

## CAS CS400D1: MEAN Stack Application Design and Development

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### About the course

This course provides an introduction to the architecture, development, testing, and deployment of full-stack web-based applications, primarily in the MEAN stack. Included are technologies such as non-relational data stores (i.e. mongoDB), RESTful, decoupled applications using JSON as a data transport, and web sockets. Front-end work is done in Angular, React, and back-end work is primarily in Node and Express. You'll end up learning two languages: JavaScript and Typescript.

The stack introduces several interesting concepts that you might not have been exposed to yet in the CS curriculum, including:

- Non-relational, document-oriented data stores
- Asynchronous, non-blocking programming using Promises and thenables
- Architectures using internal application programming interfaces (APIs)
- Use of chained and lambda functions
- Working with third-party data sources via JSON APIs
- Deploying applications in a serverless (cloud) environment such as AWS EC2 and Lambda
- Testing decoupled, API-based applications using frameworks such as Mocha/Chai and Postman

Stackoverflow's annual developer surveys (n=100,000 in 2018) shows that JavaScript continues to be a dominant language in the industry, with Python and Javascript in the #1 and #2 position in the 'technology I most want to learn' category. There is strong industry demand for full-stack developers. In this context, the course will help prepare you for this evolving workplace.

### Text

We will use Kyle Simpson's excellent 5-book series *You Don't Know JavaScript (YDKJ)*, which is available at no cost from his GitHub repo: <https://github.com/getify/You-Dont-Know-JS>

Printed copies are also available through Amazon.

### Blackboard / Piazza / GitHub / Gradescope

We use Blackboard (<https://learn.bu.edu>) as a repository for the slide sets for each class, for homework and lab assignments, and for announcements. You should be enrolled already, so that when you log on to the site you'll see the course listed. Piazza.com will be our tool for questions and discussion; a link to it will be on the Blackboard page. I'll post each week's lecture materials as PDFs on Blackboard for your reference, you'll use Blackboard to turn in homework, which for the most part will be in the form of lab exercises, and to take quizzes.

Example code, and your project assignments, will be posted on GitHub. I realize that that's a lot of tech for just one course, but unfortunately each is good at one thing and not the others.

### **Homework/Assignments/Quizzes**

Assessment will be done in three ways:

- Short assignments (during lab time)
- Quizzes
- Application code

Each carries a third of your total grade.

Grades are not negotiable, but if you think that a mistake was made in grading, we'll take a look at it together. The course grading scale is numerical:

96-100	A	80-84	B	65-69	C
90-95	A-	75-79	B-	60-64	C-
85-89	B+	70-74	C+		

If your course grade happens to be close to a boundary, such as an 89.5, I'll bump you up unless your overall course work for some reason doesn't justify it.

### **Getting Help**

We want you to succeed in this class, and if you are stuck on something, email me or drop by my or their office hours. You can also post a question on our Piazza forum ... that's usually the fastest way to get information. There are lots of ways that I can help, but you need to ask. I'll post my office hours on Blackboard.

### **Contacting me and office hours**

The best way to contact me is by email at [perryd@bu.edu](mailto:perryd@bu.edu). You may also IM me at [perryd@bu.edu](mailto:perryd@bu.edu) (iMessage). My office is in the Psychology building at 64 Cummington Mall, room PSY228C. Office hours are posted on Blackboard. No appointment needed, just drop by if you have a question or want to hang out a bit. If you need to drop something off, my mail slot is in the CS office in MCS138.

If you'd like to get some practice in using encryption tool, you are invited to send encrypted and/or digitally signed email to me at [perryd@bu.edu](mailto:perryd@bu.edu). On MacOS, the GPGSuite at [gpgtools.org](http://gpgtools.org) is a good choice (though I personally use Thunderbird with the Enigmail plugin on my own Macs); for Windows users you can try [gpg4win.de](http://gpg4win.de). My public encryption key is available at <https://pgp.mit.edu>, and my key fingerprint/ID is C894 B69B 6576 C394 1452 2E9E 7C38 F315 BCC1 ADDF.

I also am a proponent of the encrypted IM app Signal; if you'd like to practice with it I'm happy to help you get it set up.

### **Academic Conduct Code**

The University the College take cheating very seriously. Cheating and plagiarism will not be tolerated in any course. Cases will be referred to the Dean's office and may result in loss of credit for an exam or assignment or other disciplinary action. Please read the college's policy at <http://www.bu.edu/academics/policies/academic-conduct-code> and, if you have any question as to whether something you are doing is in violation, please ask me about it.

Programming is a collaborative effort, and I fully expect that you will use resources such as Google, fellow students, and our own discussion forum on Blackboard to learn the material and do your assignments. We'll discuss code and approaches in class, and I'll occasionally post sample code on GitHub that you are welcome to use as a starting point. However, I don't want you to simply copy entire programs that you find on the web and turn them in as your own work (that's the definition of plagiarism). If you do use more than a line or two of someone else's code (including mine), make a note in a comment in your program to point to where you got it. Again, if there's any doubt, ask me.