George Mason University
Graduate Course Approval/Inventory Form

Please complete this form and attach a copy of the syllabus for new courses. Forward it as an email attachment to the Secretary of the Graduate Council. A printed copy of the form with signatures should be brought to the Graduate Council Meeting. Complete the Coordinator Form on page 2, if changes in this course will affect other units.

Please indicate:  

X NEW  
MODIFY  
DELETE  

Local Unit: SCS  
Graduate Council Approval Date: 

Course Designation: NEUR  
Course Number: 702  

Full Course Title: Research Methods  

Abbreviated Course Title (24 characters max.): Research Methods  

Credit hours: 3  
Program of Record: NEUR Ph.D.  

Repeatable for Credit?  

X Yes, not within same term  
T Yes, within the same term  
N Cannot be repeated for credit  

Activity Code (please indicate):  

X Lecture (LEC)  
Lab (LAB)  
Recitation (RCT)  
Studio (STU)  
Internship (INT)  
Independent Study (IND)  
Seminar (SEM)  

Catalog Credit Format: 3:0:0  
Course Level: GF(500-600)  
GA(700+)  

Maximum Enrollment: 25  
For NEW courses, first term to be offered: Fall 2004  

Prerequisites: Admission into the Ph.D. program in neuroscience.  

Catalog Description (35 words or less): Trains students in research methodologies, techniques, and data analysis in the life sciences. The course is divided into three modules, which introduce the separate but equally significant components of any research project. The first focuses on parameters required to outlining and synthesizing a problem; the second covers techniques of measurement and analysis used by life scientists; and the third covers approaches used for data analysis and interpretation.  

For MODIFIED or DELETED courses as appropriate:  
Last term offered:  
Previous Course Abbreviation:  
Previous number:  

Description of modification:  

APPROVAL SIGNATURES:
GEORGE MASON UNIVERSITY
Course Coordination Form

Approval from other units:

Please list those units outside of your own who may be affected by this new, modified, or deleted course. Each of these units must approve this change prior to its being submitted to the Graduate Council for approval.

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Graduate Council approval: ___________________________ Date: ____________
Graduate Council representative: ___________________________ Date: ____________
Provost Office representative: ___________________________ Date: ____________
NEUR 702/BIOS 702
RESEARCH METHODS

Texts: Bernard Rosner, Fundamentals of Biostatistics (required)
Bernard Rosner, Study Guide to Fundamentals of Biostatistics (optional)
Peter Dalgaard, Introductory Statistics with R (optional)

Objectives: Trains students in the research methodologies, investigative techniques, and data analysis procedures applicable in the in life sciences. The course is divided into three modules, which each introduce separate but equally significant components of any research project. The first focuses on the development of the parameters required to outline and synthesize a problem; the second covers techniques of measurement and analysis used by life scientists; and the third covers approaches used for data analysis and scientific interpretation.

Students are introduced to the nature of scientific inquiry and synthesis; literature and electronic resources; formulation and testing of hypotheses; parameters required for experimental design; statistical data analysis; guidelines for human subjects and animals in research; and professional responsibility and ethics in research.

Lecture Topics (Spring 2004)

Jan 22 Introduction
Jan 29 Formulating questions and hypotheses
Feb 5 Study design and parameters
Feb 12 Literature and database resources
Feb 19 Analytical approaches in biological problems
Feb 26 Analytical approaches in biological problems
Mar 5 Compliance and ethical considerations
Mar 19 Large scale data management and analysis
Mar 26 Statistical analysis, regression, multivariate and correlations
Apr 2 Case studies and scientific reporting
Apr 9 Scientific integrity
Apr 16 papers/Proposals due, student presentations
Apr 23 Students presentations
Apr 30 Student presentations

Grading - Grades will be based on weekly quizzes, weekly homework assignments, 3 in class open book and notes tests and an open book and notes final exam. Each of these will contribute to your grade as follows.

Quizzes (5%), Homeworks (30%), Tests (40%), and Final Exam (25%)
The three lowest quiz grades and the three lowest homework grades will be dropped. A subset of the total homework assignment will be graded each week. Solutions to the homework assignments will be provided each week. Homeworks will not be accepted.
late since the 3 lowest homework grades are being dropped.

Grading will be on the standard: 90-100 (A), 80-90 (B), 70-80 (C), 60-70 (D), below 60 F. Grades will be adjusted with +/- consistent with George Mason University Policies.