

## Wednesday Workshops

### Programming for the Humanities – A Whirlwind Tour of Assignments

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CS instructors are sometimes tasked with modifying CS1 courses to teach introductory programming for the Digital Humanities. Training computer science students in DH programming methods may also have some additional benefits, such as bringing more women into computing, and helping in the recruitment and retention of CS students overall. DH projects may also provide Service-Learning opportunities that will give students experiential learning opportunities not provided in industry. The presenters have developed six assignments in Python that are oriented towards DH topics while still providing CS students solid experiences in core programming concepts. This workshop introduces the participants to five of the assignments and gives them immersive abbreviated experiences in each. The topics include Computing Change over Time (calculating burials in a historic cemetery), Visualization of Change over Time (visualizing the burials in the historic cemetery), Textual Analysis (finding word frequencies and “stop words” in public domain texts), Stylometrics (comparing measured features of graphic images), and Social Network Analysis (analyzing extended relationships in historic social circles). A balance of direct coding experience and discussion of gotchas and best practices in classroom management will give workshop participants confidence in offering and managing these assignments in their own classrooms. Participants should bring a laptop/keying-friendly mobile device that has a Python 3.x IDE already installed, and some familiarity with the Python language.

**Keywords:** CS1; Python programming; Digital Humanities; Humanities programming;

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### Programming Web Services on the Cloud with Node.js

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Node.js is one of the hottest open source web platforms currently available. It's used by companies like PayPal, DowJones, Walmart, Netflix, and Yahoo. Node.js allows you to use JavaScript to write all kinds of network servers in just a few lines of code, definitely easier than using other platforms based on languages such as C++, C# or Java. If you know how to use JavaScript on the front end (i.e., the browser), it's a breeze to use it on the back end (i.e., the server). This workshop is aimed at CS instructors that wish to teach

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students how to use and write RESTful web services (a.k.a. web APIs) using Node.js on a cloud platform. The only thing you need is a computer with a modern web browser and a Wi-Fi connection. Participants will use the free service provided by the Cloud9 platform (<https://c9.io>) to learn how to write scalable web services using Node.js, the Express web framework, MySQL, and Ajax via jQuery. Web services allows us to build powerful web based applications using data from multiple online sources. And, by using a cloud platform, we have all our tools readily available through a web browser, thus eliminating the hassle related to installing a complete and fully functional web development environment. Participants are expected to have a working knowledge of JavaScript, SQL and HTML. Additional information available at <http://node.arielortiz.info/> **Laptop required.**

**Keywords:** Web development; Web services; JavaScript; Node.js

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### Introducing Secure Coding in Undergraduate (CS0, CS1, and CS2) and High School (AP Computer Science A) Programming Courses

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The ACM CS 2013 curriculum includes Information Assurance and Security as a pervasive knowledge area, the ACM Community College curricular guidelines, CTransfer2017, places great emphasis on cybersecurity as well. However, introducing security in introductory programming courses is challenging because of lack of appropriate teaching resources and training. This workshop will provide a well-tested strategy for introducing secure coding concepts in CS0, CS1, CS2, and AP CS A classes. We will introduce attendees to secure coding through hands-on exercises, and provide self-contained, lab-based modules designed to be injected into CS0-CS2 with minimal impact on the course ([www.towson.edu/securityinjections](http://www.towson.edu/securityinjections)). Participants will be encouraged to bring in their own syllabus and labs to modify to include learning objectives focused on cybersecurity based on ACM and CAE guidelines. *Laptop recommended.*

**Keywords:** Security Injections; Cybersecurity; CS1; High School; Secure Coding;

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### Successfully Engaging Early Undergraduates in CS Research

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Engaging undergraduates in research has been shown to improve retention, increase students' sense of science identity, and increase the chances that they will continue to graduate school. Yet many