ROLLINS SCHOOL OF PUBLIC HEALTH
EMORY

DEPARTMENT: **Biostatistics and Bioinformatics**

COURSE NUMBER: **BIOS 560R** **SECTION NUMBER: 003 & 004**
SEMESTER: Fall

CREDIT HOURS: 2+2

COURSE TITLE: Network Science Seminar and Laborator

INSTRUCTOR NAME: Vicki Stover Hertzberg, Ronald J. Gould

INSTRUCTOR CONTACT INFORMATION

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OFFICE HOURS:
VSH: TR 11 am – noon; other hours by appointment
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BRIEF COURSE DESCRIPTION **:** Over the course of the last two decades, there has been a dramatic rise in the awareness of the role that networks play in areas as diverse as molecular metabolic pathways, sports, internet traffic, corporate boards, and public health. This increase has been particularly explosive over the course of the last decade as advances in network theory and computing technology made the application of the tools of network science feasible for scientists with many different backgrounds.

In this class we will cover the key concepts of networks. We will also consider some of the primary areas in which network science has been applied. In the lab section, we will use a variety of software packages to illustrate the concepts covered in Network Science Seminar.

LIST SCHOOL LEVEL, DEPARTMENT, AND/ OR PROGRAM COMPETENCIES

ACADEMIC HONOR CODE
The RSPH requires that all material submitted by a student in fulfilling his or her academic course of study must be the original work of the student.

LIST LEARNING OBJECTIVES ASSOCIATED WITH THE COMPETENCIES Upon completion of this class, the successful student will have mastered the key definitions and concepts of network science. In addition, s/he will be able to interpret the outcomes of an analysis of a network, evaluate a scientific paper describing an application of network science, describing its strengths & weaknesses; and design a study involving networks applied to solve a problem. Upon completion of the laboratory portion of this course, the successful student will have mastered the key definitions and concepts of network science, with the ability to derive them for a given dataset, using a variety of tools.

EVALUATION

Didactic portion:

Component	Weight	Basis of evaluation
In-class presentations and reaction papers	15%	Content, depth, organization, visual aids, clarity
Participation	10%	Thoughtfulness, originality, activity
Project proposal and complete first draft	20%	Statement of problem, state of the art of the problem, research design
Homework	10%	Correctness, write-up
Midterm examination	15%	Correctness
Final project presentation and paper	30%	Statement of research question, state of the art of the problem, research design, results, conclusions, thoughtfulness, content, depth, visual aids, clarity.

For the laboratory portion: There will be nine laboratory assignments given throughout the semester. Students are expected to hand these in one week after the assignment. Each assignment will comprise 10% of the grade. In addition to the laboratory assignments, there is a final paper due on December 12, 2012. In this paper students will be asked to compare the packages used in the lab, compare and contrast them, and make recommendations for future use. This paper should be approximately 10 pages in length, double-spaced, single-sided, 1-inch margins all around, 12-point font. This paper will comprise 10% of the grade.