

*- Course Information -*

<b>University:</b>	University of Nebraska at Omaha
<b>College:</b>	Graduate College
<b>Curriculum:</b>	Mathematics
<b>Number:</b>	8960
<b>Type:</b>	Independent Study
<b>Title:</b>	Master's Project
<b>Short title:</b>	Master's Project
<b>Effective term:</b>	Spring 2015
<b>Graduate non-degree students:</b>	Not allowed
<b>Can course be taken for credit multiple times?</b>	Yes
<b>Number of total hours:</b>	6

*- Credit Hours Information -*

<b>Type:</b>	Variable
<b>Hours:</b>	1 (minimum)
	6 (maximum)

*- Cross-listing and/or Dual-listing (UG/G) Information -*

<b>Courses:</b>	GR AS Statistics 8960
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*- Duplication Information (not to be used for cross/dual-listings) -*

<b>Curriculum:</b>	Not applicable
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*- 1.0 Course Description Information -*

## 1.1 Catalog description:

An applied project, designed and executed under the supervision of both a faculty and industry advisor. In the project the student will apply their mathematical and/or statistical skills to an applied problem. The student will present their results via a written report and oral presentation.

## 1.2 Prerequisites of the course:

Permission of faculty advisor and graduate program chair.

## 1.3 Overview of content and purpose of the course:

The purpose of this course is for students to complete an applied project under the supervision of both a faculty and industry advisor. This course will give students the opportunity to apply their learned mathematical and/or statistical skills in a real-world environment. This experience will benefit the students in their future jobs and job searches.

## 1.4 Unusual circumstances of the course:

There are no class meetings. Students work under the supervision of their advisors.

*- 2.0 Course Justification Information -*

## 2.1 Anticipated audience / demand:

We envision approximately half of our MS students taking the project option, perhaps 5-10 a year.

## 2.2 Indicate how often this course will be offered and the anticipated enrollment:

One section every semester, enrollment 5-10.

2.3 If it is a significant change to an existing course please explain why it is needed:

- *3.0 Objective Information* -

Is this course part of or being proposed for the General Education curriculum?

No

3.1 List of performance objectives stated as student learning outcomes:

The objectives will vary depending on the nature of the project, however, in general, students will develop skills to:

- use mathematics to analyze a 'real-world' scenario or develop a solution to a 'real-world' problem
- collect, analyze, visualize, and interpret data.
- communicate their findings effectively via both written and verbal means.

3.2 General Education Student Learning Outcomes

After completing the course, successful students shall be able to do the following:

- *4.0 Content and Organization Information* -

4.1 List the major topics central to this course:

Topics will be specific to the individual project. As such, topics vary widely from project to project. For example, projects could include:

- developing a visualization solution to present data in a way that is useful to the company.
- developing a statistical time-series model to predict future trends.
- developing an optimization model to increase efficiency and reduce costs.

- *5.0 Teaching Methodology Information* -

5.1 Methods:

Individual meetings and guided study.

5.2 Student role:

Students are expected to interact with their advisors to discuss the project and to work independently towards completion of the project goals.

- *6.0 Evaluation Information* -

Students should be provided the actual list of projects, basis for determining the final grade, and grading scale at the beginning of each course.

6.1.1 Describe the typical types of student projects that will be the basis for evaluating student performance:

The sole product of this course will be the written project report.

6.2 Describe the typical basis for determining the final grade (e.g., weighting of various student projects):

The determination of the final grade is made by the project advisors after they have read the written project report and participated in the student's oral presentation.

The criteria for assessment include:

- the quality and depth of the work conducted
- the quality of the resulting written report
- the presentation of the results of the project in a public setting.

## 6.3 Grading type:

Satisfactory/Unsatisfactory

*- 7.0 Resource Material Information -*

## 7.1 Textbook(s) or other required readings used in course:

Research materials will be recommended according to candidate need, project focus, and related issues.

## 7.2 Other student suggested reading materials:

## 7.3 Current bibliography and other resources:

Dufek, M.; Jeffers E.S.; Thiel D., Guidebook for Student Projects in Data Analysis, Southern Nevada Regional Profession Development Program and Nevada Chapter of the American Statistical Association, 2007.

Hoeting, J.A.; Givens, G.H., Communicating Statistical Results, Colorado State University 2002: [https://dl.dropboxusercontent.com/u/14365272/Master/HoetingGivens\\_On\\_Communicating\\_Statistical\\_Results.pdf](https://dl.dropboxusercontent.com/u/14365272/Master/HoetingGivens_On_Communicating_Statistical_Results.pdf)

Knuth, D.E.; Larrabee, T.; Roberts P.M., Mathematical Writing, MAA 1989

Maggino, F.; Trapani, T., Presenting and communicating statistics: principles, components, and their quality assessment. A proposal, Eurostat 2009.

Martin, P., Enhancing Effective Communication of Statistical Analysis to Non-Statistical Audiences, IASE 2005.

Marron, J.S., Effective writing in Mathematical Statistics, Statistica Neerlandica, 1999

Miller, J.E., How to Communicate Statistical Findings: an Expository Writing Approach, Chance 2013.

Nadarajah S.; Statistical Report Writing, School of Mathematics, University of Manchester UK: [http://www.maths.manchester.ac.uk/~saralees/68371\\_1.pdf](http://www.maths.manchester.ac.uk/~saralees/68371_1.pdf)

Swires-Hennessy, E., Presenting Data: How to Communicate Your Message Effectively, Wiley 2014

Zachary, S. Writing Statistics Project Reports, <http://www.macs.hw.ac.uk/~stan/aod/writing/writing.html>

*- 8.0 Other Information -*

## 8.1 Accommodations statement:

Accommodations are provided for students who are registered with UNO Disability Services and make their requests sufficiently in advance. For more information, contact Disability Services (MBS 111, Phone: 402.554.2872, TTY: 402.554.3799) or visit the web at <http://www.unomaha.edu/disability>.

## 8.2 Other:

## \* 8.3 Author(s):

Andrew W. Swift