Computer Science 235
Net-Centric Computing
Fall 2017 9:30 – 10:50 TR
Stuart Hall 308

Instructor: Dr. Stephen Hughes
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Office Hours: 315 Stuart Hall
MTWRF 11:00 – 12:00
By Appointment or Open Door.

COURSE DESCRIPTION

Net-Centric computing deals with the structure, design and implementation of applications enabled by networking technology.   This course will examine the fundamentals of network programming and the client-server architecture as well as exploring the role of protocols, authentication, distributed objects and security.   Students will also gain experience building and deploying web-based applications. Requires previous or simultaneous registration in CS-225 or permission of the instructor.

LEARNING OUTCOMES

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

- Define the appropriate network terminology.
- Articulate the components and organization of the Internet.
- Describe the processes that occur in layered communication architectures.
- Identify major protocols by their functional role and describe their responsibilities.
- Compare and contrast web programming with general purpose programming .
- Implement multi-threaded, client-server -based applications.
- Understand and parse the composition of modern web applications.
- Understand the essential mechanics of client-side and server-side web applications.
- Programmatically automate the process of traversing and extracting information from the Internet.

CLASS ENVIRONMENT

This class will be taught in a practice-based environment. Conceptual material will be introduced through lectures, but a significant portion of class time will be devoted to working interactively with the instructor and peers to co-develop and explore coding examples.

You will demonstrate your mastery of the learning outcomes through short written assignments, programming activities and short quizzes.   The primary function of the written assignments and quizzes are to assess your fluency with the concepts; they focus on digesting key concepts, interpreting ideas and articulating your understanding.   The programming solidifies and grounds these concepts and allows you to appreciate the nuances that are part of implementation.   It is expected that you have been successfully engaged in the introductory programming sequence and are comfortable reading and writing code.   As part of a 200-level computer science course, you will be asked to engage in a significant amount of coding.   It is likely that you will encounter some coding constructs, libraries or modules that are unfamiliar to you. To thrive in this course, you must be willing to independently research, experiment, fail, recover, explore, tweak, discover and reflect.

At its core, this course is about automating communication.   In many cases, this means that you will need partners to communicate with. You should expect to be called upon to work with partners and small groups frequently.   It is critical that you are prepared to share your programs, ideas, expertise and perspective with other class members. They are counting on you as much as you are counting on them.

This class is expected to consume a *minimum* of 150 hours of student work over the course of the term.   To meet this expectation, you will need to work outside of our scheduled meeting time.

You should plan to dedicate a minimum of 10 hours per week to this class.

STUDENT ASSESSMENT

Your grades are considered confidential in accordance with FERPA
(See page 47 of the Coe College Catalog or online at: http://www.coe.edu/academics/registrar/ferpa).

30%	Written Assignments	Letter grades will be assigned based on the following scale.		
10%	In-class activities and Quizzes	$90 \le A- < 93$	$93 \le A$	
60%	Programming Assignments	$80 \le B- < 83$	$83 \le B < 87$	$87 \le B+ < 90$
		$70 \le C- < 73$	$73 \le C < 77$	$77 \le C+ < 80$
		$60 \le D- < 63$	$63 \le D < 67$	$67 \le D+ < 70$
			$F < 60$	

COURSE MATERIALS

Course textbook:
> **Introduction to Networking.   Charles Severance**

> Note: The author of this book believes in free-access textbooks and has made it available under the Creative Commons license. A pdf version will be made available for download on the class Moodle page.   Efforts will be made to share additional resources, including additional free-access textbooks, on the class Moodle site. Computer science resources are abundant on the web; you are also strongly encouraged to seek out additional resources on your own.

You will need to have a personal computing device that you have full administrative rights and authority to configure. Ideally, this device will be a Unix-based environment.   It is also a good idea for this resource to be completely dedicated as a development environment for this class.   Even if you already have a laptop that fits these specifications, it would be a good idea to have a second resource to facilitate cross-machine communication. Therefore, I strongly suggest that you purchase a separate Raspberry Pi[1].   Minimum recommendations:

- Raspberry Pi 3 (RPi3) Model B Quad-Core 1.2 GHz 1 GB RAM
  (with on-board WiFi/Bluetooth)
- Power supply
- Case
- 16 GB+ Micro SD card
- VGA-HDMI Adapter (so you can use the lab monitors)

These supplies should cost you about $70. You can piece together the components yourself or buy a "starter kit". The instructor will place a bulk order during the first week of class.

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[1] Note – Raspberry Pis will also be used in CS325: Operating Systems offered in the spring term.

COURSE POLICIES

Attendance

I do not factor attendance directly into your grade. However, I believe that class attendance is vital to your success in this course; conversations held in class illuminate the class materials and should not be missed.   Material covered during missed sessions is the responsibility of the student. Graded in-class activities, including quizzes, will not be available for make-up without prior approval or extreme circumstances.

Submission Policy

- All work will be submitted electronically through Moodle.

- You are required to submit your work on the designated due date. Unless *explicitly* stated on the assignment sheet, work is due at class time on the due date.   There will be a late penalty of 1% per hour.

- If your work is not complete by the deadline, you can avoid a late penalty by submitting your work "as-is". You can still earn full credit for the assignment provided that:

  o You clearly and completely document sections of the assignment that are incomplete.

  o You submit revisions that address *documented* concerns within one week of the deadline; I will grade the most recent submission as your final effort.   During this grace period, you can (and probably should) come talk to me about the difficulties you are having.

- Work that is submitted after one week of the deadline will receive a minimum 15% penalty.

Academic Integrity

At Coe College, we expect academic integrity of all members of our community. Academic integrity assumes honesty about the nature of one's work in all situations. Such honesty is at the heart of the educational enterprise and is a pre-condition for intellectual growth. Academic dishonesty is the willful attempt to misrepresent one's work, cheat, plagiarize, or impede other students' academic progress. Academic dishonesty interferes with the mission of the College and will be treated with the utmost seriousness as a violation of community standards.

Please refer to the Coe College Academic Catalog for complete information regarding Academic Integrity: http://www.coe.edu/academics/dean/academicintegrity

I believe that you can learn a lot from your peers, both in the class and in the broader community. Therefore, I strongly encourage collaboration with both. **However, do not mistake this as a license to cheat**.   It is one thing to *learn* from and with your peers, it is another to pass their work off as your own.   With respect to writing code for this class:

- You are <u>required</u> to document <u>any</u> collaboration that takes place.
- Absolutely no electronic transfer of code between students is permitted.
- Any code that you "find" on the Internet must be cited, <u>with an active link to that code</u>.
- While you are encouraged to engage in conversations in online forums, under no circumstances are you permitted to solicit other individuals to complete your work for you.

Ultimately, YOU are responsible for all aspects of your submissions. You should be able to explain each and every single line of code that you include with your submission. Failure to be able to defend any aspect of your submission to my satisfaction will be treated as a violation of academic integrity and result in failure of the assignment with a referral to the Vice President of Academic Affairs.

Office Hours
Office hours are an opportunity for you to clarify details you may have missed in class, discuss general computer science issues, or to have a profound conversation about the historic role of bananas in comedy. *It is time that is reserved for you*; I may appear busy, but you are not interrupting me – unless I am with another student. When you come to office hours with a problem on the assignment, you should come prepared to answer questions, as well as ask them. If you have questions regarding code, you should come prepared with access to an electronic version of your work.

Students with Disabilities
Coe College will make reasonable accommodations for persons with documented disabilities. If you have a disability which may have some impact on your work in this course, please contact the Learning Commons' Student Disability and Academic Services Coordinator.   All arrangements for accommodations must be handled through the Learning Commons; I am not able to offer individual accommodations without documentation from the Student Disability and Academic Services Coordinator.

End of Course
This course officially ends with the scheduled Final Exam session.
No work for this class will be accepted beyond that point.