SUMMER 2018 TOPICS COURSE DESCRIPTIONS

CSCI 4960 01 RCOS

Wes Turner (and others)

(0 credits; 4-credit independent study; does not count as CS Option course)

coreq: CSCI 496x Open Source Software

In our increasingly distributed world, the computer professional of today and tomorrow will continue to be exposed to global software development that often includes direct involvement in open source communities. RCOS for the Arch provides students the opportunity to directly participate in open source software development either by creating their own open source repository or by joining and directly participating in an existing open source community. Either way, students earn independent study credits as they develop their skills by participating in open communities, using exactly those tools and community-building procedures currently in favor in industry. More importantly, in our dependence on open communities, the tools used by our students will change and evolve as the norms of these distributed communities change, ensuring the material remains current. This course is intended to be taken concurrently with CSCI 496x Open Source Software.

CSCI 4961 Open Source Software

Wes Turner (and others)

(4 credits; counts as CS Option course; concentration area: Systems and Software)

prereq: CSCI 2300 Intro to Algorithms

Open source communities are proven development engines for creating large diverse user-focused software; however, these communities are not easily understood or supported by traditional models of software development. Expected behaviors, tools, and licensing within these communities are uniquely adapted to the needs of an often volunteer workforce, distributed and asynchronous development, and meritocracy. In this course, we prepare students to understand how to use open source software, how to create open source repositories, and how to participate in an open source community; this is all achieved by learning open source tools for development, modes of communication, and licensing. Each student picks an existing open source project and works within the project to actively learn and apply these open source principles. This course is intended to be taken concurrently with CSCI 496x RCOS in which the practical experience of developing within an open source community will be expanded and explored.
CSCI 4963 Advanced Programming Using Java

Konstantin Kuzmin

(4 credits; counts as CS Option course; concentration area: Systems and Software)

prereq: CSCI 2300 Intro to Algorithms; CSCI 2600 Principles of Software

Java is one of the most popular general-purpose modern programming languages in industry. This course focuses on advanced Java features widely employed in practice. Roughly one-third of the course covers object-oriented features of Java and how to use them in software design, as well as corresponding tools that help to establish and maintain the software development life cycle. The second third of the course covers parallel programming, how it can be implemented in Java, and its advantages and limitations. Finally, the third part of the course discusses different database models and provides specific details on how to create Java applications that can use different databases as a data storage option. Special attention is given to noSQL graph databases that, when combined with Java, allow building solutions that are capable of storing, manipulating, and analyzing billion-node scale networks.

CSCI 4964 Computer Communication Networks

Buster Holzbauer

(3 credits; counts as CS Option course; concentration area: TBD)

prereq: CSCI 2300 Intro to Algorithms; CSCI 2500 or ECSE 2660

Introduction to the basic concepts of computer and communication networks, like flow control, congestion control, end-to-end reliability, routing, framing, error-recovery, multiple access, and statistical multiplexing. In-depth presentation of the different networking layers, with emphasis on the Internet reference model. Protocols and architectures such as TCP, IP, Ethernet, wireless networks, etc. are described in order to illustrate important networking concepts. Introduction to quantitative analysis and modeling of networks.

MGMT 6960 Enterprise IT Integration

This course explores a multitude of approaches to IT integration among the various departments of a corporation as well as between the corporation and entities in its external environment. It explores multiple integration methods at the data level, the process level, and the application level. Once the student acquires a strong understanding of these basic methods then the course continues with advanced methods of IT integration. Such methods include Service Oriented Architectures (SOA), Fast Business to Business methods, Middleware methods, Cloud Computing, Supply Chain, and Portal based integration. The course is case study taught using the latest case studies from various consulting companies as they have actually implemented solutions for their corporate customers.
The course starts with the exploration and understanding of the three basic approaches to IT integration in a corporation. Those are information based integration, process based integration, and application based integration. Once the student acquires a strong grasp of these basic methods then the course expands with various methods of IT integration techniques within and outside the corporation. We explore the role of Service Oriented Architectures (SOA), Supply Chain integration, Business to Business methods, Middleware types and roles, and Lean Enterprises.

**MATH-4960-01  Health Analytics Challenges Lab**

This course focuses on data analytics research applied to real-world problems using open health data, inspired by our challenge to create a healthier world through data analytics. In this course, highly motivated students work in multidisciplinary teams on six-week, team based, hands-on data analytics projects. Three hours per week are devoted to learning modeling methods useful in health informatics and generally in data analytics practice. Datasets and projects will be selected at the start of the semester from a collection of challenges supplied by on- and off-campus clients. Each client provides project and dataset background and assists in setting team objectives. Students actively engage in the process of transforming knowledge to data, gaining critical practical experience applying data analytic methods learned in prior coursework. Students will learn the process of setting project objectives, planning, and management, including the use of best-in-class collaboration tools and methods. Teams will conduct their project based on goals agreed upon with their client and workflows they develop to attain these goals.

The prerequisite for this Lab is least one of the following: *Introduction to Data Mathematics; Biostatistics; Data Analytics; Machine Learning*; or permission of instructor. The Lab will help students prepare and compete for students for future internships, coops, and careers in data analytics and health informatics, as well as providing hands-on experience with data analytics skills useful for working on problems in any domain.

Credits: 4

Instructors: Kristin Bennett and John Erickson

**COMM 496X: Social Media & Popular Culture in Contemporary China**

Helen Zhou

This course explores the ways in which Chinese culture shapes social media and popular culture in contemporary China. Through readings, guided explorations, and original research, students will learn about the different uses of Chinese social media for socializing, gaming, publicizing, and commerce. Students will gain knowledge and develop critical perspectives of Chinese social media and popular culture vs. their western equivalents. This course will be taught in English. No proficiency of Chinese is required for coursework. Course can be used to meet Chinese Minor requirement.
COMM 296X: Board Games as Storytelling Systems
Maurice Suckling
Recent developments in board game design have given us numerous examples of games where the focus is on narrative engagement for players. We now see a number of games where the essence of the experience is not so much about winning or losing, but on the design of game systems that both facilitate and encourage storytelling, sometimes cooperatively, other times not. For game writers and game designers alike, understanding the often-sophisticated interplay between narrative and design is imperative. Whether a game is ultimately destined for a digital incarnation or not, paper prototyping is a highly effective way to quickly and efficiently move through design iterations, so taking time to ‘look under the hood’ of game systems to understand how they work can prove extremely useful for analog and digital game designers alike. This course will mix analysis with practical engagement. Most games on the syllabus will be played, at least once. Students will generate short written summaries of their thoughts in response.

ARTS 296X: Sound Recording & Production
Justin Yang
This course covers historical, theoretical, practical and creative aspects of sound recording and production. Topics include microphone theory and placement, acoustics, recording studio use, mixing desk use, digital audio workstation, mixing, editing, and mastering.
Term: Summer I
Day/Time: M/R 10:30-12:35
Space: DCC
Size: 18

WRIT 196X: Introduction to Creative Writing: New Ways into Mystery
Shira Dentz
In this class we will read and write poetry, fiction, and creative non-fiction. Emphasis will be on students generating their own creativity and in-class and out-of-class exercises will foster discovery.
Language will be approached like a musical instrument, and students will practice flow on its keys through a writer’s notebook and guided prompts, tuning their senses, with the eventual goal of composing artful pieces. Students will learn literary terms and how to read creatively, looking to published literary pieces as models—we will discuss both our reactions to the texts we read and the authors’ techniques for achieving those effects. You will receive feedback from me and from your classmates on drafts of your writing, and will use these suggestions to revise your work. The willingness to imagine and a good grasp of basic English grammar are prerequisites for this course. Requirements include keeping a writer’s notebook, active class participation, and regular attendance, as well as a final portfolio.

This class will be structured according to aspects of craft, rather than by strict divisions between genres. Our focus will be mostly on the short piece, so that we may pay close attention to the many juggling balls a writer needs to balance in the making of a creative writing piece, and, as William Blake said, “To see a World in a Grain of Sand And a Heaven in a Wild Flower, Hold Infinity in the palm of your hand And Eternity in an hour.”

ARTS 2961: BOARD GAME SCULPTURE
Jefferson Wille Kielwagen
A hands-on sculpture class focused on design and fabrication of board games. Students generate original game ideas and employ woodworking, mold-making, casting and other sculptural crafts to fabricate game boards and pieces.
GSAS 2961: Films Every Game Designer Should See
Michael Lynch

This course explores a number of cinematic concepts (using excerpts and entire films) that can be of use to game designers. The concepts range from the purely technical (camera, lenses, lighting, composition) to narrative (storytelling conventions, handling of time and space, etc.). The objective of the course is to allow game designers to gain insights into techniques for telling a broader range of stories than have traditionally been found in video games.