

1. Course Number and Course Title

COE457 – Internet & IoT Programming

2. Credit Hours

3-1-3

3. Prerequisites and/or Co-Requisites:

Prerequisites: COE 312 (Software Design for Engineers) or CMP 256 (GUI Design and Programming) and COE370 (Communications Networks) or COE371 (Computer Networks I) and (CMP 310 Operating Systems or COE381 Operating Systems)

4. Name and Contact Information of Instructor:

Dr. Imran Zualkernan

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Office Hours: Posted on office door

5. Course Description (Catalog Description):

Introduces students to Internet programming. Topics include Internet protocols, advanced JavaScript programming, NSQL databases, cross-platform web-application development, Internet of Things (IoT) protocols and programming.

6. Textbook and other Supplemental Material:

Textbook:

Ethan Brown, *Web Development with Node and Express: Leveraging the JavaScript Stack*, O'Reilly Media; 1 edition (July 25, 2014). ISBN-13: 978-1491949306

Other supplemental material:

Notes and Slides.

7. Learning Outcomes:

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

1. Develop programs using sockets for various traditional Internet protocols
2. Develop end-to-end Internet applications using the JavaScript stack
3. Develop programs for non-traditional Internet-oriented NSQL (e.g., CouchDB, MongoDB) database systems
4. Develop cross-platform Internet applications
5. Develop programs using RESTful web-services
6. Develop programs using protocols (e.g., AMQP, MQTT, CoAP) for Internet of Things
7. Build Internet of Things applications

8. Teaching and Learning Methodologies:

Methods include lectures; problem and project based learning methods (homework, simulation-based projects) and class discussions.

9. Course Topics and Schedule:

Topic	Weeks
Programming using Internet protocols	1
Network programming: client-server	1
JavaScript programming	2
Programming with node.js and Express	1
Programming CouchDB/MongoDB	2
Using Cordova for cross-platform Internet applications	2
RESTful web services	1
Protocols for Internet of Things	2
Programming Internet of Things	2
Evaluation and Assessment	2
Total:	16

10. Schedule of Laboratory and other Non-Lecture Sessions:

Labs aligned with the topics covered in the class.

11. Out-of-Class Assignments with Due Dates:

Assignment (Mini Projects)	Date Out
Programming HTTP servers and clients in Java	Week 2
Programming in JavaScript	Week 4
Programming in node.js and Express	Week 8
Programming NSQL DBs	Week 10
Final Project (team)	Week 12

12. Student Evaluation:

Assessment	Weight	Due Date
Homework	25%	
Midterm Exam 1	10%	
Midterm Exam 2	15 %	
Final Exam	30 %	
Final Project (team)	20%	

13. Contribution of Course to Program Outcome:

This course contributes to the accomplishment of the following program outcomes:

Program outcome	Emphasis in this course
(a) an ability to apply knowledge of mathematics, science, and engineering	●
(b) an ability to design and conduct experiments, as well as to analyze and interpret data	
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
(d) an ability to function on multidisciplinary teams	
(e) an ability to identify, formulate, and solve engineering problems	●
(f) an understanding of professional and ethical responsibility	
(g) an ability to communicate effectively	
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i) a recognition of the need for, and an ability to engage in life-long learning	
(j) a knowledge of contemporary issues	
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	●

Emphasis: ● High; ● Medium; ○ Low; Blank – Nothing Specific Expected

13. Grading Scheme:

Grade	Range
A	93 and above
A-	89 to 92
B+	84 to 88
B	80 to 83
B-	75 to 79
C+	70 to 74
C	66 to 69
C-	60 to 65
D	50 to 59
F	<50

14. Course rules:

- Attendance is mandatory according to AUS rules. Missing 15% of classes implies dismissal from the course (regardless of whether or not the absence is justified).
- You must attend in the section you registered in.
- Students are asked to attend classes on time. Three occurrences of being late will be counted as one absence. Students might not be allowed into the class once the professor starts lecturing

- Attending labs is also a must. If a student misses a lab then s/he will get a grade of zero for that particular lab work.
- There are no make-up exams. If a student misses an exam without a valid reason then s/he will get a grade of 0 for that particular exam. If you have a valid reason as per AUS rules, then your average grade will be substituted for the missed exam. The only exception is the final examination which must be attempted.
- In the unlikely event of academic dishonesty in coursework (apart from written exams or quizzes), a grade of zero is given in all coursework. Additionally the incident will be reported to the dean's office for further disciplinary actions.
- In the unlikely event of academic dishonesty in written exams, the incident will be reported to the dean's office for a severe disciplinary action.
- Students shall not collaborate in any form in delivering coursework. Rather, students are encouraged to collaborate and interact with the course professor and lab instructor.
- Office hours are your right not your privilege, please make use of them. If there is a need to meet with the instructor outside the published office hours then please make an appointment.
- Feedback from students during the semester regarding the course or the professor is most welcomed.
- Coursework must be submitted on time. 33% will be deducted per late day.
- Final exam is comprehensive.
- Switch off your mobile phone during classes and lab sessions.

15. Lab rules:

1. Once in the lab, the students shall download the lab assignment form ilearn.
2. Students are encouraged to bring in their books and notes to make use of them during the lab session.
3. Once the students finish, they are required to store their solutions and snapshots of the results in a word document report. The report is uploaded on ilearn.
4. Students should not communicate during the labs session, the only help they can get is from the lab instructor, lab helper and professor.
5. Grading will take into account the readability of the code, this includes indentation, inserting comments if needed and using meaningful names for the variables.
6. If a student submits faked snapshots of the results of any lab question then he/she will get a zero for the whole lab session and this will be treated as an incident of cheating.
7. The lab instructor will then post the solution of the lab on ilearn.