Statistics and Data Science MS

Consistent Cohort Of Graduate Students Each Year

Goal Description:

A cohort of ten supported graduate students to admit each year. This allows us to maintain a healthy program with consistent class sizes and class schedules.

Providing Department: Statistics and Data Science MS

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Support Ten New Students Each Year

Learning Objective Description:

We will support ten new graduate students each year, as many as twenty in the two years of our program. Support should be such that the full-time students are supported by at least $10,000 more than the cost of tuition and fees.

RELATED ITEM LEVEL 2

Foster a thriving MS program

Indicator Description:

In order to foster a thriving MS program in statistics, we need a total of 20 students, ideally 10 students per cohort. Any less than this, and our classes fail to run regularly. Any more than this, and the research needs of the students in such a large program exceed the faculty support available.

Criterion Description:

We will recruit enough students to be able to accept a cohort of 10 qualified incoming MS students each fall semester.

Findings Description:

This target was not met. The program relies heavily on international students which often have difficulty in obtaining the fund and necessary visas. We have 14 GA's allocated in the program and we were able to admit one more making 15 students in the program.

RELATED ITEM LEVEL 3

Foster a thriving MS Program

Action Description:

The Statistics program area will continue to try and recruit local and international students and to accept in a timely manner to be eligible for additional scholarships. The department will continue to advocated for higher graduate stipends.

Deliver A Curriculum That Emphasizes Communication Skills

Goal Description:

The curriculum will provide students with opportunities to develop the appropriate speaking, analyzing, and writing skills to function as a professional in the subject area. Our sequence of courses for four semester train the students in these skills. Students gain these experiences through different class projects which includes the oral presentation and written report. Students gain these experiences as a part of the Practicum requirement as well.

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RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Communicating Mathematical Ideas - Oral

Learning Objective Description:

Students will be able to prepare and deliver oral presentations of mathematical material through statistics practicum. Students will develop the ability to critique real world problems, and provide their own solutions based on statistical analysis.

RELATED ITEM LEVEL 2

Statistics Practicum

Indicator Description:

A statistics practicum(Registered under STAT 6380) should be completed by the students under the guidance of one of the faculty members (practicum supervisor). Students are required to prepare the final report in the form of manuscript that includes abstract, introduction, methodology, results, and conclusion. A letter grade is assigned for the practicum by the supervising faculty based on performance throughout the research project.

Criterion Description:

All candidates will receive a letter grade by his/her supervising faculty.

Findings Description:

All second year Statistics & Data Science graduate students except one completed the practicum. One student is working now and we are expecting him to finish in July.

RELATED ITEM LEVEL 3

Statistics Practicum

Action Description:

The Statistics program area will consider ways of improving the evaluation of student performance in the practicum, for example developing a rubric to be used.

Deliver A Curriculum With Appropriate Discipline Specific Skill Sets

Goal Description:

The curriculum will provide students with opportunities to develop professional skills typically required in the area of study. Our course sequence and practicum provide students data analysis, presentation, and report writing skills using different statistical softwares.

Providing Department: Statistics and Data Science MS

RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Foundation Areas In Probability And Statistics

Learning Objective Description:

Students will have a working knowledge of the foundational topics including regression analysis, design of experiments, multivariate analysis, and mathematical statistics (Bayesian analysis, bio-statistics, quality control, non-parametric statistics, sampling theory, Time Series Analysis, and statistical computing,).

RELATED ITEM LEVEL 2

Comprehensive Oral Examination

Indicator Description:

A comprehensive oral examination, given by a committee of three or more faculty members, will be administered to candidates for the degree of M.S. in Statistics which will examine the candidate's knowledge of the primary areas of concentration within the program, as well as the candidates own communication abilities. The committee will then judge the candidates' knowledge on the materials according to a previously agreed upon rubric with three levels of comparison: High Pass, Pass, and Fail.

Criterion Description:
All candidates will receive a mark of either "High Pass" or "Pass" for the components of the comprehensive oral exam. The rubric used is the same one shown in the "Mathematical Statistics" criterion.

Findings Description:
In April, there were 4 grad students who took the oral exam. There was one high pass, and the other 3 passed either 2 or 3 courses out of 4, and had to retake one or two after at least one week. One student will take the oral exam in July, 2024. Though, oral communication of mathematical ideas and the basics of probability and statistics are current LOs, the comprehensive exam does not disaggregate these two.

RELATED ITEM LEVEL 3

Comprehensive Oral Examination
Action Description:
The Statistics program area will consider establishing a target pass rate for the comprehensive exams in the five compulsory courses.

Improve Instruction By TAs

Goal Description:
We will improve our instructional support for TA instruction in our elementary level Statistics courses. The designated faculty (course-coordinator) trains them for teaching before the semester starts. We will also encourage our assistants to attend the training conducted by GUIA (The Graduate/Undergraduate Instructor Academy.

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RELATED ITEMS/ELEMENTS

RELATED ITEM LEVEL 1

Encourage And Train Teaching Assistants For Teaching
Learning Objective Description:

Will encourage and assign teaching assistants in elementary statistics courses as instructors. The designated faculty (course-coordinator) will train them for teaching. We will also encourage our assistants to attend the training conducted by GUIA (The Graduate/Undergraduate Instructor Academy.

RELATED ITEM LEVEL 2

Evaluation of TA's
Indicator Description:

Teaching evaluations and classroom visits by faculty. These visits will be managed/scheduled by the graduate advisor and/or course coordinators.

Criterion Description:
As many of our teaching assistants are not native speakers, a language barrier may be an additional challenge in their classroom.

Findings Description:
There were no classroom observation for stats TA's this academic year.

RELATED ITEM LEVEL 3

Evaluation TA
Action Description:
The indicator of pertaining to the observation of TA's will be reviewed Statistics program area to determine if this is still an appropriate indicator.

Update to Previous Cycle's Plan for Continuous Improvement Item

Previous Cycle's Plan For Continuous Improvement (Do Not Modify):
We will make an effort to increase our funded student cohort size to 10 which will make our total number of funded positions for the program to be 20 students. We can serve our undergraduate students better if we have 20 funded students in our program. We have around 22 sections of STAT/MATH 3379 and 20 sections of MATH 1342 each semester. We use our second-year teaching assistants to teach MATH 1342 and graduate assistants to help with SPSS (statistical programing) and tutoring. Having more graduate assistants will make a significant impact on the success of our undergraduate students.
A good number of excellent graduate students used to apply to our Statistics program, but many eventually declined after getting higher TA financial offers from more competitive Universities. Recently, we are struggling to recruit good TA's in our program. This type of erosion obviously becomes a pronounced problem for any program. We have identified this as a serious issue for our program. We will continue to request the university to provide additional funding to overcome this problem. The current funding we provide them is not sufficient to pay the tuition fee and other expenses. This is encouraging them to join or transfer to other universities.

We will provide students with more professional development opportunities. Will continuously organize student weekly group sessions where the students can make presentations in a friendly environment. This is a great opportunity for them to learn how to present their research projects. We observed that our students benefited from it significantly so will continue to do this in the coming academic year as well.

We will continue to assign our second-year students to teach introductory statistics courses as instructors of record. We will continue to encourage our students to go through the PACE program graduate teaching perforation training certification. We also encourage our students to go through other professional development programs (Many are available online now).

Update of Progress to the Previous Cycle's PCI:
We were not able to achieve our goals as we planned. Our plan to produce more researchers, leaders, teachers, and experts in the field of statistics to fulfill the current demand did not meet as we expected. Not only this, we need more assistants to help our undergraduate classes which will be our source for the graduate recruitments. But with limited funding, we could not hire as many assistants as we thought. Also, the stipend we give them is not enough to cover their basic expenses including tuition fees. This is restricting us to recruit the good students for our program.

We will continue with the same plan for the upcoming year. We believe this would be a good opportunity to raise the issues mentioned above to help improving our program. Low stipend is the main issue we we would like to bring in attention to the University.

We will continue to provide professional development opportunities and prepare our students to be fulfill the current demand in solving the real world problems. We can assign all of our second year student to teach our introductory statistics classes if we become competitive in hiring and able to offer Assistantship to more qualified applicants. Assigning them in teaching will help the University/Department financially as well.

New Plan for Continuous Improvement

Closing Summary:

We will make an effort to increase our funded student cohort size to 10 which will make our total number of funded positions for the program to be 20 students. We can serve our undergraduate students better if we have 20 funded students in our program. We have around 23 sections of STAT/MATH 3379 and 19 sections of MATH 1342 each semester. We use our second-year teaching assistants to teach MATH 1342 and NO classes. Our graduate assistants help STATS 3379 students with SPSS (statistical programing) homework/projects in lab and tutoring. Having more graduate assistants will make a significant impact on the success of our undergraduate students.

A good number of excellent graduate students initially apply to our Statistics program, but many eventually decline after getting higher TA financial offers from more competitive Universities. Over time, this type of erosion obviously becomes a pronounced problem for any program. We have identified this as a serious issue for our program. We will continue to request the university to provide additional funding to overcome this problem. The current funding we provide them is not sufficient to pay the tuition fee and other expenses. This is encouraging them to join or transfer to other universities.

To provide our students the best skill needed to solve the real world problems, we are working on some changes in the program. As an initiation, we have changed our degree name to MS in Statistics and Data Science. We will work on the the course structures that provides more data analysis training to the students.

We will provide students with more professional development opportunities. Will continuously organize student weekly professional development sessions where the students make presentations in different statistical modeling projects. This is a great opportunity for them to learn how to present their research projects. We observed that our students benefited from it significantly so will continue to do this in the coming academic year as well.

We will continue to assign our second-year students to teach introductory statistics courses as instructors of record. We will continue to encourage our students to go through the PACE program graduate teaching perforation training certification. We also encourage our students to go through other professional development programs (Many are available online now).

The Comprehensive Exam does not disaggregate learning outcomes. Thus, the statistics faculty will consider doing so in the future and/or modifying the learning outcomes.