10KS5165MS: STATISTICS: ANALYTICS, MS

Completed Workflow

1. U Program Review (dforgacs@illinois.edu; eastuby@illinois.edu; aledward@illinois.edu)
2. 1583 Head (libo@illinois.edu)
3. KV Dean (las-catalog@illinois.edu)
4. University Librarian (jpwilkin@illinois.edu)
5. Grad_College (agrindly@illinois.edu; jch@illinois.edu; lowry@illinois.edu)
6. Provost (kmartens@illinois.edu)
7. Senate EPC (bjlehman@illinois.edu; kmartens@illinois.edu; moorhouz@illinois.edu)
8. Senate (jtempel@illinois.edu)
9. U Senate Conf (none)
10. DMI (eastuby@illinois.edu; aledward@illinois.edu; dforgacs@illinois.edu)

Approval Path

1. Tue, 11 Aug 2020 20:57:56 GMT
   Deb Forgacs (dforgacs): Approved for U Program Review
2. Tue, 11 Aug 2020 21:55:29 GMT
   Bo Li (libo): Approved for 1583 Head
3. Tue, 11 Aug 2020 22:19:24 GMT
   Kelly Ritter (ritterk): Approved for KV Dean
4. Wed, 12 Aug 2020 00:32:24 GMT
   John Wilkin (jpwilkin): Approved for University Librarian
5. Wed, 12 Aug 2020 14:21:00 GMT
   Allison McKinney (agrindly): Approved for Grad_College
6. Wed, 12 Aug 2020 17:53:27 GMT
   Kathy Martensen (kmartens): Approved for Provost
7. Tue, 15 Sep 2020 16:53:38 GMT
   Barbara Lehman (bjlehman): Approved for Senate EPC
8. Wed, 23 Sep 2020 21:54:52 GMT
   Jennifer Roether (jtempel): Approved for Senate
9. Fri, 02 Oct 2020 21:24:50 GMT
   Kathy Martensen (kmartens): Approved for U Senate Conf
10. Wed, 07 Oct 2020 16:03:22 GMT
    Emily Stuby (eastuby): Approved for DMI

History

1. Sep 18, 2019 by Deb Forgacs (dforgacs)
2. Oct 22, 2019 by Deb Forgacs (dforgacs)
3. Oct 7, 2020 by Amy Elli (amyelli)

Date Submitted:Tue, 13 Oct 2020 13:49:47 GMT

Viewing:10KS5165MS : Statistics: Analytics, MS

Changes proposed by: Amy Elli

Proposal Type

Proposal Type:

Concentration (ex. Dietetics)

This proposal is for a:

Revision

Proposal Title:

If this proposal is one piece of a multi-element change please include the other impacted programs here.*example: A BS revision with multiple concentration revisions*

Revising the MS in Statistics Concentration in Analytics

EP Control Number

EP.21.031

Official Program Name

Statistics: Analytics, MS

Effective Catalog Term

Fall 2021

Sponsor College

Liberal Arts & Sciences

Sponsor Department

Statistics

Sponsor Name

Jeff Douglas, Associate Chair and Darren Glosemeyer, Director MS Program

Sponsor Email

jeffdoug@illinois.edu and glosemey@illinois.edu

College Contact

Kelly Ritter

College Contact Email

ritterk@illinois.edu

Program Description and Justification

Justification for proposal change:

The Department of Statistics in the College of Liberal Arts & Sciences has developed and is now offering numerous courses in response to expansion of the field in recent years. The program requirements have not fully been updated for these additions. This proposal would incorporate the expanded coursework options into the curriculum. With the exception of making Stat 430 Topics in Applied Statistics a purely elective course, this proposal only expands students' coursework options within the degree requirements.

The field of statistics and the course offerings from the department have greatly increased in recent years, and the curriculum is in need of update for these increased offerings. Additions to the curriculum are all in the form of increased choice in electives or choice in areas where there is choice of a small number of courses.

The only courses in the current degree requirements which are proposed to be removed from the listed courses are Stat 430 Topics in Applied Statistics and Stat 578 Topics in Statistics. These courses are special topic courses. The topic can and does change semester to semester. When the curriculum requirements were last updated, the topics were less varied and tended to be more foundational in nature. Now with new foundational courses with their own numbers added to the catalog and a wide variety of topics covered in different sections of Stat 430 and Stat 578, the courses generally cover valuable elective material rather than foundations of the field.

Is this program interdisciplinary?

No

Corresponding Program(s):

Corresponding Program(s)
Statistics: Analytics, MS

Academic Level

Graduate

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

N/A

What is the typical time to completion of this program?

2 years

What are the minimum Total Credit Hours required for this program?

32

Delivery Method

Is this program available on campus and online?

No

This program is available:

On Campus

Budget

Are there budgetary implications for this revision?

No

Will the program or revision require staffing (faculty, advisors, etc.) beyond what is currently available?

No

Resource Implications

Facilities

Will the program require new or additional facilities or significant improvements to already existing facilities?

No

Technology

Will the program need additional technology beyond what is currently available for the unit?

No

Non-Technical Resources

Will the program require additional supplies, services or equipment (non-technical)?

No

Resources

For each of these items, be sure to include in the response if the proposed new program or change will result in replacement of another program(s). If so, which program(s), what is the anticipated impact on faculty, students, and instructional resources? Please attach any letters of support/acknowledgement from faculty, students, and/or other impacted units as appropriate.

Faculty Resources

Please address the impact on faculty resources including any changes in numbers of faculty, class size, teaching loads, student-faculty ratios, etc. Describe how the unit will support student advising, including job placement and/or admission to advanced studies.

N/A

Library Resources

Describe your proposal's impact on the University Library's resources, collections, and services. If necessary please consult with the appropriate disciplinary specialist within the University Library.

None

Instructional Resources

Will there be any reduction in other course offerings, programs or concentrations by your department as a result of this new program/proposed change?

No

Does the program include other courses/subjects impacted by the creation/revision of this program?

No

Financial Resources

Will the unit need to seek campus or other external resources?

No

Is this program requesting self-supporting status?

No

Program Regulation and Assessment

Briefly describe the plan to assess and improve student learning, including the program's learning objectives; when, how, and where these learning objectives will be assessed; what metrics will be used to signify student's achievement of the stated learning objectives; and the process to ensure assessment results are used to improve student learning. (Describe how the program is aligned with or meets licensure, certification, and/or entitlement requirements, if applicable).

N/A

Is the career/profession for graduates of this program regulated by the State of Illinois?

No

Program of Study

"Baccalaureate degree requires at least 120 semester credit hours or 180 quarter credit hours and at least 40 semester credit hours (60 quarter credit hours) in upper division courses" (source: https://www.ibhe.org/assets/files/PrivateAdminRules2017.pdf). For proposals for new bachelor's degrees, if this minimum is not explicitly met by specifically-required 300- and/or 400-level courses, please provide information on how the upper-division hours requirement will be satisfied.

All proposals must attach the new or revised version of the Academic Catalog program of study entry. Contact your college office if you have questions.

Revised programs

MS StatisticsAnalyticsConc10KS5165MS Revision.doc
Statistics Analytics MS Academic Catalog.docx
Statistics Analytics MS Side by Side Comparison.docx

Attach a side-by-side comparison with the existing program AND, if the revision references or adds "chose-from" lists of courses students can select from to fulfill requirements, a listing of these courses, including the course rubric, number, title, and number of credit hours.

Catalog Page Text

Statement for Programs of Study Catalog

Code	Title	Hours
STAT 440	Statistical Data Management	4
STAT 448	Advanced Data Analysis	4
STAT 510	Mathematical Statistics I	4
STAT 542	Statistical Learning	4
Select one of the following:		4
STAT 425	Applied Regression and Design	
or STAT 527	Advanced Regression Analysis	
Select one of the following:		4
STAT 424	Analysis of Variance	
STAT 426	Sampling and Categorical Data	
STAT 429	Time Series Analysis	
STAT 430	Topics in Applied Statistics	

STAT 578	Topics in Statistics	
STAT 431	Applied Bayesian Analysis	
STAT 433	Stochastic Processes	
Select one of the following:		4
STAT 428	Statistical Computing	
STAT 432	Basics of Statistical Learning	
STAT 480	Data Science Foundations	
CS 412	Introduction to Data Mining	
Select one of the following:		4
STAT 427	Statistical Consulting	
STAT 593	STAT Internship	
STAT 443	Professional Statistics	
STAT 410/MATH 464	Statistics and Probability II (or equivalent proficiency [may be waived with approval])	4
Select one of the following:		4
STAT 525	Computational Statistics	
STAT 546	Machine Learning in Data Science	
STAT 571	Multivariate Analysis	
CS 512	Data Mining Principles	
Total hours		**36-40**

Other Requirements

Requirement	Description
Other requirements may overlap	
A concentration is not required.	
Minimum 500-level Hours Required Overall:	12
Minimum GPA:	2.75

EP Documentation

Attach Rollback/Approval Notices

Sponsor response EP21030and21031.pdf

DMI Documentation

Banner/Codebook Name

MS: Statistics: Analytcs-UIUC

Program Code:

10KS5165MS

Conc Code

5165

Degree Code

MS

Major Code

0329

Senate Approval Date

9/21/2020

Senate Conference Approval Date

9/30/2020

BOT Approval Date

n/a

IBHE Approval Date

n/a

Effective Date:

10/2/2020

Key: 781

Proposal to the Senate Educational Policy Committee

PROPOSAL TITLE: Revising the MS in Statistics Concentration in Analytics (10KS5165MS) in the Department of Statistics and College of Liberal Arts & Sciences

SPONSOR: Darren Glosemeyer, Senior Instructor and MS Program Director, Department of Statistics, 300-0282, glosemey@illinois.edu

COLLEGE CONTACT: Kelly Ritter, Associate Dean for Curricula and Academic Policy, 333-1350, ritterk@illinois.edu

BRIEF DESCRIPTION: The Department of Statistics in the College of Liberal Arts & Sciences has developed and is now offering numerous courses in response to expansion of the field in recent years. The program requirements have not fully been updated for these additions. This proposal would incorporate the expanded coursework options into the curriculum. With the exception of making Stat 430 Topics in Applied Statistics a purely elective course, this proposal only expands students' coursework options within the degree requirements.

JUSTIFICATION: The field of statistics and the course offerings from the department have greatly increased in recent years, and the curriculum is in need of update for these increased offerings. Additions to the curriculum are all in the form of increased choice in electives or choice in areas where there is choice of a small number of courses.

The only courses in the current degree requirements which are proposed to be removed from the listed courses are Stat 430 Topics in Applied Statistics and Stat 578 Topics in Statistics. These courses are special topic courses. The topic can and does change semester to semester. When the curriculum requirements were last updated, the topics were less varied and tended to be more foundational in nature. Now with new foundational courses with their own numbers added to the catalog and a wide variety of topics covered in different sections of Stat 430 and Stat 578, the courses generally cover valuable elective material rather than foundations of the field.

BUDGETARY AND STAFF IMPLICATIONS: There are no budgetary or staff implications for the changes. The courses are already being taught and allowed as substitutions within the current curriculum. Faculty, staff, space, and technology resources will not be impacted.

DESIRED EFFECTIVE DATE: upon implementation

STATEMENT FOR ACADEMIC CATALOG:

Statistics

http://www.stat.illinois.edu

Chair of the Department: Bo Li
Director of Ph.D. Program: Xiaofeng Shao
Director of M.S. Program: Darren Glosemeyer
M.S. Advisors: Karle Flanagan, Christopher Kinson
Contact: Aaron Thompson
101 Illini Hall
725 South Wright Street
Champaign, IL 61820
(217) 333-2167
stat-office@illinois.edu

Major: Statistics
Degrees Offered: M.S., Ph.D.
Graduate Minor: Statistics
Graduate Concentrations: Analytics (M.S. only), Applied Statistics (M.S. only)

Graduate Degree Programs

The Department of Statistics offers graduate study leading to the Master of Science in Statistics, the Master of Science in Statistics with specialization in various areas of application, and the Doctor of Philosophy in Statistics.

Admission

Graduate College admission requirements apply. Students are expected to have a strong undergraduate mathematics background, but need not have an undergraduate statistics or mathematics degree. Students may be admitted with deficiencies, which are to be removed during the first year of graduate work. A minimum Test of English as a Foreign Language (TOEFL) score of 590 for the paper-based test or 243 for the computer-based test is required for students whose native language is not English. The Graduate Record Examination (GRE) is required. The department offers Ph.D. admissions for the fall only.

Graduate Teaching Experience

Although teaching is not a general Graduate College requirement, experience in teaching is considered an important part of the graduate experience in the Ph.D. program.

Financial Aid

Financial aid is available primarily in the form of teaching assistantships, research assistantships, and fellowships. For further information write to the Graduate Admissions Committee, Department of Statistics.

Statistics, Analystics concentration MS

STAT 440	Statistical Data Management	4
STAT 448	Advanced Data Analysis	4
STAT 510	Mathematical Statistics I	4
STAT 542	Statistical Learning	4
Select one of the following:		4
STAT 425	Applied Regression and Design	
or STAT 527	Advanced Regression Analysis	
Select one of the following:		4
STAT 424	Analysis of Variance	
STAT 426	Sampling and Categorical Data	
STAT 429	Time Series Analysis	
STAT 431	Applied Bayesian Analysis	
STAT 433	Stochastic Processes	
Select one of the following:		4
STAT 428	Statistical Computing	
STAT 432	Basics of Statistical Learning	
STAT 480	Data Science Foundations	
CS 412	Introduction to Data Mining	
Select one of the following:		4
STAT 427	Statistical Consulting	
STAT 593	STAT Internship	
STAT 443	Professional Statistics	
STAT 410/ MATH 464	Statistics and Probability II (or equivalent proficiency [may be waived with approval])	4
Select one of the following:		4

STAT 525	Computational Statistics	
STAT 546	Machine Learning in Data Science	
STAT 571	Multivariate Analysis	
CS 512	Data Mining Principles	
Total hours		36-40

Other Requirements[1]

Grad Other Degree Requirements

Requirement	Description
Other requirements may overlap	
A concentration is not required.	
Minimum 500-level Hours Required Overall:	12
Minimum GPA:	2.75

Appendix A:
Comparative Table of Proposed Changes
Statistics: Analytics Concentration, MS

Current Requirements	Hours	Proposed Requirements	Hours
STAT 440 Statistical Data Management	4	STAT 440 Statistical Data Management	4
STAT 448 Advanced Data Analysis	4	STAT 448 Advanced Data Analysis	4
STAT 510 Mathematical Statistics I	4	STAT 510 Mathematical Statistics I	4
STAT 425 Applied Regression and Design	4	STAT 542 Statistical learning	4
STAT 542 Statistical learning	4		
Select one of the following:	4	Select one of the following:	4
STAT 424 Analysis of Variance		STAT 425 Applied Regression and Design or STAT 527 Advanced Regression Analysis	
STAT 426 Sampling and Categorical Data			
STAT 429 Time Series Analysis			
STAT 430 Topics in Applied Statistics			
STAT 578 Topics in Statistics			
		Select one of the following:	4
		STAT 424 Analysis of Variance	
		STAT 426 Sampling and Categorical Data	
		STAT 429 Time Series Analysis	
		STAT 431 Applied Bayesian Analysis	
		STAT 433 Stochastic Processes	
		Select one of the following:	4
STAT 428 or CS 412 Statistical Consulting	4	STAT 428 Statistical Computing	

Introduction to Data Mining			
		STAT 432 Basics of Statistical Learning	
		STAT 480 Data Science Foundations	
		CS 412 Introduction to Data Mining	
Select one of the following:	4	Select one of the following:	4
STAT 525 Computational Statistics		STAT 427 Statistical Consulting	
STAT 571 Multivariate Analysis		STAT 593 STAT Internship	
CS 512 Data Mining Principles		STAT 443 Professional Statistics	
STAT 410/MATH 464 Statistics and Probability II (or equivalent proficiency [may be waived with approval])	4	STAT 410/MATH 464 Statistics and Probability II (or equivalent proficiency [may be waived with approval])	4
		Select one of the following:	
		STAT 525 Computational Statistics	
		STAT 546 Machine Learning in Data Science	
		STAT 571 Multivariate Analysis	
		CS 512 Data Mining Principles	
Total hours	36-40	Total hours	36-40
Other Requirements		Other Requirements	
Other requirements may overlap		Grad Other Degree Requirements	
A concentration is not required		Other requirements may overlap	
Minimum 500-level Hours Required Overall:	12	A concentration is not required	

Minimum GPA:	2.75	Minimum 500-level Hours Required overall	12

STATEMENT FOR ACADEMIC CATALOG:

Statistics

http://www.stat.illinois.edu

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Graduate Teaching Experience

Although teaching is not a general Graduate College requirement, experience in teaching is considered an important part of the graduate experience in the Ph.D. program.

Financial Aid

Financial aid is available primarily in the form of teaching assistantships, research assistantships, and fellowships. For further information write to the Graduate Admissions Committee, Department of Statistics.

Thanks for reaching out, Jennie. I apologize for any lack of clarity in our submission.

For EP 21.030 (Statistics MS), you are correct.

The intent is to make Stat 430 (Topics in Applied Statistics) and Stat 578 (Topics in Statistics) electives.

Students would be required to take STAT 510;
AND either STAT 425 or Stat 527;
AND one of the following: STAT 424, 426, 429, 431, or 433.

In addition, the students would take a minimum of five electives from the departmental list. Some of the course have been added in recent years and as such are newly added options in the MS requirements. The total credits would remain a minimum of 32.

For EP21.031 (Statistics- Analytics Concentration in MS), you are correct that we meant no additional concentration within the concentration is required, and I agree that was a bit confusing. Thank you, too, for catching the "Analysitcs" typo-- happens occasionally with all of the "statistics" and "analytics" I type.

I think you're probably right on the other conjectures as well, but we may be looking at different files. Attached is the latest I have on the Analytics revision (I see the advisors should also be updated to Victoria Ellison and Hyoeun Lee now). I think in the meantime a new proposal form was created and there might also have been something lost in translation in entry in a University system. I'd also be happy to have a look at the file(s) you're seeing if there are differences and having a look could help resolve the remaining issues.

Thanks,
Darren

Darren Glosemeyer
Department of Statistics
University of Illinois at Urbana-Champaign
publish.illinois.edu/glosemey

Dear Professors Douglas and Glosemeyer,

I hope that your week is going well, and that you and your families remain healthy.

As you may recall from our prior exchanges, I'm the chair of subcommittee A of the Senate Educational Policy Committee. Two new proposals that you sponsor have come to my subcommittee for review. They are 1) EP 21.030 (revising the Statistics MS) and 2) EP 21.031 (revising the MS in Statistics, in the Concentration in Analytics). The subcommittee is very supportive; updating the programs to incorporate expanded coursework and respond to new demands is commendable and appropriate.

A couple members of my subcommittee had a few late-breaking questions, and thus I am reaching out. Our next Ed Pol meeting is November 16th. I am not sure if it will be possible to clear up these questions before then, but I'd like to try so that I can present your proposals with all pending questions answered to facilitate swift approval.

Here are the questions (and my thought follow in italics):

<u>With respect to EP 21.030 (Statistics MS):</u>

1. The department will add new classes to choose from, and make some currently-required classes optional. With reference to the Programs of Study Table, how does the choose option work?   (*This looks like a formatting issue in the proposal's text. It seems to me that the intent is to make Stat 430 (Topics in Applied Statistics) and Stat 578 (Topics in Statistics) electives. When I read Appendix A, it becomes clearer. As I read it, students would be required to take STAT 510; AND either STAT 425 or Stat 527; AND one of the following: STAT 424, 426, 429, 431, or 433. In addition, the students would take a minimum of five electives from the departmental list. Some of these are new classes for the MS. The total credits would be a minimum of 32*.)

<u>With respect to EP21.031 (Statistics- Analytics Concentration in MS):</u>

1. Some of the program of study entry seems to correlate with the overall MS rather than the concentration. The department includes the academic catalog entry as an attachment, but it appears to be the entry for the overall degree. Additionally, in the table of requirements in the main

proposal, it states that "A concentration is not required," which seems odd to list within a concentration itself rather than within the general degree description. (*The difficulty I see is confusion between the attachment showing the Program of Study and the table under the Program of Study section in the proposal's text. Again, I think that this is a formatting issue; the proposed catalogue attachment indicates which courses are new and to be added to the Analytics concentration. I see that only STAT 430 and STAT 478 are to be removed. I agree that saying "a concentration is not required" is a bit confusing; perhaps the department means that within the Analytics Concentration, no **further** concentration is required. But I would like your thoughts. Finally -- t*here is a typo in the heading "Statistics, Analytics" on page 3 on the proposed course catalogue entry.*)

I appreciate your time.

With thanks,

Jennie

Jennifer N. Pahre
Director of Undergraduate Studies
Assistant Teaching Professor
University of Illinois College of Law