CS Origins – Turing, Babbage, and Lovelace in the UK

Winter 2025

Professor Contact

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Emergency Contact

Within the UK, U.S. Citizens with emergencies may call +44 20 7499 9000 to reach the US embassy. Additionally, dialing 999 is the UK equivalent of our 911.

Course Overview

Embark on a transformative journey through the United Kingdom with our immersive computer science / software engineering study abroad program. This 3-credit winter program hosted in London, UK will explore the remarkable life and legacy of Alan Turing, tracing his footsteps from the historic Bletchley Park to the vibrant streets of London and the quaint corners of Cambridge. Our program will also include the works of Charles Babbage as well as Lady Ada Lovelace, considered to be the first computer programmer.

Academically, assignments will include research and reflection on the life and works of these historical computer scientists. Additionally, there will be programming assignments and a mini hackathon. We will also engage with the London tech industry to gain added perspectives on the global software engineering industry.

Credits Offered

CS 399 ***or*** CS 595: Software Engineering Abroad - 3 credits (CS Elective)

Learning Objectives

Upon completion of this course, students will be able to:

1. Demonstrate an understanding of the historical context and contributions of Alan Turing, Charles Babbage, and Ada Lovelace to the field of computer science.
2. Evaluate the historical and cultural context in which these pioneers worked, including their societal impact.
3. Analyze the ethical considerations inherent in computing, drawing parallels between past and present dilemmas.
4. Analyze and assess software usability using analytical evaluation techniques.
5. Demonstrate proficiency in programming concepts through practical assignments and projects, including team-based software development.
6. Apply critical thinking and problem-solving techniques to real-world software engineering challenges encountered during the study abroad program.
7. Foster intercultural competence through collaboration and engagement with

local communities and software engineers in and around London.

8. Enhance career readiness through exposure to international engineering practices, networking opportunities, and the development of a global perspective on software engineering.

Prerequisites

Proficiency in at least one programming language.
Ability to work well with others.
A passionate desire for learning.

Course Materials

Required Reading:

Hodges, Andrew. *Alan Turing : The Enigma*. New York: Walker, 2000

Gibson, William, and Bruce. Sterling. *The Difference Engine. 20th anniversary ed.*; 2011 Spectra Trade paperback ed. New York: Ballantine Books, 2011

Essinger, James. *Ada's Algorithm : How Lord Byron's Daughter Ada Lovelace Launched the Digital Age.* Brooklyn, NY: Melville House, 2014. Available Online

Padua, Sydney. *The Thrilling Adventures of Lovelace and Babbage: the (mostly) true story of the first computer*. Pantheon, 2015.

Computer Requirements: You will need a laptop computer that you can bring with you to the UK. Recommended specifications from the CS Department can be found here. Your laptop should be easily portable, have a good battery life, and be capable of accessing WiFi. The CPU and RAM should be sufficient for running your favorite development environment.

Software: You will need a browser and operating system that are listed as being compatible or certified with the Blackboard version available on the myMasonPortal. You will need access to GitHub as well as the appropriate GitHub client for your laptop.

Miscellaneous: Bring a comfortable backpack capable of storing your laptop as well as a paper notebook and writing utensils. Make sure to also pack a good pair of walking shoes – we will be doing a lot of walking!

Packing lists will be provided closer to the start of the term.

Grading Policy

Research Paper: 20%

Reflective Essay: 15%

Programming Assignments: 25%

Hackathon: 20%

Participation and Engagement: 20%

Please note that expectations on the above will differ for undergraduate vs. graduate students.

Attendance & Participation

Attendance and class participation are integral components of your final grade in this experiential course, as it immerses you in real-world experiences beyond the traditional classroom setting. Class participation entails actively engaging in discussions, completing assigned readings, attending scheduled events, and

exploring the city of London and surrounding area. These events encompass lectures provided by the instructor, guided walking tours of historical landmarks, visits to galleries and museums, and guest speakers from the UK software engineering industry. While I aim to create an enjoyable learning environment during this trip, it is crucial to note that failing to attend assigned events in favor of personal activities may significantly impact your overall course grade.

Assignments

Specific assignment details will be provided prior to departure and include:

Research Paper: A critical analysis of one aspect of Alan Turing's contributions to computer science.

Reflective Essay: Discuss the ethical considerations related to diversity and equity in computing.

Programming Assignments: Software development based on these historical figures.

Mini Hackathon: Collaborative coding challenge.

Presentation & Discussion

Though not a graded aspect of this study abroad course, I will encourage you to share your study abroad experiences with future classes. I firmly believe in the value of international travel and experiential learning but the best way to encourage others is for you to share your personal experiences.

Email policy

You must use your Mason email account for all email correspondence having anything to do with your work at Mason. Federal laws protecting your privacy rights require that we only communicate student information directly to students –and use of the university email system is our only way to validate your identity. You may forward your campus email elsewhere, but we can respond only to a Mason email account.

Honor Code

You are expected to abide by the University's honor code and the CS Department's Honor Code and Academic Integrity Policies during the semester.

Accommodations

Any student who requires special arrangements in order to meet course requirements should contact me to make necessary accommodations (**before the pre-departure orientation please).** This includes students with disabilities as well as those needing accommodations for dietary or allergy restrictions.

Tentative Schedule

(A final, detailed daily schedule will be provided in your pre-departure information sessions.)

Day	Lessons	Activities
0 December	Program Overview Historical Background Pre-Departure Orientation	Front-load material you'll need to complete your assignments in the weeks before departure. Meet your classmates and form groups for the project.
1 **1/2/2025**		Students depart from the US
2 **1/3/2025**	Program Begins	Students arrive in-country Neighborhood and in-country program orientation
3 **1/4/2025**	Life and contributions of Turing, Babbage, and Lovelace	London Science Museum – Babbage and Turing machines Group Dinner
4 **1/5/2025**	London Culture and History with ties to Computing	London historic walking tour
5 **1/6/2025**	Turing Machine Overview and applications to Cryptography	Day trip to Bletchley Park and National Museum of Computing Enigma Machine
6 **1/7/2025**	Software Development Practices Societal Impact of Software	Mini Hackathon
7 **1/8/2025**	Ada Lovelace and Women in Computing	British Library – Ada Lovelace Notes Theatre show or other cultural activity

8 **1/9/2025**	Diversity in Computing	Day trip to Cambridge – Secret Cambridge, the Alan Turing Tour
9 **1/10/2025**	Turing Machine Evolution – Implications for Modern Software Engineering	Tower of London Tour
10 **1/11/2025**	Global Software Engineering	Visits to London Tech Companies Evening social with industry professionals
11 **1/12/2025**	Programming assignment work / discussions	Neighborhood exploration around London, including Notting Hill and Camden
12 **1/13/2025**	Assignment wrap up	Tour of Windsor Castle
13 **1/14/2025**	Assignment wrap up	Free day to explore Farewell dinner
14 **1/15/2025**		Depart for the US