LSC Use Only Proposal No:	*UWUCC Use Only* Proposal No: 14-76a
LSC Action-Date:	UWUCC Action-Date: AP-10/21/14 Senate Action Date: App 11/4/14

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person(s) Russell Stocker	Email Address rstocker@iup.edu
Proposing Department/Unit Mathematics	Phone 357-3798

Check all appropriate lines and complete all information. Use a separate cover sheet for each course proposal and/or program proposal.

1. Course Proposals (check all that apply)

☐ New Course ☐ Course Prefix Change ☐ Course Deletion
☐ Course Revision ☐ Course Number and/or Title Change ☐ Catalog Description Change

Current course prefix, number and full title: _____

Proposed course prefix, number and full title, if changing:

2. Liberal Studies Course Designations, as appropriate

This course is also proposed as a Liberal Studies Course (please mark the appropriate categories below)

☐ Learning Skills ☐ Knowledge Area ☐ Global and Multicultural Awareness ☐ Writing Across the Curriculum (W Course)

☐ Liberal Studies Elective (please mark the designation(s) that applies – must meet at least one)

☐ Global Citizenship ☐ Information Literacy ☐ Oral Communication
☐ Quantitative Reasoning ☐ Scientific Literacy ☐ Technological Literacy

3. Other Designations, as appropriate

☐ Honors College Course ☐ Other: (e.g. Women's Studies, Pan African)

4. Program Proposals

☐ Catalog Description Change ☑ Program Revision ☐ Program Title Change ☐ New Track
☐ New Degree Program ☐ New Minor Program ☐ Liberal Studies Requirement Changes ☐ Other

Current program name: Applied Statistics

Proposed program name, if changing: _____

5. Approvals	Signature	Date
Department Curriculum Committee Chair(s)	Russell G Stocker, Jr	8/25/2014
Department Chairperson(s)		8/25/14
College Curriculum Committee Chair		9/16/14
College Dean		9/22/14
Director of Liberal Studies (as needed)		
Director of Honors College (as needed)		
Provost (as needed)	Timothy S McCord (com)	10/22/14
Additional signature (with title) as appropriate		
UWUCC Co-Chairs	Gail Zeduist	10/23/14

Received
OCT 23 2014
Liberal Studies

Received
SEP 23 2014
Liberal Studies

Description of Curriculum Change:

Catalog Description: The minor in Applied Statistics consists of 18 credits in mathematics and statistics. It is designed for students who want to apply statistical methodology to investigate real world problems. The use of statistical software and interpretation of results is heavily emphasized. The minor is created for students from a variety of majors including those in the natural sciences, social sciences, and business.

Required Courses: 9cr
MATH 214 or 216 or 217
MATH 411 Univariate Statistics
MATH 412 Multivariate Statistics

Controlled Electives: Select at least 9cr from the following: 9cr
MATH 115 or 121 or 125, 363, 364, CRIM 306, QBUS 215, ECON 356, PSYC 290, PSYC 291, or any statistics or quantitative methods course approved by the applied statistics advisor. Students majoring in mathematics cannot select MATH 115, 121, or 125 as a controlled elective.

Description of Curriculum Change:

	Old Program	Revised Program
Required Courses	MATH 214 or 216 or 217 MATH 417 MATH 418	MATH 214 or 216 or 217 MATH 411 Univariate Statistics MATH 412 Multivariate Statistics
Controlled Electives	Select at least 7cr from the following: MATH 115 or 121 or 125, 363, 364, CRIM 306, QBUS 215, ECON 356, PSYC 291, or any statistics or quantitative methods course approved by the Applied Statistics Advisor.	Select at least 9cr from the following: MATH 115 or 121 or 125, 363, 364, CRIM 306, QBUS 215, ECON 356, PSYC 290, PSYC 291, or any statistics or quantitative methods course approved by the Applied Statistics Advisor. Students majoring in mathematics cannot select MATH 115, 121, or 125 as a controlled elective.

List of Course Changes:

- PSYC 290 is being added to the controlled electives.
- MATH 417 (Statistical Applications) is being deleted from the required courses.
- MATH 418 (Sampling Survey Theory and Its Applications) is being deleted from the required courses.
- MATH 411 (Univariate Data Analysis) is being added to the required courses.
- MATH 412 (Multivariate Data Analysis) is being added to the required courses.

Rationale for Change: The Applied Statistics minor is being revised in several different ways. MATH 411 and MATH 412 are taking the place of MATH 417 and MATH 418 as required courses. MATH 411 and 412 consist of modern statistical methodology used to analyze univariate and multivariate data. These new courses more accurately reflect the skills needed and used by students from a variety of majors offered at IUP. PSYC 290 has been included as an option for a controlled elective since most psychology majors take this as a followup to MATH 217. The catalog description was revised so that prospective students will realize the program is very applied in nature and is appropriate for a variety of different majors. The number of required controlled electives credits has increased from 7cr to 9cr; thus the minor now meets the 18 credit hours required by PASSHE.

Implementation:

1. How will the proposed revision affect students already in the existing program?

   Students currently in the program will not be affected by the revision. They may take MATH 411 in place of MATH 417 and MATH 412 in place of MATH 418. Additionally, students that need to repeat MATH 417 may take MATH 411 and those that need to repeat MATH 418 may take MATH 412.

2. Are faculty resources adequate? If you are not requesting or have not been authorized to hire additional faculty, demonstrate how this course will fit into the schedule(s) of current faculty.

   MATH 417 and MATH 418 are being replaced in our yearly course rotation by MATH 411 and MATH 412 respectively. Therefore, we do not see the need for additional faculty resources. We do plan on offering MATH 418 occasionally as an elective, but we will no longer offer MATH 417.

3. Are other resources adequate?

   Yes, other resources are adequate.

4. Do you expect an increase or decrease in the number of students as a result of these revisions? If so, how will the department adjust?

   We expect that the number of students in the minor will stay the same or increase slightly. The slight increase would be due to an increase in the number of choices for the controlled electives. We do not anticipate that the increase in students will require additional changes by the department.

Periodic Assessment:

1. Describe the evaluation plan. Include evaluation criteria. Specify how student input will be incorporated into the evaluation process.

   The minor will be evaluated every 5 years as part of the 5 year review of the Mathematics Department. This includes a survey of our students and an internal assessment by the five year review committee. Student input is incorporated into the evaluation process via their responses to the survey.

2. Specify the frequency of the evaluations.

   The evaluations will occur every five years.

3. Identify the evaluating entity.

   The five year review committee is the evaluating entity.

Indiana University of Pennsylvania
www.iup.edu

Department of Psychology
Uhler Hall
1020 Oakland Avenue
Indiana, Pennsylvania 15705-1064

P 724-357-2426
F 724-357-2214
www.iup.edu/psychology

SUBJECT: Proposed Revision to Applied Statistics Minor and MATH 411 and 412 New Course Proposals

TO: University-Wide Undergraduate Curriculum Committee

FROM: Dr. Raymond Pavloski, Chair – Psychology Department

DATE: Feb. 10, 2014

I have reviewed the Description of Curriculum Change and the new course proposals for MATH 411 and 412. In addidion, these documents were made available to all Psychology Department faculty, a number of whom provided comments.

The Applied Statistics Minor is taken by a significant proportion of students who major in psychology. The existing minor has helped these students to expand their skills in statistics, thereby adding to their ability to understand research publications, to design and conduct research, and to analyze behavioral data. These skills, in turn, have helped these students gain employment and acceptance into high-quality Master's and Doctoral programs.

Based on my assessment, and on the comments received from other Psychology Department faculty, I wish to lend my strong support to the proposed revision to the minor and to the two new course proposals. There is necessarily some overlap of content between the new course proposals and the two, laboratory-course sequence consisting of PSYC 290 and 291 that is required of all psychology majors. Given the challenging nature of statistics for many students, and the manner in which statistical skills mature and evolve with practice, this overlap is desirable.

In its last five-year undergraduate program review, our external reviewer applauded the preparation in statistics and in research design and analysis that our curriculum provides to psychology majors. The proposed revision to the Applied Statistics Minor and the availability of MATH 411 and 412 will further strengthen the preparation of students who complete the requirements of this minor.

Subject: **Re: Letter of Support**
From: Nicholas Karatjas <karatjas@iup.edu>
Date: 01/29/14 09:21 PM
To: Russell S Stocker <russell.stocker@iup.edu>

Russell,

The Department of Economics supports the revisions to the Applied Statistics minor.

Nicholas Karatjas

Dr. Nicholas Karatjas, Chair
Department of Economics
Indiana University of PA
213 McElhaney Hall
Indiana, PA 15705
724.357.2640 Phone
On Sun, 05 Jan 2014 16:09:17 -0500
"Russell S Stocker" <russell.stocker@iup.edu> wrote:

> *The Department of Mathematics is currently in the process of revising the Applied Statistics minor. The revision includes new required electives; more choices for controlled electives; and an increase in the number of credit hours required (this will meet the new requirements required by PASSHE).*
>
> *As part of this revision, we are proposing two new courses that will be required for the minor. One of the courses is entitled "Univariate Statistics" (MATH 411) and the other is "Multivariate Statistics" (MATH 412). MATH 411 covers a variety of topics including regression (simple and multivariate), experimental design, ANOVA, logistic regression, and Poisson regression. MATH 412 covers a variety of topics in multivariate statistics including multivariate analysis of variance, path analysis, factor analysis, and discriminant analysis.*
>
> *We are asking that you please provide a letter of support for the revision of the minor and these two new courses. If you have any questions or comments about these proposals then please do not hesitate to contact me.*
>
> *Sincerely,*
>
> *Russell Stocker*
> *Assistant Professor*
> *Department of Mathematics*

Subject: RE: Letter of Support
From: Pankaj \(PC\) <pankaj@iup.edu>
Date: 01/28/14 03:35 PM
To: 'Russell S Stocker' <russell.stocker@iup.edu>
Cc: 'Pankaj \(PC\)' <pankaj@iup.edu>

Dr. Stocker,

I had solicited feedback from the MISDS faculty on the Mathematics department proposal. Based on the responses received till date, I would like to inform you that the MISDS department has no issues with this proposal.

Thanks and Regards
Pankaj

-----Original Message-----
From: Russell S Stocker [mailto:russell.stocker@iup.edu]
Sent: Sunday, January 5, 2014 4:01 PM
To: pankaj@iup.edu
Subject: Letter of Support

The Department of Mathematics is currently in the process of revising the Applied Statistics minor. The revision includes new required electives; more choices for controlled electives; and an increase in the number of credit hours required (this will meet the new requirements required by PASSHE).

As part of this revision, we are proposing two new courses that will be required for the minor. One of the courses is entitled "Univariate Statistics" (MATH 411) and the other is "Multivariate Statistics" (MATH 412). MATH 411 covers a variety of topics including regression (simple and multivariate), experimental design, ANOVA, logistic regression, and Poisson regression. MATH 412 covers a variety of topics in multivariate statistics including multivariate analysis of variance, path analysis, factor analysis, and discriminant analysis.

We are asking that you please provide a letter of support for the revision of the minor and these two new courses. If you have any questions or comments about these proposals then please do not hesitate to contact me.

Sincerely,

Russell Stocker
Assistant Professor
Department of Mathematics