

## Course Application

1. Course number and title EDGE - An introduction to the Analysis of Social Networks

2. Course credits <span style="border: 1px solid black; padding: 2px;">3</span>	3. Course prerequisites <span style="border: 1px solid black; padding: 2px;">M121 or equivalent</span>	4. Last semester offered <span style="border: 1px solid black; padding: 2px;">NA</span>	5. Next semester offered <span style="border: 1px solid black; padding: 2px;">Fall 2012</span>
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6. Course outcomes

1. Identifying and representing social networks: This section of the course will introduce you to the basic representation of a social network as either a directed graph or a matrix. We will discuss how to represent relationships between individuals and how to visualize social networks using social network software. We will also discuss different methods by which social networks are identified.

2. Quantifying relationships and influence: This section of the course will focus on introducing the language that we use to describe different networks and to measure an individual's influence on and ties to their social network. We will discuss the mathematical measures used to quantify the relationships in a network and the influence members of the social network. You will also learn how NetDraw can be used to perform many of these computations.

3. Tracking the flow of information: • In this section we will talk about the flow of information in a social network. In this portion of the course, we will discuss subgraphs (e.g. cliques, k-cores) and the relationship between subgraph structure and information flow.

7. General education student outcomes students taking this course will satisfy:

- Students will be able to use writing as a means to engage in critical inquiry by exploring ideas, challenging assumptions, and reflecting on and applying the writing process.
- Students will be able to speak with clarity, accuracy, and fluency in public contexts.
- Students will be able to reason analytically and quantitatively at an algebraic level.
- Students will be able to use an understanding of the physical and natural world to identify and solve problems.
- Students will demonstrate an understanding of ethics, cultural endeavors, and legacies of world civilizations.
- Students will be able to describe the biological, social, political, and economic forces that influence human behaviors and attitudes.
- Students will be able to demonstrate the processes and proficiencies involved with creating and/or interpreting creative works.
- Students will be able to demonstrate proficient critical thinking skills.

8. Please attach or include the following:

- CRC paperwork with approval (if applicable)
- Course syllabus
- A summary of course assignments that address the student outcomes checked in (7). Use space below.

Students will be assessed through homework, exams, and a final project on their understanding of how social roles are defined and analyzed and how social relationships change over time, influence information, and define social norms.

Dept. Head Approval:  College Dean Approval:

General Education Committee Approval:  Faculty Senate Approval:

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| <ul style="list-style-type: none"> <li><input type="checkbox"/> Communications</li> <li><input type="checkbox"/> Humanities/Fine Arts</li> <li><input type="checkbox"/> Mathematics</li> <li><input type="checkbox"/> Physical &amp; Life Sciences</li> <li><input type="checkbox"/> Social Sciences</li> </ul> | For Committee use only. |
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## EDGE 199

### An Introduction to the Analysis of Social Networks

#### General Information

**Instructor:** Dr. Hilary Risser  
**Location:** Office: Museum 112  
Phone: 496-4581 (no voicemail)  
Email: hrisser@mtech.edu

#### Office hours:

Other times by appointment only. Appointments must be made at least one class day in advance.

#### Course Materials

**Prerequisites:** College algebra (M 121) or equivalent

**Text:** We will use the online text by Dr. R. Hanneman available on the web from <http://faculty.ucr.edu/~hanneman/nettext/> along with readings posted on Moodle

**Materials:** Access to Microsoft Excel  
a copy of NetDraw downloaded from <http://sites.google.com/site/netdrawsoftware/>  
a copy of NodeXL downloaded from <http://nodexl.codeplex.com/>  
a copy of KrackPlot downloaded <http://www.andrew.cmu.edu/user/krack/krackplot.shtml>

#### Objectives:

The objective of this course is to introduce you to the basic concepts in the analysis of social networks. The course is divided into four different topics

1. Identifying and representing social networks: (approximately 20% of the course)
  - This section of the course will introduce you to the basic representation of a social network as either a directed graph or a matrix. We will discuss how to represent relationships between individuals and how to visualize social networks using social network software. We will also discuss different methods by which social networks are identified.
2. Quantifying relationships and influence (approximately 50% of the course)
  - This section of the course will focus on introducing the language that we use to describe different networks and to measure an individual's influence on and ties to their social network. We will discuss the mathematical measures used to quantify the relationships in a network and the influence members of the social network. You will also learn how NetDraw can be used to perform many of these computations.
3. Tracking the flow of information (approximately 20% of the course)
  - In this section we will talk about the flow of information in a social network. In this portion of the course, we will discuss subgraphs (e.g. cliques, k-cores) and the relationship between subgraph structure and information flow.
4. Researching with social networks: (approximately 10% of the course)
  - This section of the course will focus on current studies of social networks, including my own research, and the ethics of researching with human subjects.

**Class Policies:**

**Attendance:** is required and will be taken daily. You are expected to be on-time and remain the entire class time. You should sign in on the sign in sheet every day. If you didn't sign in, you weren't there. Responsibility for work missed because of illness or school business is placed upon the student.

**Homework:** On the homework assignments, you will be asked to demonstrate your understanding of the terminology of social network analysis and the quantitative analysis of social networks. You may use computer programs on the assignments. However, if specified, you may need to show the work you did by hand. There will be approximately ten homework papers assigned during the semester.

**Exams:** Three exams are scheduled during the semester. If you know that you are going to miss class on an exam day for school business please arrange to take the exam in advance. Makeup exams will be available for one calendar week after the missed exam. If the missed exam is not made up by that time, you will receive a zero on the missed exam. Documentation must be provided to receive a makeup exam.

**Project:** As a class, we will be creating a map of the social network of movie actors and directors using the Imbd database. Each member of the class will be responsible for mapping a portion of the database. We will put the data that each class member compiles into a large data set that will be used by the class. Each class member will then choose some aspect of the database to study. You will create graphics using NetDraw and prepare a short report of your findings.

**Academic Dishonesty:** Academic Dishonesty as defined on p138 of the student handbook will not be tolerated.

**Evaluation and Measurement:**

**Grade distribution:**

- Exams = 45%
- Homework assignments = 30%
- Final Project
  - Mapping a portion of the Imbd database = 5%
  - Project write up = 15%
  - Project presentation = 5%

No extra credit available.