Carnegie Mellon University

Dietrich College of Humanities and Social Sciences

Spring 2017 Research Training Course Offerings (xx-198)

Course#, Section, Professor	*Abbreviated Topics*
36-198, Section A, Prof. Peter Freeman	Exploring Astrostatistics: Analyzing Astronomical Data with Cutting-Edge Methods of Statistics and Machine Learning
66-198, Section A, Dr. Joseph Devine	The Carnegie Mellon Minority Teaching and Research Fellows (Summer 1990): Where Are They Now?
76-198, Section A, Prof. Christopher Warren	Big Historical Data
79-198, Section A, Prof. Lisa Tetrault	Women's Rights and Gender-Based Violence
79-198, Section C, Prof. Christopher Phillips	Clinical Trials and Medical Statistics
82-198, Section A, Prof. Kenya Dworkin	Cyber-Activism and Independent, Civil Society in Contemporary Cuba: Digital Platforms and Social Media as Tools for Change
82-198, Section B, Prof. Seth Wiener	Using Eye-tracking to Understand Spoken Language Processing
82-198, Section C, Prof. Bonnie Youngs	Using Data to Improve Learning in French Online
82-198, Section D, Prof. Sébastien Dubreil	Bonne Chance: Game Design as a Model for French Learning
85-198, Section A, Prof. Vicki Helgeson	Adjustment to Chronic Illness
85-198, Section B, Professor David Klahr	Teaching Elementary School Students to "Think Scientifically"
85-198, Section C, Prof. Mike Scheier	Personality Psychology
85-198, Section J, Prof. Laurie Heller	Auditory Perception
85-198, Section K, Prof. Erik Thiessen	The Role of Learning in Infants' Language Acquisition
85-198, Section L, Prof. Robert Siegler	Research Training in Psychology
85-198, Section M, Prof. Brooke Feeney	Social Psychology

SPRING 2017 COURSE DESCRIPTIONS

36-198, Research Training in Statistics, 9 units
Section A, Professor Peter Freeman
Contact by email: pfreeman@cmu.edu and include information about your interest in this project
Exploring Astrostatistics: Analyzing Astronomical Data with Cutting-Edge Methods of Statistics and Machine Learning
As recently as 25 years ago, astronomy was a data-starved discipline, with catalogs that consisted of details about hundreds of objects. Because of the success of projects such as the Sloan Digital Sky Survey, that number has grown from hundreds to hundreds of millions. To make sense of these data, one needs to utilize advanced methods of statistics and machine learning. In this research training course, students will learn how to utilize advanced methods of classification and regression and will apply them to given astronomical datasets. All analyses will be done using the statistical package R. No prior knowledge of astronomy (or of R or of basic data analysis algorithms) is required.
3 students maximum

66-198, Dietrich College Interdisciplinary Research Training, 9 units
Section A, Dr. Joseph Devine
Contact: jd0x@andrew.cmu.edu, and include information about your interests in this project.
The Carnegie Mellon Minority Teaching and Research Fellows (Summer 1990): Where Are They Now?
In the summer of 1990, with the support of a grant from the U.S. Department of Education, fourteen Carnegie Mellon undergraduates – all minority students-of-color -- were recruited and supported over that summer in a program that allowed them to focus on an original research or creative project (with faculty mentorship), as well as participate in a series of seminars about the research and teaching aspects of the academy. Entitled the Carnegie Mellon Minority Teaching and Research Fellowship Program (or "MTRFP"), the goal of the program was to expose these students, through this intensive immersion experience, to the research/teaching mission and culture of the academy, and through this to encourage them to consider post-baccalaureate study in graduate or professional school, and possibly careers in the academy. The grant supporting this program stemmed from a DOE initiative that responded to national data pointing to low numbers of minority candidates in PhD pipelines who could compete for faculty positions becoming more available as colleges and universities intensified their efforts to diversify their faculties. This project will attempt to connect with these fourteen individuals – now CMU alumni – and, through a combination of surveys, direct communication, and related research -- gather information about each of these individuals to learn what we can about how successful the summer 1990 program was in its efforts to encourage post-baccalaureate study and academic careers. In addition, this project will assemble information and insights about these alumni experiences since graduating, and assemble them into a narrative collection about them as a single cohort, and their reflections on that summer's program experience.

76-198, Research Training in English
Section A, Prof. Christopher Warren
Those interested should contact Prof. Chris Warren at cnwarren@cmu.edu with a short note about why they'd be a good fit.
Big Historical Data
The focus of this course will be a corpus of about 62 million words of authoritative historical writing, covering the Roman Empire to the present. It's hard to overstate what a cool opportunity this is to use

data-driven methods to assess what we think we know about the past. There's a good bit of work to be done in parsing XML and data munging, so Python programming is a must, but students will ultimately have a wide range of questions to investigate, including gender, identities, economics, historiography, networks, and empire. Experience with, or willingness to learn, BeautifulSoup, NLTK, Pandas, and GGplot Python libraries, is highly desirable. Students will develop a Jupyter Notebook throughout the semester, with course assessments being based on its mid-term and final forms. Multiple students accepted.

79-198, Research Training in History, 9 units
Section A, Prof. Lisa Tetrault
Contact by email: tetrault@cmu.edu, and include information about your interest in this project.
Women's Rights and Gender-Based Violence
I have two projects underway. The first is on women's rights in the nineteenth century (the 1800s). This will involve working with nineteenth-century digitized newspapers (super fun!). And the second is on gender-based violence, in the US and abroad. This will involve working with a variety of issues and sources. I'll help you learn the research process, then set you free in the archives. And together we'll advance each project.

Open to more than one student.

79-198, Research Training in History, 9 units
Section C., Prof. Christopher Phillips
Contact by email: cjp1@cmu.edu, and include information about your interest in this project and why you think you'd be a good fit.
Clinical Trials and Medical Statistics
Going to the doctor in the twenty-first century is a numerical experience:
height, weight, blood pressure, and cholesterol level, to be sure, but also genetic risk analysis, five-year survival rates, and false positive ratios. While statistics have long been a part of epidemiology and public health, the field's role in clinical medicine was largely established in the twentieth century. As part of an ongoing book project on the rise of statistics in medicine, this course will involve uncovering how and why the clinic has been quantified, and what is at stake for those involved.
Together we'll gather resources and studies, build a database, and identify important historical events and transitions--all with the hope of uncovering the people and historical contingencies behind the quantification of medicine.

Open to 1-2 students.

82-198, Research Training Course in Modern Languages
Section A, Professor Kenya C. Dworkin
Contact by email: kdworkin@andrew.cmu.edu, and include information about your interest in this project and why you think you'd be a good fit.
Cyber-Activism and Independent, Civil Society in Contemporary Cuba: Digital Platforms and Social Media as Tools for Change
As part of an ongoing project on contemporary, independent, civil society in Cuba and the tools it is employing to promote its agendas and projects both inside and outside Cuba, this project will involve guided research and analysis of print & digital blogs, news sources, webpages, digital platforms published in and/or about contemporary Cuba, by Cubans and non-Cubans. We will work to: (1) follow established sources (web pages, Twitter accounts, Facebook posts and their bloggers/Tweeters and owners/users), (2)

discover and analyze news ones, and (3) assess their effectiveness regarding reach and language of materials.

Open to one or two students. Prerequisites: (1) Students must have at least advanced level reading skills in Spanish and be fully proficient in English. (2) Students must also be willing to sign up for and follow Twitter and Facebook accounts, and blogs belonging to and/or that host the work of Cuban Cyber-Activists.

82-198, Research Training in Modern Languages
Section B, Prof. Seth Wiener
Email sethw1@cmu.edu and include information about your interest in this project and why you think you'd be a good fit
Using Eye-tracking to Understand Spoken Language Processing
There is a moment in speech when a listener can disambiguate the word 'candle' from 'candy.' One way to capture and understand this moment is by analyzing a listener's eye movements as he/she views photos of candles and candy. Eye movements are closely aligned to speech and therefore provide insight into language processing. In this research project, students will take part in the development of an eye-tracking study that explores spoken word recognition in native and non-native listeners. Students will gain experience preparing the experiment, testing participants, collecting data, and learning to analyze and visualize the data.

Open to one or two students.

82-198, Research Training in Modern Languages
Section C, Prof. Bonnie Youngs
Contact: byoungs@cmu.edu
Using Data to Improve Learning in French Online
In this research we analyze the 'backend data' gathered from the French Elementary 1 Online course. The exact topic of study is yet to be determined, based on research being done in fall 2016. The work could be linked to learning theories, pure data analysis, or student interaction with the course materials. No knowledge of French or statistics is required.

82-198, Research Training in Modern Languages
Section D, Prof. Sébastien Dubreil
Bonne Chance: Game Design as a Model for French Learning
Students would join a team of other undergraduate students organized as an interdisciplinary team to design a video game entitled Bonne Chance (http://www.playbonnechance.com), which aims at enhancing the learning of French at the elementary level.

In the game, the learner plays as a traveler going to Paris, who is then faced with an epic quest. The game progresses through a series of problem-solving language puzzles and form-focused, language-practice mini-games that connect to French culture. By solving the enigmas, players are able to practice language skills in a rich, culturally authentic context.

In language learning, one of the best methods of content acquisition is through immersion. When true immersion is unavailable, situating the language within an authentic cultural context is a viable alternative. Narrative-based gaming provides a series of familiar mechanics and structures into which this cultural context may be situated. Bonne Chance is designed to be an immersive language learning game that manifests in the form of a mobile app (designed using Unreal Engine□).

What we are looking for:
- Students who are curious, intrepid, and creative
- Students in a wide range of disciplines: computer science, arts, design, graphic design, linguistics, etc.
- Students who want to commit to a research and design team
- Previous experience in French preferred but not necessary

Students will be involved in the research process both as researchers and participants. Students' roles will be (a combination of) the following:
- Participate in every facet of the design decision-making process
- Execute the design plan by either coding, creating assets, writing parts of the storyline or playtest the game
- Participate in a weekly meeting with team members (to be determined)
- Assist in evaluating French learning through game design and/or gameplay

85-198, Research Training in Psychology
Section A, Professor Vicki Helgeson
Contact by email: vh2e@andrew.cmu.edu
Adjustment to Chronic Illness
Students will be introduced to the topic of how people adjust to chronic illness (e.g., diabetes, cancer) within the field of social and health psychology. The research focuses on individual difference factors (e.g., illness identity) as well as relational factors (e.g., communal coping) that influence adjustment. Students will read articles on the topic and have hands-on experience conducting research on this topic.

Open to 5 students

85-198, Research Training: Psychology, 9 units
Section B, Professor David Klahr
Contact klahr@cmu.edu and include relevant information about your interest in this course, and why you think you are qualified for it.
Teaching Elementary School Students to "Think Scientifically"
The aim of this course is to provide undergraduate students with experience doing research on scientific thinking in elementary school children. We will be investigating the best way to allocate teacher-controlled and student-controlled instruction as children learn some very basic procedures and concepts associated with "the experimental method" in science. An example of the type of studies involved can be found here: http://www.psy.cmu.edu/~klahr/pdf/KlahrNigam.PsychSci.pdf

The course includes a mix of activities and responsibilities, that might include running experiments with children, at off campus sites, video-recording and/or transcribing data, participating in research group meetings several times each month, and writing a 3-5 page paper at the end of the semester describing what the student learned during the course. Time commitment during the semester would be 5 – 10 hours a week, depending on final arrangements.

85-198, Research Training in Psychology
Section C, Professor Michael Scheier
Contact: Maria G Mens, mmens@andrew.cmu.edu or Mike Scheier (scheier@cmu.edu)
Personality Psychology

This course provides students with research experience in the area of personality psychology. Our lab focuses on investigating how individuals manage their goal pursuits, with an emphasis on management of goals during serious illness. Students will have the opportunity to be involved in a longitudinal project with a sample of breast cancer patients, and various laboratory experiments. In laboratory projects, students will gain experience working as an experimenter, scheduling and running participants, collecting data, and managing/analyzing this data. In longitudinal projects, students will gain experience in coding qualitative data and analyzing this data. Lab meetings will also help students improve their ability to read and understand research literature, and to think critically about research methodology.

Open to more than one student.

85-198, Research Training: Psychology, 9 units
Section J, Professor Laurie Heller
Contact by email: laurieheller@cmu.edu, and include information about your interest in this project.
Auditory Perception
This course provides students with research experience in the area of auditory perception. Students will assist with research projects in the Auditory Perception Laboratory, obtaining hands-on experience with various aspects of conducting research. Students will gain experience in study design,
participant recruitment & scheduling, working as an experimenter, data collection, and data management/analysis including acoustic analysis and possibly sound recording and sound synthesis.
For example, students may conduct an analysis of the acoustics of sounds which have similar perceptual qualities, or they may run an experiment in which listeners judge the causes of sounds, or listeners may do tasks seemingly unrelated to the sounds they hear and show evidence of unconscious priming when sounds and words (or gestures) are related.
Students with a special interest in sound synthesis and/or matlab programming should bring attention to that interest.

Open to more than one student.

85-198, Research Training: Psychology, 9 units
Section K, Professor Erik D. Thiessen
Contact: thiessen@andrew.cmu.edu, and include information about your interests in this project.
The Role of Learning in Infants' Language Acquisition
In order to master their language, infants need to learn an extraordinary amount. They must discover what sounds occur in their language, how those sounds relate to meaning, the identity and meaning of words in their language, and how to string those words together into sentences. Infants are exposed to a rich linguistic environment, but little is known about how infants are able to take advantage of the richness of this environment. In the Infant Language and Learning Lab
(http://www.psy.cmu.edu/~thiessen/home.html), we try to understand how infants are able to learn from their environment. In particular, we explore how infants respond to the distribution of probabilistic information across levels of linguistic organization like sound and meaning. To do so, we use a variety of experimental methods, such as habituation, in studies with infants between the ages of 6 and 24 months.

Our experiments present infants with novel languages, and examine what infants are able to learn from them. Specifically, upcoming projects will examine how infants learn that different sounds (like /d/ and /t/) indicate different meanings, how infants discover the rules governing word order in phrases, and how infants learn about the rhythmic structure of their native language.

Open to more than one student.

85-198, Research Training: Psychology, 9 units
Section L, Professor Robert Siegler
Contact by email siegler@cmu.edu and include information about your interest in this course.
The purpose of this course is for undergraduate students to gain experience with research. The course includes working 5-10 hours/week on research being done in our lab, attending research group meetings once/week, and writing a 3-5 page paper at the end of the semester describing what the student learned during the course.

85-198, Research Training: Psychology, 9 units
Section M, Professor Brooke Feeney
Contact by email: bfeeney@andrew.cmu.edu, and include information about your interest in this project.
Social Psychology
This course provides students with research experience in the area of social psychology. Students will assist with research projects in the Relationships Laboratory, thereby obtaining actual, hands-on experience with various aspects of large research projects on the topic of interpersonal relations. As a member of the Relationships Lab, students will gain experience in study design, participant recruitment & scheduling, working as an experimenter, data collection, and data management/analysis. For example, students may work with newlyweds and dating couples in an experimenter role, code videos of couple interactions, assist with data entry and data analysis, assist with preparation of research reports, and assist with library work.

Open to more than one student.