

COMPSCI (unless otherwise noted)

121 Introduction to Problem Solving with Computers (R2) 4 credits

INSTRUCTOR(S): Moll

COMPSCI 121 provides an introduction to problem solving and computer programming using the programming language Java; it also provides an integrated introduction to some of the wonderful innovations to modern science and indeed modern life that can be attributed to computer science. The course teaches how real-world problems can be solved computationally using the object-oriented metaphor that underlies Java. Concepts and techniques covered include data types, expressions, objects, methods, top-down program design, program testing and debugging, state representation, interactive programs, data abstraction, conditionals, iteration, interfaces, inheritance, arrays, graphics, and GUIs. No previous programming experience required. This can be a challenging course. If you prefer a more modest introduction to computing, you should consider COMPSCI 119 (Introduction to Programming), which however is only offered during the academic school year and is not offered online. COMPSCI 121 is taught using a free online interactive textbook, which is ideal for the distance-learning format of this course. Computer use is of course required for this class. Prerequisite: R1 (basic math skills). 4 credits.

187 Programming with Data Structures (R2) 4 credits

INSTRUCTOR(S): Richards

The course introduces and develops methods for designing and implementing abstract data types using the Java programming language. The main focus is on how to build and encapsulate data objects and their associated operations. Specific topics include linked structures, recursive structures and algorithms, binary trees, balanced trees, and hash tables. These topics are fundamental to programming and are essential to other courses in computer science. There will be weekly intensive programming assignments, online quizzes, group discussions, and other online-related activities. There will also be several online/take-home exams. Prerequisites: COMPSCI 121 (or equivalent Java experience) and Basic Math Skills (R1). Basic Java language concepts are introduced quickly; if unsure of background, contact instructor. This course is offered entirely online. 4 credits.

305 Social Issues in Computing 3 credits

INSTRUCTOR(S): Trim

Using a range of different disciplinary perspectives we will explore various impacts of computers on modern society. This exploration will focus primarily on the social impacts of computers, with an emphasis on ethical concerns. Students will gain practice in several technical communication genres, public writing, writing for electronic environments and academic writing. Students will produce approximately 20-25 polished pages of written work in addition to informal writing associated with class discussions. Class discussions will take place via an online forum, and students will be expected to post at least twice per week. Those posts will be among the graded components for the course. In lieu of a presentation, students will create short videos. No previous experience with making videos is needed. 3 credits.

590AC Introduction to Affective Computing 3 credits

INSTRUCTOR(S): Hudlicka

Affective computing represents a broad, interdisciplinary research and practice area focusing on a range of topics, including: computational models of emotion, cognitive-affective architectures; affective user modeling; emotion sensing and recognition; emotion expression; and the use of emotions to improve human-computer interaction across a range of contexts including intelligent tutoring and gaming. This course will provide an introduction to affective computing through a combination of lectures, student presentations of selected literature, projects and class discussion. The course content and format will be appropriate for computer science, cognitive science, psychology, human factors, and industrial engineering students (advanced undergraduate / graduate). Prerequisite: Graduate or Senior level in Computer Science or Engineering, or permission of instructor. This course counts as a CS Elective toward the CS major (BA/BS). 3 credits.

INFO 397F Special Topics - Introduction to Data Science 3 credits

INSTRUCTOR(S): Anderson

The terms "data science" and "big data" appear in the news media and in everyday conversations. Moreover, we are told that we live in the "age of information", where almost every business venture and scientific research initiative collect a massive amount of data which may contain valuable information. This course is an introduction to the concepts and skills involved with the collection, management, analysis, and presentation of large data sets and the data products that result from the work of data scientists. Privacy and ethical issues are discussed. Students will work with data from the financial, epidemiological, educational, and other domains. The course provides many case studies and examples of real-world data that students work with using the R programming language as well as the structured query language (SQL). This course consists of two meetings per week. Each meeting includes a lecture, where conceptual material will be presented, followed by lab time where students receive instruction on the use of software tools and apply the concepts by working on data sets. Readings will be assigned as preparation for each class meeting. Several projects will be assigned during the course. The projects provide students with an opportunity to explore the topics in more depth in a specialized domain. Two midterm exams and one final exam will be given. Grades are determined by a combination of class participation including the in-class lab activities, projects, and exam scores. Software: The R software for statistical analysis (www.r-project.org). This course does not satisfy requirements for the CS major. Prerequisites: COMPSCI 119 or COMPSCI 121. 3 credits.