

Berlin 2022 – Courses

www.cc.gatech.edu/berlin | berlin@cc.gatech.edu

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 2022?

- **Gerandy Brito:** College of Computing: Lecturer; gbrito3@gatech.edu
- **Henry Owen:** College of Engineering: School of Electrical and Computer Engineering, Professor; owen@gatech.edu
- **Mark Moss:** College of Computing: Lecturer; mmoss7@gatech.edu
- **Michael Nitsche:** School of Literature, Media, and Communication: Associate Professor in Digital Media; michael.nitsche@gatech.edu

Course offerings for summer 2022:

CS 2050: Introduction to Discrete Math for CS with Prof. Brito

This course helps students to make the transition from a more coding to a designing algorithms way of thinking in a fun and challenging way. Students will learn to write formal proofs and understand logic. Various areas of mathematics are explored to help provide a foundation for computation. The course provides a basis for understanding and developing clear logic, understanding simple encryption techniques, writing regular expressions, designing computational models by applying fun logic puzzles, propositional logic, proofs, number theory, and basic counting. The course provides a solid foundation for CS3510, and this Summer in Berlin will be taught by the Algorithm instructor!

CS 2340: Objects and Design with Prof. Moss (prerequisite: CS 1331, CS 1372, or CS 1316)

Students will learn how to design and build software systems in teams using modern software development methods, with a focus on object-oriented design techniques. This course provides background in team-based software development, agile development methodologies, and software design paradigms, principles and patterns, with a focus on the critical decisions that frequently arise during the design phase of many software development processes. Students will develop and implement a course project in order to apply some of the abstract concepts being studied in a more practical setting. This course will help prepare students for their design capstone courses and for professional software engineering roles.

CS 2701: 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 or creating your own projects inside of an existing company. The class involves getting out and interacting with the local Berlin community. 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, and business models. Provides a “safe and supportive” classroom environment to improve public speaking and presentation skills. Includes class field trips to local incubators and local professional events. An excellent way to become involved in the Berlin community.

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.

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CS 4400: Introduction to Database Systems with Prof. Moss (prerequisite: CS 1301, CS 1315 or CS 1371)

Students will learn the fundamental concepts necessary for the design and use of modern database systems in today's large-scale enterprise applications. The course takes a very hands-on approach in demonstrating how to use the Structured Query Language (SQL) to view and manage data in the database, and to build database structures. Also, students will analyze requirements in order to develop, implement, and test a database system using Entity Relationship Diagrams, relational schema conversion processes, data integrity and normalization principles, and the MySQL Relational Database Management System. The course also covers relational algebra, relational calculus, and related topics including indexes and transactions.

CS 4641: Machine Learning with Prof. Brito (prerequisite: CS 1331)

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 foundations of machine learning, surveys the major paradigms, 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. We plan to explore its clear connections to ethics and modern software development as one way to complement and enhance the other courses being offered in Berlin.

LMC 3262: Performance Studies with Prof. Nitsche (prerequisite: ENGL 1102; Humanities credit)

Building on basics of Performance Studies, this course will focus on questions of digital performance practice and its challenges. Digital performance happens on Facebook, Twitter, video game play, in blockbuster movies, in our encounters with robots, and on traditional stages. It shapes behavior as well as technology, frames the emergence of new social groups as well as individual expression. We will ask: How do digital media affect performative expression? How can we expand on their opportunities and deal with their limitations? To answer these questions, we will tackle theoretical readings as well as practical assignments and our own performance prototypes. Berlin hosts countless performance practices that offer many opportunities for exploration, critique, and inspiration. The class will feature readings, discussions, critique sessions, and teamwork is necessary throughout but especially in the final project.

LMC 3314: Technologies of Representation: Berlin and the Moving Image with Prof. Nitsche (prerequisite: ENGL 1102; Humanities credit)

It was in Berlin where the Brothers Skladanowsky showed the very first moving images in 1895 and the city has been a center for film and media production ever since. We will draw from this rich past and present culture throughout the course as it explores foundations of the moving image, from the still image to film and video to current digital formats such as videogames. How did technologies of representation develop their language from framing to montage, to cutscenes, to the emerging VR aesthetics? We will discuss and analyze examples ranging from *Berlin Symphony of a Great City* to *Run Lola Run* to *Babylon Berlin* - all of them shot in Berlin and telling different stories about the city. To expand this into the digital age, we will also look at newer recent art forms of the moving image formats, such as real-time 3D graphics. The goal is to identify overlaps as well as differences between different media formats and trace connections and divergences. The class will include readings, analysis assignments, as well as final team projects. If conditions permit it, we will include field trips to film and media attractions in and around Berlin. The class should be of interest for students who want to explore different formats of moving image media through the rich history in place at Berlin.

Please note: Registration permits for courses will be issued based on the order of the student's acceptance into the program and other criteria. The maximum capacity for courses will be enforced; overload permits may be issued in exceptional circumstances. Apply and complete your application early to the program to ensure you get the courses you want. We recommend that you have 1-2 alternate courses in the event you are unable to secure a seat in your top 4 preferred courses. An online survey will be distributed in March 2022 to participants from which class rolls will be set by the program.