THE OHIO STATE UNIVERSITY

College of Arts and Sciences

Department of Statistics

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August 30, 2022

Bernadette Vankeerbergen, Ph.D.
Assistant Dean for Curriculum

Dear Dr. Vankeerbergen,

The Department of Statistics is requesting that a small update be made to the undergraduate minor in statistics. The update will add three additional courses as elective options in the minor.

Proposed update: In the requirements for the undergraduate minor in statistics (https://artsandsciences.osu.edu/sites/default/files/minor-statistics.pdf) replace

> *(2) Take and pass with a grade of C- or above one of the following two courses.*
>
> *Stat 3302 (3) Statistical Modeling for Discovery II*
> *Stat 3410 (3) Principles of Data Collection and Analysis*

with

> *(2) Take and pass with a grade of C- or above one of the following courses.*
>
> *Stat 3302 (3) Statistical Modeling for Discovery II*
> *Stat 3303 (3) Bayesian Analysis and Statistical Decision Making*
> *Stat 3410 (3) Principles of Data Collection and Analysis*
> *Stat 5510 (3) Statistical Foundations of Survey Research*
> *Stat 5550 (3) Introductory Time Series Analysis*

Rationale: Currently students can satisfy requirement (2) of the minor by choosing between two courses that focus on methods of data analysis and related statistical principles. The department offers other courses at a similar level (requiring similar pre-requisites) that achieve similar objectives. Allowing students to choose from a larger set of courses will give students a greater opportunity to take a course that better aligns with their interests and will provide students with additional scheduling flexibility.

External/Internal Impact: We do not expect the proposed update to have any impact on other units as the additional course options are all statistics courses and introduce no new pre-requisite requirements. We also do not expect the proposed update to hinder our ability to offer the existing options (3302 and 3410) on a regular schedule; both courses are required for our various majors and so there will continue to be enough demand to fill multiple sections of these courses each year.

This proposed update to the minor was approved by the faculty of the Department of Statistics on August 30, 2022.

Attached please find the current official requirements for the minor, the current advising sheet for the minor, and a revised advising sheet that reflects the proposed update. Please let us know if any other information about this proposed update would be helpful.

Sincerely,

Christopher M. Hans, Ph.D.
Associate Professor of Statistics

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To discuss or declare the minor please contact Antonio
Hernandez 614-292-6961 hernandez.413@osu.edu

A demonstrated knowledge and working understanding of
basic statistical techniques and methods is critical for
students in many disciplines including business,
engineering, life sciences and social sciences. The
undergraduate minor in Statistics is designed as a valuable
asset to enhance most undergraduate majors and career
opportunities for their students.

To achieve the Statistics minor, the student must successfully
complete the requirements listed in (1) - (3) below. The total
number of semester credit hours required for the statistics
minor is at least 13.

*Some courses in this minor have pre-requisites. Please
consult the course bulletin before enrolling in courses.*

(1) Take and pass with a grade of C- or above each of the
following required courses:

Stat 3201 (3) Introduction to Probability for Data Analytics
Stat 3202 (4) Introduction to Statistical Inference for Data
Analytics
Stat 3301 (3) Statistical Modeling for Discovery I

Note: Stat 3201-3202 can be replaced with Stat 4201-4202.
Stat 4201 (4) Introduction to Mathematical Statistics I
Stat 4202 (4) Introduction to Mathematical Statistics II
Students replacing Stat 3201-3202 with Stat 4201-4202 must
also take Stat 5730 as a pre-requisite to Stat 3301.

(2) Take and pass with a grade of C- or above one of the
following two courses.

Stat 3302 (3) Statistical Modeling for Discovery II
Stat 3410 (3) Principles of Data Collection and Analysis

(3) Maintain a minimum cumulative grade point average of
2.00 in the statistics minor.

(4) Students with credit for Math 4530 or Math 5530H who
elect to take 4201-4202 instead of 3201-3202 need not take
Stat 4201 before they take 4202. However, for Math majors,
Math 4530 or Math 5530H cannot be counted for credit in the
Statistics minor. Students with Math 4530 or Math 5530H but
not 4201 will have to take 3 semester hours of electives (see
next note for a list of possible electives).

(5) In addition to the required courses, it is recommended
that the student take one or more electives from such
specialized courses as Bayesian Analysis and Statistical
Decision Making (3303), Introduction to Statistical Learning
(4620), Advanced Statistical Inference (4301),

Computational Statistics (4302), Statistical Foundations of
Survey Research (5510), Introductory Time Series Analysis
(5550), Introduction to R for Data Science (5730), or
Introduction to SAS Software (5740). Other electives may be
selected with the approval of the Undergraduate Minor
Coordinator.

Statistics minor program guidelines

Credit hours required A minimum of 13 credit hours.
1000 level courses shall not be counted in the minor.

Transfer and EM credit hours allowed
A student is permitted to count up to 6 total hours of transfer
credit and/or credit by examination.

Overlap with the GE A student is permitted to overlap up to 6
credit hours between the GE and the minor.

Overlap with the major and additional minor(s)
• The minor must be in a different subject than the major.
• The minor must contain a minimum of 12 hours distinct
from the major and/or additional minor(s).

Grades required
• Minimum C- for a course to be listed on the minor.
• Minimum 2.00 cumulative GPA for all minor course work.
Course work graded Pass/Non-Pass cannot count on the
minor.
• No more than 3 credit hours of coursework graded
Satisfactory/Unsatisfactory may count toward the minor.

X193 credits No more than 3 credit hours.

Approval required The minor program must be approved by
the academic unit offering the minor

Filing the minor program form The minor program form must
be filed at least by the time the graduation application is
submitted to a college/school advisor.

Changing the minor Once the minor program is filed in the
college office, any changes must be approved by the academic
unit offering the minor.

The Ohio State University
Department of Statistics
Introduction to the New Undergraduate Minor in Statistics Curriculum

A demonstrated knowledge and working understanding of basic statistical techniques and methods is critical for students in many disciplines, including business, engineering, life sciences and social sciences. The undergraduate minor in statistics is designed as a valuable asset to enhance most undergraduate majors and career opportunities for their students.

As of autumn 2018, we have implemented a large revision to the undergraduate minor curriculum. There were several reasons for this change, including taking advantage of new courses that integrate modern statistical computation and aligning the courses with the new undergraduate major in statistics and undergraduate major in data analytics. This document gives a snapshot of many key features of the minor. Students should refer to the official minor sheet for detailed requirements. *Students who began pursuing the minor degree in or before autumn 2018 or who are required to take STAT 4201/2 for their major may be able to earn the degree under the curriculum in effect in August 2018; contact the statistics major advisor for more information by calling (614) 292-6961.*

Required Courses, Credits and Prerequisites

Course	Credits	Prerequisite snapshot (see the course catalog for details)
STAT 3201*	3	Calculus II
STAT 3202*	4	STAT 3201
STAT 3301	3	STAT 3202* and concurrent MATH 2568‡
STAT 3302 or STAT 3410	3	STAT 3301 and MATH 2568 STAT 3202

* The STAT 3201/2 sequence may be replaced with the STAT 4201/2 + STAT 5730 sequence to fulfill the required courses.

‡ MATH 2568 concurrence for STAT 3301 may be waived for students who complete supplemental educational activities prior to the start of STAT 3301. (The MATH 2568 linear algebra prerequisite is strictly enforced for STAT 3302.)

Sample Programs (Courses with math *pre*requisites beyond Calculus II are highlighted)

	Autumn	Spring			Autumn	Spring
Sample Program A				Sample Program B		
Year 1	3201	3202		Year 1	4201	4202, 5730
Year 2	3301	3302		Year 2	3301	3302
Sample Program C				Sample Program D		
Year 1	3201	3202		Year 1	4201	4202, 5730
Year 2	3301			Year 2	3301	
Year 3	3410			Year 3	3410	
Sample Program E				Sample Program F		
Year 1	3201	3202		Year 1	4201	4202, 5730
Year 2	3301, 3410			Year 2	3301, 3410	

Information for Major/Minor Course Overlap

The proposed minor curriculum requires 13 credit hours, 12 of which must be unique to the minor in statistics. That is, students typically cannot count courses that fulfill requirements for their major or another minor toward the minor in statistics. Typical examples are listed below.

- Mathematics and actuarial science majors have some other route for demonstrating that they have achieved the learning objectives for STAT 4201 (e.g., MATH 4530 or Actuarial Science P-exam). The Undergraduate Coordinator **may** waive STAT 4201 as a required core course in these situations. However, students in this situation must supplement their statistics minor program with approved electives to achieve at least 12 unique credits in total.
- Mathematics and actuarial science majors may be required to take STAT 4202 as a required course for their major. Students in this situation must supplement their statistics minor program with approved electives to achieve at least 12 unique credits in total.

Possible Supplemental Electives

Course	Credits	Typical Offering	Prerequisites
STAT 3302 Statistical Modeling for Discovery II (If not used to fulfill core requirements)	3	Spring	STAT 3301 and MATH 2568
STAT 3303 Bayesian Analysis and Statistical Decision Making	3	Spring	STAT 3301, or permission of instructor (email inquiry)
STAT 3410 Principles of Data Collection and Analysis (If not used to fulfill core requirements)	3	Autumn	STAT 3201/2, or STAT 4201/2 and 5730
STAT 4620 Introduction to Statistical Learning	2	Autumn	STAT 3302
STAT 5550 Introductory Time Series Analysis	3	Spring	STAT 3301, or STAT 4202 and 5302
STAT 5730 Introduction to R for Data Science	2	Spring	GE Data Analysis course
STAT 5740 Introduction to SAS Software	2	Autumn	STAT 5302, or permission of instructor (email inquiry)
Pre-approved sections of STAT 4194	1-2	Autumn/Spring	

The Ohio State University
Department of Statistics
Advising Information for the Undergraduate Minor in Statistics

A demonstrated knowledge and working understanding of basic statistical techniques and methods is critical for students in many disciplines, including business, engineering, life sciences and social sciences. The undergraduate minor in statistics is designed as a valuable asset to enhance most undergraduate majors and career opportunities for their students.

The full requirements for the minor in statistics are available from the College of Arts and Sciences. This document summarizes the requirements and provides additional advising information to help students plan their studies.

To discuss or declare the minor please contact the statistics advisor, Antonio Hernandez (614-292-6961; hernandez.413@osu.edu). We strongly encourage all students interested in the minor to meet with the advisor as early as possible to plan their course of study.

Core Course Requirements

Take and pass with a grade of C- or above **all** of the following required courses:

Course	Credits	Prerequisite snapshot (see the course catalog for details)
STAT 3201*	3	Calculus II
STAT 3202*	4	STAT 3201
STAT 3301	3	STAT 3202; or STAT 4202 and STAT 5730 Prerequisite or concurrent: MATH 2568‡

* The STAT 3201/2 sequence may be replaced with the STAT 4201/2 sequence (though see "Information for Major/Minor Course Overlap" on the next page). Students taking this path must also take STAT 5730 as a prerequisite to STAT 3301.

‡ MATH 2568 concurrence for STAT 3301 may be waived for students who complete supplemental educational activities prior to the start of STAT 3301. Please contact the statistics advisor for details. The MATH 2568 linear algebra prerequisite is strictly enforced for STAT 3302.

Elective Course Requirement

Take and pass with a grade of C- or above **one** of the following courses:

Course	Credits	Prerequisite snapshot (see the course catalog for details)
STAT 3302	3	STAT 3301 and MATH 2568 (strictly enforced)
STAT 3303	3	STAT 3301; or STAT 4202 and STAT 5730
STAT 3410	3	STAT 3202; or STAT 4202 and STAT 5730
STAT 5510	3	GE Data Analysis course
STAT 5550	3	STAT 3301; or STAT 4202 and STAT 5302

We recommend that students discuss their elective course plan with the statistics advisor as early as possible, as not all elective course options are offered every year.

Sample Programs (Courses with math *pre*requisites beyond Calculus II are ==highlighted==)

	Autumn	Spring			Autumn	Spring
Sample Program A				**Sample Program B**		
Year 1	3201	3202		Year 1	==4201==	==4202==, 5730
Year 2	3301	==3302==, or 3303, or 5550		Year 2	3301	==3302==, or 3303, or 5550
Sample Program C				**Sample Program D**		
Year 1	3201	3202		Year 1	==4201==	==4202==, 5730
Year 2	3301			Year 2	3301	
Year 3	3410			Year 3	3410	
Sample Program E				**Sample Program F**		
Year 1	3201	3202		Year 1	==4201==	==4202==, 5730
Year 2	3301, 3410			Year 2	3301, 3410	

Information for Major/Minor Course Overlap

The minor curriculum requires 13 credit hours, 12 of which must be unique to the minor in statistics. That is, students typically cannot count courses that fulfill requirements for their major or another minor toward the minor in statistics. Typical examples are listed below.

- Mathematics and actuarial science majors have some other route for demonstrating that they have achieved the learning objectives for STAT 4201 (e.g., MATH 4530 or Actuarial Science P-exam). The Undergraduate Coordinator **may** waive STAT 4201 as a required core course in these situations. However, students in this situation must supplement their statistics minor program with approved electives to achieve at least 12 unique credits in total.
- Mathematics and actuarial science majors may be required to take STAT 4202 as a required course for their major. Students in this situation must supplement their statistics minor program with approved electives to achieve at least 12 unique credits in total.

Possible Supplemental Electives

Course	Credits	Typical Offering	Prerequisites
STAT 3302 Statistical Modeling for Discovery II**	3	Spring	STAT 3301 and MATH 2568
STAT 3303 Bayesian Analysis and Statistical Decision Making**	3	Spring	STAT 3301
STAT 3410 Principles of Data Collection and Analysis**	3	Autumn	STAT 3202; or STAT 4202 and 5730
STAT 4620 Introduction to Statistical Learning	2	Autumn	STAT 3302
STAT 5510 Statistical Foundations of Survey Research**	3		GE Data Analysis course
STAT 5550 Introductory Time Series Analysis**	3	Spring	STAT 3301; or STAT 4202 and 5302
STAT 5730 Introduction to R for Data Science	2	Spring	GE Data Analysis course
STAT 5740 Introduction to SAS Software	2	Autumn	STAT 3202 or 4202 or 5301
Pre-approved sections of STAT 4194	1-2		

**If not already used to fulfill the minor requirements.