

Barcelona 2020 – 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.
- No prerequisites are required for any courses (with the exception of CS 4400), and ALL majors are welcome.
- Classes take place on the campus of Universitat Politècnica de Catalunya (UPC).
- 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 2020?

- **Sabir Khan:** College of Design, Associate Professor; sabir.khan@design.gatech.edu
- **Monica Sweat:** College of Computing: Division of Computing Instruction, Director and Senior Lecturer; sweat@cc.gatech.edu
- **Richard Henneman:** School of Interactive Computing, Professor of the Practice; rhenneman@gatech.edu
- **Valerie Summet:** Rollins College: Dept. of Mathematics and Computer Science, Assistant Professor, vsummet@gmail.com
- **Jay Summet:** College of Computing: OMSCS, Senior Lecturer; summetj@gatech.edu

Course Offerings for summer 2020:

ARCH 3135: City Literacy: What Makes Great Cities Great (Social Sciences Credit) with Prof. Khan

This course engages the city of Barcelona directly in order to understand the relationship between cities and city life: how cities are conceived and perceived, negotiated and lived. We look closely at the relationship between physical form and social life - between the “hardware” and the “software” of a city -- to get a sense of the role design, politics, policy, technology, individual initiatives and collective actions play or could play in improving the quality of life in cities. The projects range from analysis and field observation to design projects and interactions with its inhabitants. The goal of the class is to leverage your summer living in Barcelona and visiting other European cities into a transformative experience so that you come back with a sense of what is possible in your own city and the neighborhoods in which you live.

ARCH 4128: Barcelona: Architecture, Design, Material Culture (Humanities Credit, IP) with Prof. Khan

Barcelona and its incredible design culture, from its Roman origins to its current status as a hub for digital arts, music, and innovation -- offers an unparalleled opportunity to look at think about design at a whole range of scales. In this class we will practice how to look at and make sense of -- *to make considered judgments about* -- about buildings, furniture, objects, and everyday things. We will pay attention to how something is produced, consumed, and received. You will come away with an ability to look, notice, describe, relate, question, speculate, and discover -- a way of seeing and analyzing that you could apply in many different domains. No background in “architecture” or “design” is necessary: if you are curious and take pleasure in discovering new ways of seeing, knowing, and understanding, then this course is for you.

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

You are in a tapas restaurant in Barcelona. What could be better? Exactly how many ways are there to pick three tapas selections from the twenty amazing kinds you see before you? This is just one type of question that will be solved in CS 2050. Let's face it, you're traveling the world and expanding your mind. Why not hone your logic skills too? We'll delve into logic puzzles, propositional logic, proofs, number theory, basic counting, and more.

Barcelona 2020 – Courses Cont.

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CS 2340: Objects and Design with Prof. Valerie Summet

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. After taking this course you will be prepared for design capstone courses and for professional software engineering roles. CS 2340 will complement and enhance the other courses being offered in Barcelona including user interface design and ethical issues such as data protection, privacy and cultural sensitivity.

CS 3750/PSYC 3750: Human-Computer Interface Design and Evaluation with Prof. Henneman

This course teaches how to design human-computer interfaces that are usable and effective, using principles and methods that apply to all interactive systems—desktops, laptops, pads, smart phones and consumer devices. Topics include human perceptual and cognitive capabilities, methods to understand user requirements and needs, as well as ways to evaluate interactive systems. In teams you will design, prototype and test interactive systems. The emphasis will be on design and prototyping rather than programming.

CS 4001: Computing & Society (Ethics Credit) with Prof. Valerie Summet

This 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, system safety and security, algorithmic bias, and e-voting. The course also discusses the social context of computer-based technology especially as it is revealed in transitional and cross-cultural differences. We'll also take a special look at European regulation for topics like net neutrality and data security and privacy.

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

In our modern world almost everything we encounter involves a database behind the scenes. This course introduces the fundamental concepts necessary for the design and use of modern database systems. We explore the database design process through the course material and through the completion of a group project. The project will take you from the real-life problem description to a conceptual data model, and from there, on to a database specific model (namely the relational data model). The final result is a GUI-driven application that interacts via SQL with the database underneath it all. We will see how to use the relational database language SQL to define the relations and to write SQL statements to insert, delete, retrieve, and update the data. We'll study ways to judge (and hopefully improve) the goodness of relations. Time permitting, we also examine some of the fundamental storage structures and indexing schemes that are used in relational database systems.

CS 4475: Computational Photography with Prof. Jay Summet

This course explores perceptual and technical aspects of photographs, and more precisely the capture and depiction of reality by computational means. The scientific and perceptual principles behind image-making will be emphasized. Topics include creating panoramas, high-dynamic range images, image morphing, and other techniques that will give students a new appreciation for the unique combination of computing and photographic media. There are programming assignments in this class, and a basic working knowledge of Linear Algebra, Calculus, Probability, and Programming in Python (e.g. CS 1301 / CS 1315) will be required. You will complete a creative computational photography project with a local theme during the semester.

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 2020 to participants from which class rolls will be set by the program.