions or equivalent high school preparation" to "MA 105 College Algebra of MA 110 Elementary Functions or equivalent high school preparation." Attached to this memo is new course proposal for MA 105. Also attached is a course revision proposal for MA 121. Included in both proposals are letters from all departments having a program where MA 121 is required.

I am requesting that you send me either an e-mail message or a memo indicating that I have made you aware of the proposal to change the prerequisite for MA 121. Please contact me if you have any questions about the MA 121 or MA 105 proposals. My understanding is that you do not have to approve the proposals nor sign off on them, but rather that the Screening Committee simply wants to know that you are aware of the proposals.

cc: Chairperson, Screening Committee – Dr. John Butzow, Dean



#1

4-NOV-1997 16:05:03.10

NEWMAIL

From:

GROVE::JGARRETT

To: JBURIOK

CC:

CCULLUM, JWBUTZOW

Subj: Curriculum Revision for MA 121 Calculus I...

Jerry, thanks for sending information about the Mathmatics Department revision of MA 121. I see no reason why the proposal should not go forward as presented. It is my understanding that departments with education programs that require MA 121 have had an opportunity to review the proposal and have raised no questions regarding the change.

If you need anything addition from the COE, please let us know...jlg

Joyce Lynn Garrett, Ph.D. Associate Dean for Administration and Academic Affairs 412.357.2483 412.357.5595 (fax) JGARRETT@Grove.IUP.Edu

Press RETURN for more...

MAIL>

#1 4-NOV-1997 16:05:03.10 College of Education Indiana University of Pennsylvania Indiana, PA 15705-1087

MAIL>

NEWMAIL



#19 30-OCT-1997 14:49:07.48

NEWMAIL

From: GROVE::DRCHRDSN "Darlene Richardson, Liberal Studies"

To: CJSUTTON, JBURIOK, RMEDDY, DEANNA, HERBHUNT, JIMMILL

CC: DRCHRDSN

Subj: cancellation of LS meeting for today, Oct. 30

Hello, folks. I am sorry to inform you that the LS Committee meeting for today, 10-30, was cancelled due to lack of quorum. I am placing today's proposals on next week's agenda (11-6). I know that next Tuesday is Senate and the Univ. Wide Curriculum Committee will not meet next Tuesday. I also just learned that the NS&M college Curriuc. Comm. will meet Nov. 13. I believe that your proposals will be acceptable to the LS Committee and will let you know as soon as possible.

I know the agenda for the Univ wide Curric Comm is due next Thursday by noon for the meeting on Tuesday 11-11 and I will ask special permission from the chair of that committee to place the LS report on the agenda Friday morning.

Again, sorry for the delay. Darlene

Dr. Cullum: FyI

