

# Statistical Methods Minor

## To Prepare Future Statisticians for the Industry

**Goal Description:**

To help students learn how to collect, organize, and analyze real world data using statistical methods and computational tools to help them to make an optimal decision.

**Providing Department:** Statistical Methods Minor

RELATED ITEMS/ELEMENTS -----

RELATED ITEM LEVEL 1

**Students Will Be able to Use SPSS to Study Introductory Statistical Computing**

**Learning Objective Description:**

Students will learn how to use SPSS in order to perform Introductory statistical computing such as Linear Regression, Analysis of Variance, etc.

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 Methods Minors took STAT 3382, all of them studied statistical computing actively because we offered statistical computing topics in most stat courses.

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

**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 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 Their Graduate Study

Goal Description:

Students will be prepared for their graduate study by learning the discipline specific statistical knowledge and methods for solving real world problems from their own field of study.

Providing Department: Statistical Methods Minor

RELATED ITEMS/ELEMENTS -----

RELATED ITEM LEVEL 1

Students Will Be able to Use R for Statistical Programming

Learning Objective Description:

Students will learn how to use R statistical software package to study statistical programming in basic machine learning topics such as clustering, classification etc.

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:

One out of 7 Stat Methods minor students was enrolled in STAT 4090 during the last academic year.

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:

One Stat Methods minor was enrolled in STAT 4090 and had statistical research experience for one semester.

#### 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:**

Three Stat Methods Minor students took STAT 4390, and Dr. Kafle gave them a term project with a real-world dataset.

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#### RELATED ITEM LEVEL 1

### **Students Will Be able to Use SAS to Study Intermediate Statistical Computing**

#### **Learning Objective Description:**

Students will learn how to use SAS in order to perform intermediate statistical computing such as Design of Experiments, Generalized Linear Modeling, etc.

#### RELATED ITEM LEVEL 2

### **Independent Study - STAT 4090**

#### **Indicator Description:**

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#### **Results Description:**

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## **To Provide Students with Adequate Quantitative Skills and Interpretations**

### **Goal Description:**

Students will acquire proper communication skills with numerical data through learning statistical tools which describe and interpret given data numerically and visually.

**Providing Department:** Statistical Methods Minor

RELATED ITEMS/ELEMENTS -----

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### **Update to Previous Cycle's Plan for Continuous Improvement**

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

##### **Closing Summary**

We expect for the up coming year that we will offer enough classes for our undergraduate courses and the goal will be met next year.

I depends on how many new course we offer next year, we will continue to implement the concept and software to improve the skills of the students.

#### **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.