2022-2023

Statistical Theory Minor

To Help Students to Acquire Sufficient Knowledge in Theoretical Statistics

Goal Description:

The main goal of the undergraduate minor in Statistics Theory is to facilitate students with adequate theoretical knowledge of the subject area in addition to the quantitative skills typically required for statistical data analysis. Students are also expected to gain the theoretical foundation that is required for graduate degrees in related areas.

Providing Department: Statistical Theory Minor

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Advanced Knowledge in Theoretical Statistics to Pursue Graduate Degree
Learning Objective Description:

Students will be able to demonstrate sufficient knowledge in Theoretical Statistics to pursue a graduate degree in Statistics after graduation.

RELATED ITEM LEVEL 2

Independent Study - STAT 4090
Indicator Description:

Undergraduate Statistics minors will enroll in STAT 4090 in which students can study several special topics in Statistics such as Categorical Data Analysis, Survival Data Analysis, Biostatistics, etc. Students may take this course more than once and semester research project will be provided by a faculty member.

Criterion Description:

Most undergraduate Statistics minors will enroll in STAT 4090 and complete semester long research project with a faculty member.

Findings Description:

Two out of 7 Stat Theory minor students was enrolled in STAT 4090 during the last academic year, and one of those two students was actively engaged a year-long independent study.

RELATED ITEM LEVEL 3

Annual Meeting with Statistical Methods Minors
Action Description:

Annual Meeting with Statistical Methods Minors will be at the beginning of the Academic Year by the Advisor.

RELATED ITEM LEVEL 3

Undergraduate Research Experience through STAT 4090
Action Description:

Three Stat Methods minors were enrolled in STAT 4090 and one of them had a year-long statistical research experience.

RELATED ITEM LEVEL 2

Introduction to Statistical Computing - STAT 3382
Indicator Description:

Students will learn Mathematical and Statistical background of topics in Computational Statistics. Also, students will acquire communication skills which enable them to solve real world problems properly using statistical learning algorithms. Term project will be given using a statistical computing language, SAS and/or R.

Criterion Description:

Through the semester, students will choose a topic from Statistical Computing and work on their data analysis project with a faculty member. The proficiency of the usage of the statistical language will be also measured by the data analysis project.

Findings Description:

Although none of the STAT Theory Minors took STAT 3382, all of them studied statistical computing actively because we offered statistical computing topics in most stat courses.

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RELATED ITEM LEVEL 3

Assessment in STAT 4390 and STAT 3382

Action Description:

The assessment was not properly completed due to the number of enrolled minors.

RELATED ITEM LEVEL 2

Introduction to Statistical Learning - STAT 4390

Indicator Description:

Students will learn several topics from the supervised and unsupervised statistical learning in which they can obtain skills of statistical programming in R. Topics include Neural Network, Classification, Clustering, etc., and students will be evaluated by their term project.

Criterion Description:

The term project will be completed based on a real world dataset of their choice. This class will be essential especially for students who will be looking for a data analysis position after graduation.

Findings Description:

One Stat Theory Minor student took STAT 4390, and Dr. Kafle gave him/her a term project with a real-world dataset.

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RELATED ITEM LEVEL 1

Foundation of Mathematical Statistics - Theory and Application of Probability and Statistics

Learning Objective Description:

Students will demonstrate knowledge of topics in Mathematical Statistics such as Random Variable, Probability Distributions, Confidence Interval, Hypothesis Testing, etc.

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RELATED ITEM LEVEL 1

Improve Communication Between Statistics Faculty Members and Statistics Minors

Performance Objective Description:

Throughout more active and approachable interaction with Statistics faculty members, faculty members can provide students with several kind of opportunities such as internship, scholarship, research, etc.

RELATED ITEM LEVEL 2

Annual Meeting with Statistics Faculty Members

KPI Description:

At the first semester of each academic year, an individual meeting with statistics minors will be scheduled by the advisor of the statistics minor program. Through this meeting, statistics minors will have opportunities to check their progress and to obtain information such as possible internship opportunities, statistics and data science conference information, etc.

Target Description:

80% of statistics minors will meet with their advisor.

Results Description:

We are planning to have a meeting at the beginning of the 2023-2024 academic year.

To Prepare Students for Graduate Study in Statistics

Goal Description:

To help students to acquire knowledge in theoretical statistics through two required courses, STAT 4371 and STAT 4372, and to apply theoretical knowledge they obtained from those two courses to solve real world problems from optional four courses. Students will be ready to join master's program in Statistics after graduation.

Providing Department: Statistical Theory Minor

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RELATED ITEM LEVEL 1

Students Will Acquire the Analytic Capability in Statistics

Learning Objective Description:

In-depth study of theoretical statistics will help students to have the analytic view of the result from the statistical data analysis.

RELATED ITEM LEVEL 2

Introduction to Statistical Computing - STAT 3382

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Results Description:

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Update of Progress to the Previous Cycle's PCI

Previous Cycle's Plan For Continuous Improvement (Do Not Modify):

Closing Summary

We have taught 18 credit hours to students minoring in statistics both as face-to-face or as independent study.

We would like all students took the courses as face-to-face to gain more knowledge from instructors.

We would continue improve the style of teaching for all courses so students will be very comfortable taking all classes.

Update of Progress to the Previous Cycle's PCI:

We will have a new BSDS program and a new Data Science minor in our department starting the next semester. We expect to offer more courses with a sufficient number of students in all classes next year.

New Plan for Continuous Improvement

Closing Summary:

We will have a new BSDS program and a new Data Science minor in our department starting the next semester. Statistics faculty members will be actively working with students in these programs together.