

10KV0329BSLA: STATISTICS, BSLAS

In 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. Provost (kmartens@illinois.edu)
6. Senate EPC (bjlehman@illinois.edu; moorhouz@illinois.edu; kmartens@illinois.edu)
7. Senate (jtempel@illinois.edu)
8. U Senate Conf (none)
9. Board of Trustees (none)
10. IBHE (none)
11. DMI (eastuby@illinois.edu; aledward@illinois.edu; dforgacs@illinois.edu)

Approval Path

1. Thu, 04 Feb 2021 17:04:38 GMT
Deb Forgacs (dforgacs): Approved for U Program Review
2. Thu, 04 Feb 2021 17:17:09 GMT
Bo Li (libo): Approved for 1583 Head
3. Wed, 17 Feb 2021 20:41:38 GMT
Amy Elli (amyelli): Approved for KV Dean
4. Wed, 17 Feb 2021 20:47:53 GMT
John Wilkin (jpwilkin): Approved for University Librarian
5. Thu, 18 Feb 2021 00:08:17 GMT
Kathy Martensen (kmartens): Approved for Provost
6. Wed, 03 Mar 2021 18:04:56 GMT
Barbara Lehman (bjlehman): Approved for Senate EPC

History

1. Mar 30, 2019 by Deb Forgacs (dforgacs)

Date Submitted: Wed, 03 Feb 2021 22:48:55 GMT

Viewing: 10KV0329BSLA : Statistics, BSLAS

Changes proposed by: Joseph Zarnsy

Proposal Type

Proposal Type:

Major (ex. Special Education)

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*

Proposal to revise the Statistics, BSLAS in the Department of Statistics within the College of Liberal Arts & Sciences

EP Control Number

EP:21.066

Official Program Name

Statistics, BSLAS

Effective Catalog Term

Fall 2021

Sponsor College

Liberal Arts & Sciences

Sponsor Department

Statistics

Sponsor Name

David Unger, Director of Undergraduate Programs in Statistics

Sponsor Email

dunger@illinois.edu

College Contact

Kelly Ritter

College Contact Email

ritterk@illinois.edu

Program Description and Justification

Justification for proposal change:

The proposed revisions to the curriculum of the Statistics major degree in LAS are as follows.

1. STAT 426 (3 credit hours) will replace STAT 420 (3 credit hours) as a required course.
2. Advanced course electives in the "Select of the following" section will now also include STAT 385, 431, 432, 433, 434, and 447. STAT 426 will be removed from this section to align with item 1 above.
3. The newly created STAT 107 will be added to the list of approved introductory statistics course options which currently includes STAT 200 and STAT 212.
4. The newly created MATH 257 will be added to the list of approved linear algebra course options which currently includes MATH 415 and MATH 416.

As the practice and teaching of Statistics has both grown and evolved over the past few years, so has our curriculum. Existing courses have adapted to the needs of our students and their future careers. New courses have been developed, approved by campus, and taught so that our department may continue to provide our students with current methods. This is especially true where traditional statistics intersects with statistical computing and data science.

In a few of our existing courses, adaptations have led to a bit of duplication. In recent semesters, STAT 420 has begun to incorporate more advanced topics in data science and modeling. This has unintentionally resulted in a blurring of the delineation between it and STAT 425, a hallmark course for our program. To rectify this emerging duplication, we plan to introduce STAT 426 as a required course for the major. It better complements the primary objectives of STAT 425 and provides a more advanced treatment of statistical modeling to prepare students for their future electives and careers.

Many of our graduates are moving into careers where skills in advanced modeling and data science are not only encouraged, but required. It is only appropriate that the newly developed courses focusing on these skills be included in the major curriculum as options for our students. The proposed revisions to our Statistics Major in this document mainly serve to officially include STAT 426 and the new courses into the program.

1. As a set of courses in our department have evolved, this revision will update our curriculum to remove a rising duplication of skills (STAT 420 and STAT 425) and to supplant the duplicated content with a course that addresses other core competencies in advanced statistical modeling for our students (STAT 426).
2. Advanced topics that formerly resided as specialized sections in our STAT 430: Topics in Applied Statistics rubric have recently been approved with their own distinct course titles. These courses (STAT 385, 431, 432, 433, 434, and 447) that have been allowed as electives will now formally be included in the curriculum.
3. The major curriculum will be updated to include another option for first year students, a newly developed introductory statistics course which as an emphasis on data science programming (STAT 107).
4. This revision will also update the curriculum to include a new option (MATH 257) for students in the area of linear algebra devised by our colleagues in Mathematics to provide a more modern approach to the topic.

This proposed revision does not subtract any credit hours from the major plan of study, nor in the specific area of upper division courses. Thus, the program will maintain the same number of upper division credit hours. This proposed revision only serves to provide more options for students to satisfy this requirement.

Corresponding Degree

BSLAS Bachelor of Science in Liberal Arts and Sciences

Is this program interdisciplinary?

No

Academic Level

Undergraduate

Will you admit to the concentration directly?

No

Is a concentration required for graduation?

No

CIP Code

270501 - Statistics, General.

Is This a Teacher Certification Program?

No

Will specialized accreditation be sought for this program?

No

Admission Requirements

Desired Effective Admissions Term

Fall 2021

Is this revision a change to the admission status of the program?

No

Provide a brief narrative description of the admission requirements for this program. Where relevant, include information about licensure requirements, student background checks, GRE and TOEFL scores, and admission requirements for transfer students.

Not Applicable for this revision as there are no proposed changes to Admission Requirements

Describe how critical academic functions such as admissions and student advising are managed.

First-Year student (i.e., "freshman") admissions are primarily determined by the College of LAS and OUA with some input from our department. Most of our new students are internal transfers – students already enrolled at Illinois who transfer to Statistics or add it as a complementary major to their current program. A series of introductory courses to our program must be successfully completed before a student may add the Statistics major as a degree program. Readiness for entering the program, continued progress in the major, and preparation for post-baccalaureate opportunities (such as graduate school or employment) are monitored by a team of full-time academic and career advisors, faculty, and program directors within the Department of Statistics.

Enrollment

Describe how this revision will impact enrollment and degrees awarded.

The proposed revision is expected to have a positive impact on enrollment and degrees awarded. Our undergraduate program has grown rapidly in the past five years. Due to hiring limitations, we were unable to provide a supply of courses to meet the demand from outside our program. With many new faculty hires and innovative creation of new courses of late, not only are we able to meet the demand, but we can offer a variety of dynamic new courses. With the revision, our current majors will have more options for degree completion, and a greater number of non-majors will be able to take our courses and perhaps be enticed to join the program full time.

Estimated Annual Number of Degrees Awarded

What is the matriculation term for this program?

Fall

What is the typical time to completion of this program?

4 years

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

120

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.

No changes in the number of faculty are needed.

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.

Current collections and services are adequate for the proposed program as existing courses from STAT and MATH are being used in the curricula.

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?

Yes

Explain how the inclusion or removal of the courses/subjects listed above impacts the offering departments.

Though STAT 420 will be removed from the program's curriculum, we anticipate its enrollment to remain stable. It will remain a required course for the BS in Actuarial Science and the Masters in Computer Science with Data Science specialization. Further, the reduction in enrollment of Statistics majors will make space for non-majors who clamor to get in each semester but have been turned away due to capacity constraints.

The program will continue to include the Calculus sequence of MATH 221, 231, and 241 as it always has. The revisions include the addition of MATH 257, which the Department of Mathematics has created to introduce a more programmatic approach to linear algebra for many non-Mathematics majors (including Statistics).

Attach letters of support from other departments.

Stats_letter of suport_Math_257_Fa21.pdf

Financial Resources

How does the unit intend to financially support this proposal?

This is a revision of an existing degree program, and for the most part involves only a shift in enrollments of courses taken within the Department already.

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

No

Are you seeking a change in the tuition rate or differential for this program?

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).

The Department of Statistics will continue to monitor Student Learning Outcomes for this program as outlined in our Assessment Plan filed with the Provost's Office. In fact, this proposal is an outcome of that effort. Through student performance, student and industry survey, and evaluation of emerging trends in our field, the proposed revisions address opportunities to improve student learning with our BS Statistics & Computer Science program.

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

Stat Major Side-by-Side.pdf

STAT Major Revision Fa21 Revised Jan2021.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: Description of program for the catalog page. This is not official content, it is used to help build the catalog pages for the program. Can be edited in the catalog by the college or department.

For the degree of Bachelor of Science in Liberal Arts & Sciences Major in Statistics

Departmental distinction: To graduate with distinction requires a specified minimum grade point average in all Computer Science, Statistics, and Mathematics courses listed below. A GPA of 3.25 is required for Distinction, 3.5 for High Distinction, and 3.75 for Highest Distinction.

General education: Students must complete the Campus General Education requirements including the campus general education language requirement.

Minimum required major and supporting course work: Normally equates to 70-72 hours.

Twelve hours of 300- and 400-level in the major must be taken on this campus.

Minimum hours required for graduation: 120 hours.

Statement for Programs of Study Catalog

Code	Title	Hours
Introductory and Preparatory Coursework (17-19 hours)		
Calculus through MATH 241-	Calculus III	11-12
Select one from:		
Select one from the following:		3-4
STAT 107	Data Science Discovery	
STAT 200	Statistical Analysis	
STAT 212	Biostatistics	
Select one from the following:		3
MATH 257	Linear Algebra with Computational Applications	
MATH 415	Applied Linear Algebra	
MATH 416	Abstract Linear Algebra	
Statistical Core Coursework (13 hours)		
STAT 400	Statistics and Probability I	4
STAT 410	Statistics and Probability II	3
STAT 420	Methods of Applied Statistics	3
STAT 425	Statistical Modeling I	3
STAT 426	Statistical Modeling II	3
Advanced Statistics Electives (12 hours)		
Select four of the following:		12
STAT 385	Statistics Programming Methods	
STAT 424	Analysis of Variance	
STAT 427	Statistical Consulting	
STAT 428	Statistical Computing	
STAT 429	Time Series Analysis	
STAT 430	Topics in Applied Statistics	
STAT 431	Applied Bayesian Analysis	
STAT 432	Basics of Statistical Learning	
STAT 433	Stochastic Processes	
STAT 434	Survival Analysis	
STAT 440	Statistical Data Management	
STAT 443	Professional Statistics	
STAT 447	Data Science Programming Methods	

STAT 448	Advanced Data Analysis
STAT 480	Data Science Foundations
MATH 444 or MATH 447	Elementary Real Analysis Real Variables

Total Hours

42-44

EP Documentation

DMI Documentation

Banner/Codebook Name

BSLAS:Statistics -UIUC

Program Code:

10KV0329BSLA

Degree Code

BSLAS

Major Code

0329

Key: 279



Proposal for revised curricula (degree, major, concentration, minor)

Proposal Title: Proposal to revise the BSLAS in Statistics

Proposed effective date: Fall 2021

Sponsor(s): David Unger, Director of Undergraduate Programs in Statistics, dunger@illinois.edu

College contact: Kelly Ritter, Associate Dean for Curricula and Academic Policy, College of Liberal Arts and Sciences, ritterk@illinois.edu

PROGRAM DESCRIPTION and JUSTIFICATION

1) **Provide a brief description but concise description of your proposal.** For example, if proposing revisions to a curriculum, state specifically what is changing. Where applicable, note whether stated program changes include additional requirements in the form of prerequisite courses. Requests for curriculum revisions must be accompanied by a table which clearly outlines the current requirements and the proposed revisions. This information may be submitted as an appendix. See Appendix A for an example. Please provide pertinent information only.

The proposed revisions to the curriculum of the Statistics major degree in LAS are as follows.

1. STAT 426 (3 credit hours) will replace STAT 420 (3 credit hours) as a required course.
2. Advanced course electives in the "Select of the following" section will now also include STAT 385, 431, 432, 433, 434, and 447. STAT 426 will be removed from this section to align with item 1 above.
3. The newly created STAT 107 will be added to the list of approved introductory statistics course options which currently includes STAT 200 and STAT 212.
4. The newly created MATH 257 will be added to the list of approved linear algebra course options which currently includes MATH 415 and MATH 416.

2) **Provide a justification of the program**, including how your unit decided to create this program, highlights of the program objectives, and the careers, occupations, or further educational opportunities for which the program will prepare graduates, when appropriate.

As the practice and teaching of Statistics has both grown and evolved over the past few years, so has our curriculum. Existing courses have adapted to the needs of our students and their future careers. New courses have been developed, approved by campus, and taught so that our department may continue to provide our students with current methods. This is especially true where traditional statistics intersects with statistical computing and data science.

In a few of our existing courses, adaptations have led to a bit of duplication. In recent semesters, STAT 420 has begun to incorporate more advanced topics in data science and modeling. This has unintentionally resulted in a blurring of the delineation between it and STAT 425, a hallmark course for our program. To rectify this emerging duplication, we plan to introduce STAT 426 as a required course for the major. It better complements the primary objectives of STAT 425 and provides a more advanced treatment of statistical modeling to prepare students for their future electives and careers.

Many of our graduates are moving into careers where skills in advanced modeling and data science are not only encouraged, but required. It is only appropriate that the newly developed courses focusing on these skills be included in the major curriculum as options for our students. The proposed revisions to our Statistics Major in this document mainly serve to officially include STAT 426 and the new courses into the program.

1. As a set of courses in our department have evolved, this revision will update our curriculum to remove a rising duplication of skills (STAT 420 and STAT 425) and to supplant the duplicated content with a course that addresses other core competencies in advanced statistical modeling for our students (STAT 426).
2. Advanced topics that formerly resided as specialized sections in our STAT 430: Topics in Applied Statistics rubric have recently been approved with their own distinct course titles. These courses (STAT 385, 431, 432, 433, 434, and 447) that have been allowed as electives will now formally be included in the curriculum.
3. The major curriculum will be updated to include another option for first year students, a newly developed introductory statistics course which as an emphasis on data science programming (STAT 107).
4. This revision will also update the curriculum to include a new option (MATH 257) for students in the area of linear algebra devised by our colleagues in Mathematics to provide a more modern approach to the topic.

3) In addition, please provide an answer as to how your degree (120 hours of coursework) will satisfy this requirement: IBHE requires that all degree programs contain at least 40 credit hours in upper division courses. Upper division courses have been described as 300- and 400- level coursework and some 200-level courses in which multiple prerequisites are required.

This proposed revision does not subtract any credit hours from the major plan of study, nor in the specific area of upper division courses. Thus, the program will maintain the same number of upper division credit hours. This proposed revision only serves to provide more options for students to satisfy this requirement.

ADMISSION REQUIREMENTS

1) Desired admissions term: *For LAS units, a fall semester effective term for all curricula will be requested, please indicate the proposed year*

Fall, 2021

2) Provide a brief narrative description of the admission requirements for this program. Where relevant, include information about licensure requirements, student background checks, GRE and TOEFL scores, and admission requirements for transfer students. (degrees, majors, concentrations ONLY)

Not Applicable for this revision as there are no proposed changes to Admission Requirements

3) Describe how critical academic functions such as admissions and student advising are managed.

First-Year student (i.e., “freshman”) admissions are primarily determined by the College of LAS and OUA with some input from our department. Most of our new students are internal transfers – students already enrolled at Illinois who transfer to Statistics or add it as a complementary major to their current program. A series of introductory courses to our program must be successfully completed before a student may add the Statistics major as a degree program. Readiness for entering the program, continued progress in the major, and preparation for post-baccalaureate opportunities (such as graduate school or employment) are monitored by a team of full-time academic and career advisors, faculty, and program directors within the Department of Statistics.

ENROLLMENT

1) Describe how this revision will impact enrollment and degrees awarded.

The proposed revision is expected to have a positive impact on enrollment and degrees awarded. Our undergraduate program has grown rapidly in the past five years. Due to hiring limitations, we were unable to provide a supply of courses to meet the demand from outside our program. With many new faculty hires and innovative creation of new courses of late, not only are we able to meet the demand, but we can offer a variety of dynamic new courses. With the revision, our current majors will have more options for degree completion, and a greater number of non-majors will be able to take our courses and perhaps be enticed to join the program full time.

2) Estimated Annual Number of Degrees Awarded(degrees, majors, concentrations ONLY)

Year 1: 280 – The actual number might be somewhat larger due to students who planned to graduate in AY21, but will defer/be delayed until AY22 due to COVID-19.

Year 5 (or when fully implemented): After fully implemented, a gain of 10-20% seems attainable as long as we maintain a solid roster of faculty.

3) What is the matriculation term for this program? Fall OR Spring/summer/other

4) Delivery Method, what is the program’s primary delivery method?

Face to Face; Online & Face to Face; Online Only; Other- specify

If NOT face to face, please describe the use of this delivery method: NA

5) MINORS ONLY:

Will the department limit enrollment in the minor?

Describe how the department will monitor admission to/enrollment in the minor.

Are there any prerequisites for the proposed minor?

Other than certification via the students' degree audits, is there any additional planned mechanism to award/honor successful completion of the minor? If yes, please describe.

BUDGET

1) Please describe any budgetary implications for this revision- addressing applicable personnel, facilities, technology and supply costs.

This is a revision of an existing degree program, and for the most part involves only a shift in enrollments of courses currently offered within the Department.

2) Will the revision require staffing (faculty, advisors, etc.) beyond what is currently available? If yes, please describe.

No. Thanks to a recent wave of successful hires for faculty, advising staff, and support staff, the Department currently has the necessary staffing.

3) Please provide any additional budget information needed to effectively evaluate the proposal.

Not Applicable

RESOURCE IMPLICATIONS

1) Facilities- Will the program require new or additional facilities or significant improvements to already existing facilities? If yes, please outline the specific need and Year 1 and Year 5 cost.

No.

2) Technology- Will the program need additional technology beyond what is currently available for the unit? If yes, please outline the specific need and Year 1 and Year 5 cost.

There is no expected impact beyond the demand that already arises from current Statistics students.

3) Non-Technical Resources- Will the program require additional supplies, services or equipment (non-technical)? If yes, please outline the specific need and Year 1 and Year 5 cost.

No.

RESOURCES

1) 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.

No changes in the number of faculty are needed.

2) 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.

Current collections and services are adequate for the proposed program as existing courses from STAT and MATH are being used in the curricula.

3) 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? If yes, please describe.

Though STAT 420 will be removed from the program's curriculum, we anticipate its enrollment to remain stable. It will remain a required course for the BS in Actuarial Science and the Masters in Computer Science with Data Science specialization. Further, the reduction in enrollment of Statistics majors will make space for non-majors who clamor to get in each semester but have been turned away due to capacity constraints.

4) Does this new program/proposed change result in the replacement of another program? If yes, please specify the program.

No.

5) Does the program include any required or recommended subjects that are offered by other departments? If yes, please list the courses. Explain how these additional courses will be used by the program and provide letters of support from the departments.

Yes, the program will continue to include the Calculus sequence of MATH 221, 231, and 241 as it always has. The revisions include the addition of MATH 257, which the Department of Mathematics has created to introduce a more programmatic approach to linear algebra for many non-Mathematics majors (including Statistics).

FINANCIAL RESOURCES

1) How does the unit intend to financially support this proposal?

This is a revision of an existing degree program, and for the most part involves only a shift in enrollments of courses taken within the Department already.

2) Will the unit need to seek campus or other external resources? If yes, please provide a summary of the sources and an indication of the approved support.

No.

3) Will an existing tuition rate be used or continue to be used for this program? (degrees, majors, concentrations ONLY)

There are no proposed changes to the existing tuition rate.

PROGRAM REGULATION

1) Describe how the program is aligned with or meets licensure, certification, and/or entitlement requirements, if applicable.

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.

The Department of Statistics will continue to monitor Student Learning Outcomes for this program as outlined in our Assessment Plan filed with the Provost's Office. In fact, this proposal is an outcome of that effort. Through student performance, student and industry survey, and evaluation of emerging trends in our field, the proposed revisions address opportunities to improve student learning with our BS Statistics & Computer Science program.

2) Is the career/profession for graduates of this program regulated by the State of Illinois? If yes, please describe.

No.

ACADEMIC CATALOG ENTRY

1) All proposals must submit the major requirements (courses, hours) for the proposed curricula. Please see the University of Illinois Academic Catalog- <http://catalog.illinois.edu/> for your unit for an example of the entry.

The entry may remain unchanged. It currently reads as follows.

Statistics is the science of modeling, summarizing, and analyzing data, and of using mathematics and computing tools to make predictions and decisions in the face of uncertainty. Statistical ideas are applicable in any area involving quantitative measurement and in almost every area of scholarly pursuit. The major, administered by the Department of Statistics, is designed to provide students with an understanding of the concepts of statistical inference and a familiarity with the methods of applied statistical analysis. A major in statistics will prepare students for a career in business, industry, or government, and for further graduate study in statistics or in a related area.

For the degree of Bachelor of Science in Liberal Arts & Sciences Major in Statistics

Departmental distinction: To graduate with distinction requires a specified minimum grade point average in all Computer Science, Statistics, and Mathematics courses listed below. A GPA of 3.25 is required for Distinction, 3.5 for High Distinction, and 3.75 for Highest Distinction.

General education: Students must complete the Campus General Education requirements including the campus general education language requirement.

Minimum required major and supporting course work: Normally equates to 70-72 hours. Twelve hours of 300- and 400-level in the major must be taken on this campus.

Minimum hours required for graduation: 120 hours.

Introductory and Preparatory Coursework- 17-19 hours

Calculus through [MATH 241](#) - Calculus III 11-12

Select one from: 3-4

[STAT 107](#) **Data Science Discovery**

[STAT 200](#) Statistical Analysis

[STAT 212](#) Biostatistics

Select one from: 3

[MATH 257](#) **Linear Algebra with Computational Applications**

[MATH 415](#) Applied Linear Algebra

[MATH 416](#) Abstract Linear Algebra

Statistical Core Coursework- 13 hours

[STAT 400](#) Statistics and Probability I 4

[STAT 410](#) Statistics and Probability II 3

[STAT 425](#) Applied Regression and Design 3

[STAT 426](#) **Sampling and Categorical Data** 3

Advanced Statistics Electives, Select four of the following: 12

[STAT 385](#) **Statistics Programming Methods**

[STAT 424](#) Analysis of Variance

[STAT 427](#) Statistical Consulting

[STAT 428](#) Statistical Computing

[STAT 429](#) Time Series Analysis

[STAT 430](#) Topics in Applied Statistics

[STAT 431](#) **Applied Bayesian Analysis**

[STAT 432](#) **Basics of Statistical Learning**

[STAT 433](#) **Stochastic Processes**

STAT 434	Survival Analysis
STAT 440	Statistical Data Management
STAT 443	Professional Statistics
STAT 447	Data Science Programming Methods
STAT 448	Advanced Data Analysis
STAT 480	Data Science Foundations
MATH 444	Elementary Real Analysis
or MATH 447	Real Variables

2) Include a comparative table of the current and proposed requirements.

Current curricula and proposed revisions are listed below. Those additions to the program are highlighted in yellow. The update of one course (STAT 426) from optional elective to required core is highlight in green. The deletion from the program is highlighted in blue.

Comparative Table of Proposed Changes

Current Requirements	Current Hours	Proposed Requirements	Proposed Hours
Introductory and Preparatory Coursework	17-18		17-19
Calculus through MATH 241: Calculus III	11-12	[SAME]	11-12
STAT 200: Statistical Analysis, or STAT 212: Biostatistics	3	STAT 107: Data Science Discovery, or STAT 200: Statistical Analysis, or STAT 212: Biostatistics	3-4
MATH 415: Applied Linear Algebra, or MATH 416: Abstract Linear Algebra	3	MATH 257: Linear Algebra with Computational Applications, or MATH 415: Applied Linear Algebra, or MATH 416: Abstract Linear Algebra	3
Statistical Core Coursework	13		13
STAT 400: Statistics & Probability I	4	[SAME]	4
STAT 410: Statistics & Probability II	3	[SAME]	3
STAT 420: Methods of Applied Statistics	3	---	---
STAT 425: Applied Regression and Design	3	[SAME]	3
---		STAT 426: Sampling and Categorical Data	3
Advanced Statistics Electives	12		12
Select four of the following:			
---		STAT 385: Statistics Programming Methods	
STAT 424: Analysis of Variance		[SAME]	
STAT 426: Sampling and Categorical Data		---	

STAT 427: Statistical Consulting		[SAME]	
STAT 428: Statistical Computing		[SAME]	
STAT 429: Time Series Analysis		[SAME]	
STAT 430: Topics in Applied Statistics		[SAME]	
---		STAT 431: Applied Bayesian Analysis	
---		STAT 432: Basics of Statistical Learning	
---		STAT 433: Stochastic Processes	
---		STAT 434: Survival Analysis	
STAT 440: Statistical Data Management		[SAME]	
STAT 443: Professional Statistics		[SAME]	
MATH 444: Elementary Real Analysis, or MATH 447: Real Variables		[SAME]	
---		STAT 447: Data Science Programming Methods	
STAT 448: Advanced Data Analysis		[SAME]	
STAT 480: Data Science Foundations		[SAME]	
TOTAL	42-43		42-44

2) Include a comparative table of the current and proposed requirements.

Current curricula and proposed revisions are listed below. Those additions to the program are highlighted in yellow. The update of one course (STAT 426) from optional elective to required core is highlight in green. The deletion from the program is highlighted in blue.

Comparative Table of Proposed Changes

Current Requirements	Current Hours	Proposed Requirements	Proposed Hours
Introductory and Preparatory Coursework	17-18		17-19
Calculus through MATH 241: Calculus III	11-12	[SAME]	11-12
STAT 200: Statistical Analysis, or STAT 212: Biostatistics	3	STAT 107: Data Science Discovery, or STAT 200: Statistical Analysis, or STAT 212: Biostatistics	3-4
MATH 415: Applied Linear Algebra, or MATH 416: Abstract Linear Algebra	3	MATH 257: Linear Algebra with Computational Applications, or MATH 415: Applied Linear Algebra, or MATH 416: Abstract Linear Algebra	3
Statistical Core Coursework	13		13
STAT 400: Statistics & Probability I	4	[SAME]	4
STAT 410: Statistics & Probability II	3	[SAME]	3
STAT 420: Methods of Applied Statistics	3	---	---
STAT 425: Applied Regression and Design	3	[SAME]	3
---		STAT 426: Sampling and Categorical Data	3
Advanced Statistics Electives Select four of the following:	12		12
---		STAT 385: Statistics Programming Methods	
STAT 424: Analysis of Variance		[SAME]	
STAT 426: Sampling and Categorical Data		---	
STAT 427: Statistical Consulting		[SAME]	
STAT 428: Statistical Computing		[SAME]	
STAT 429: Time Series Analysis		[SAME]	
STAT 430: Topics in Applied Statistics		[SAME]	
---		STAT 431: Applied Bayesian Analysis	
---		STAT 432: Basics of Statistical Learning	
---		STAT 433: Stochastic Processes	
---		STAT 434: Survival Analysis	
STAT 440: Statistical Data Management		[SAME]	
STAT 443: Professional Statistics		[SAME]	
MATH 444: Elementary Real Analysis, or		[SAME]	

MATH 447: Real Variables			
---		STAT 447: Data Science Programming Methods	
STAT 448: Advanced Data Analysis		[SAME]	
STAT 480: Data Science Foundations		[SAME]	
TOTAL	42-43		42-44

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Department of Mathematics

273 Altgeld Hall, MC-382
1409 West Green Street
Urbana, IL 61801



Re: Use of Math 257 in Statistics

The Mathematics Department, working with the Grainger College of Engineering, has recently created the course MATH 257, *Linear Algebra with Computational Applications*. Quoting from the justification of the approved proposal, “In the future, MATH 257 will replace the MATH 415 requirement in many science and engineering curricula.” With this in mind, the department would be pleased to have Statistics add MATH 257 as an option to MATH 415 in their program, specifically in their Statistics BS, Statistics & Computer Science BS as well as in their Statistics minor. As the Mathematics department is reallocating instructional resources from Math 415 to Math 257 as the need shifts, this will not cause any undue difficulties for Mathematics resources.

Sincerely

A handwritten signature in black ink that reads 'Randy McCarthy' in a cursive script.

Randy McCarthy
Professor of Mathematics
Dir of Undergraduate Studies in Math
rmccrthy@illinois.edu

telephone 217-333-3350 • fax 217-333-9576
email office@math.uiuc.edu • url <http://www.math.uiuc.edu/>