Berlin 2019 – Courses

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Overview:
• Courses are taught in English by GT faculty for GT resident credit.
• Choose 4 courses for a total of 12 credit hours for the summer.
• Carefully check the prerequisites for the courses!
• ALL majors are welcome.
• Classes take place on the campus of Technische Universität Berlin (TU Berlin).
• Course meeting times are typically arranged to avoid any scheduling conflicts for students.
• It is expected that students will spend an average of 40 hours per week on coursework: approximately 16 hours per week in class for the 4 courses taken through the program plus 24 hours per week working outside of class.

Who are the faculty for summer 2019?
• Henry Owen: College of Engineering: School of Electrical and Computer Engineering, Professor; henry.owen@ece.gatech.edu
• Chris Simpkins: College of Computing: Division of Computing Instruction, Lecturer; chris.simpkins@gatech.edu
• Jean Sands: Instructor; jeangeorgiatech@gmail.com
• Caroline Simpkins: Instructor; caroline.simpkins.gt@gmail.com

Course Offerings for summer 2019:
CS 2340: Objects and Design with Prof. Chris Simpkins (prerequisite: CS 1331, CS 1372, or CS 1316)
Students will learn how to design and build software systems in teams using highly sought-after modern software development methods and technologies. This course provides background in team-based software development, agile development methodology, and design paradigms such as object-oriented, functional, and parallel/distributed software architectures. This course was recently redesigned to use Scala, one of the hottest technologies in modern software development. This course will teach you Scala from the ground up, which, being a JVM language created by a principal architect and implemeneter of modern Java, follows naturally from CS 1331. After taking this course you will be prepared for design capstone courses and for professional software engineering roles, including positions requiring Scala. CS 2340 will complement and enhance the other courses being offered in Berlin. High tech startups produce significant software systems in small teams, many modern startups use machine learning in their products, and software systems designed for human users must consider ethical issues such as data protection, privacy and cultural sensitivity.

CS 2701/COE2701/MGT4803: Startup Lab with Prof. Owen
The best time to learn how to “create your own job” is not the day you suddenly have to, but instead before you need to. This class explores a scientific method which may be used for creating your own job. The class involves getting out and interacting with the local Berlin community through real world interactions. Group based discussion and active learning both in the classroom and outside of the classroom with topics including opportunity identification and validation, ideation, customer discovery, market analysis, minimum viable product development, business models, and intellectual property. Provides a “safe and supportive” classroom environment to improve public speaking and presentation skills.

CS 4001: Computing & Society (Ethics Credit) with Prof. Owen
This highly interactive and discussion based course examines computing as a social process, with emphasis on ethical and social impacts on local and global organizations. Topics include the responsibilities of computing professionals, intellectual property, privacy governance and policy, and computing/technology safety and security. The course includes Berlin specific and European Union general issues such as European societal viewpoint on privacy and how this impacts you, even when you go back to Atlanta. Relevant current topics in the news related to computers and society will also be discussed.
CS 4641: Machine Learning with Prof. Chris Simpkins (prerequisite: CS 1331)
Students will learn how to create computer programs that learn from data. Machine Learning is the hottest growth area in high tech, with large companies scrambling to build machine learning/data science programs and startups being born every day. This course presents the theoretical foundations of machine learning, surveys the major paradigms -- supervised, unsupervised, and reinforcement learning -- and provides practical skills. After taking this course students will be prepared for further study in machine learning, e.g., to specialize in a particular area, or to apply skills as a data scientist or machine learning engineer (especially after taking additional courses like CS 2340). With its rapid growth and reach into personal lives, machine learning has also been the topic of ethical debates concerning privacy and bias. With its clear connections to ethics, startups, and modern software development, CS 4641 will complement and enhance the other course being offered in Berlin.

ISyE 3770: Statistics and Applications with Prof. Sands (prerequisites: MATH 2401 or MATH 2550 or MATH 2551 or (Minimum Grade of D) or MATH 24X1 or MATH 2X51 or MATH 25X1 AND MATH 1553 or MATH 1554 or MATH 1564 (Minimum Grade of D) or MATH 1X53)
Computer science provides you with the tools to be able to do data analysis. When you are doing that data analysis, the methods that are used requires the knowledge of statistical concepts. This course will teach computer science oriented students how to use statistical inference for the modeling and analysis of data. The class orientation is applied rather than theoretical, but theory, where required will be explained for understanding of the methods covered. Data analysis from various sources to include but not limited to computer science, political, business, environmental and medical data will be analyzed during the course. In order to take advantage of the Berlin/European Union location of the course, examples and insight on German and European Union issues (e.g. Brexit), as they become available will be examined from a statistical standpoint.

APPH 1040: Scientific Foundation of Health with Prof. Caroline Simpkins
Students will learn how genetics, the environment, and human behavior influence well-being. Topics will include fitness, nutrition, mental health, stress management, and chronic disease prevention. We will focus not only on how to lead a healthy lifestyle at home, but also while traveling abroad!

APPH 3801: Special Topics in Applied Physiology with Prof. Caroline Simpkins
This course will take a more in-depth look at the benefits of regular exercise on both the body and the brain. More specifically, students will participate in class discussions on the effects that exercise can have on learning, stress, anxiety, and depression. Discussions will be primarily based on readings from the book Spark: The Revolutionary New Science of Exercise and the Brain by John Ratey.