The Hashemite University

الجامعـــــة الهاشميـــــة

Deanship of Academic Development and International Outreach

عمادة التطوير الأكاديمي والتواصل الدولي

# Web Applications Programming and Engineering (2010031375)

## Second Semester 2021/2022

| COURSE INFORMATION | |
|---|---|
| **Course Name:** Web Applications Programming and Engineering<br>**Semester:** Second Semester 2021/2022<br>**Department:** Department of Software Engineering<br>**Faculty:** Prince Al-Hussein Bin Abdullah II Faculty for Information Technology | **Course Code: 2010031375**<br>**Section:** Mandatory<br>**Core Curriculum**: |
| **Day(s) and Time(s):** Sunday: 9:00-10:00<br>Tuesday: 9:00-10:00<br>Thursday: 9:00-10:00<br>**Classroom:** HB 307 | **Credit Hours:** 3<br>**Prerequisites**: 2010031260 Fundamentals of Software Engineering |

**COURSE DESCRIPTION**

Three credit hours is counted for this course. The course focuses on engineering methods and technologies for building highly interactive web sites. The course focuses on methodologies, technologies and tools required for building and developing high quality (reliable, usable, secure, available, and maintainable) and highly interactive large-scale Web sites. The course utilizes and explores the latest technologies in Web programming and development, client-server programming and component-based programming.

**DELIVERY METHODS**

The course will be delivered through a combination of active learning strategies. These will include:

- PowerPoint lectures and active classroom-based discussion.
- Video lectures.
- E-learning resources: e-reading assignments and practice quizzes through Model and Microsoft Team.

**FACULTY INFORMATION**



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| **Name** | **Bashar Al shboul** |
| **Academic Title:** | **Assistant Professor** |
| **Office Location:** | **IT 131** |
| **Telephone Number:** | |
| **Email Address:** | **Bashar.Alshboul@hu.edu.jo** |

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|---|---|
| **Office Hours:** | **Sunday** 12:00-13:00<br>**Tuesday** 12:00-13:00<br>**Thursday** 10:00-11:00<br>*Please send an e-mail to meet at any other time.* |

## REFERENCES AND LEARNING RESOURCES

**Required Textbook:**

- There is no required textbook for purchase. All compulsory weekly readings are available electronically on Moodle.

**Suggested Additional Resources**:

- Marijn Haverbeke. 2018. Eloquent JavaScript: A Modern Introduction to Programming (3rd. ed.). No Starch Press, USA.
- Crockford, Douglas. JavaScript: The Good Parts: The Good Parts. " O'Reilly Media, Inc.", 2008.
- Stefanov, Stoyan. JavaScript Patterns: Build Better Applications with Coding and Design Patterns. " O'Reilly Media, Inc.", 2010.
- Flanagan, David, and Gregor M. Novak. "Java-Script: The Definitive Guide." (1998): 41-44.
- ECMAScript® 2016 Language Specification The JavaScript standard document. https://www.ecma-international.org/publications/standards/Ecma-262.htm

## STUDENT LEARNING OUTCOMES MATRIX*

| Core Curriculum Learning Outcomes | Program Learning Outcomes | Course Objectives | Course Student Learning Outcomes | Assessment Method |
|---|---|---|---|---|
| | [SM1] Knowledge and understanding of scientific principles and methodology necessary to underpin their education in their engineering discipline, to enable appreciation of its scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies. . | • Introduce Web Application Engineering.<br>• Discuss various Web application programming and engineering concepts.<br>• Explain markup languages and their various uses.<br>• Discuss scripting languages and their use in building Web Applications.<br>• Discuss various existing network protocols.<br>• Introduce and discuss interactive graphics in the | • [CLO1] Understand the essentials of the web and the underlying protocols and the client server architecture. | • Exams<br>• Quizzes<br>• "On-line" reading assignments<br>• homework assignments |
| | [EA1] Understanding of engineering principles and the ability to apply them to analyse key engineering processes. | | • [CLO2] Demonstrate full understanding of the HTTP protocol and request/response architecture. | • Exams<br>• Quizzes<br>• "On-line" reading assignments |

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| | | context of Web applications.<br>• Explain event-driven programming and its roll in Web application programming.<br>• Discuss various database technologies focusing on document-based databases. | | • homework assignments |
| | [EA4] Understanding of, and the ability to apply, an integrated or systems approach to solving engineering problems.<br>. | | • [CLO4] Demonstrate the ability to design and build a scalable web application that makes use of modern technologies and approaches. | • Exams<br>• Quizzes<br>• "On-line" reading assignments<br>• homework assignments |
| | [D4] Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal. | | • [CLO4] Demonstrate the ability to design and build a scalable web application that makes use of modern technologies and approaches. | • Exams<br>• Quizzes<br>• "On-line" reading assignments<br>• homework assignments |
| | [EP1] Understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, application and development of technology, etc.). | | • [CLO6] Demonstrate the ability to apply architectural and design patterns in building scalable web applications including MVC, RESTful, etc. | • Exams<br>• Quizzes<br>• "On-line" reading assignments<br>• homework assignments |
| | [EP3] Ability to apply relevant practical and laboratory skills. . | | • [CLO3] Understand the role of web servers and server-side programs. | • Exams<br>• Quizzes<br>• "On-line" reading assignments<br>• homework assignments |
| | [EP6] Understanding of appropriate codes of practice and industry standards. | | • [CLO5] Identify and discuss the security risks of Web applications and Web Services. | • Exams<br>• Quizzes<br>• "On-line" reading |

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| | | | | assignments<br>• homework assignments |

## ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their Instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual's needs.

**Special Needs Section:**
**Tel:**
**Location:**
**Email**:

## COURSE REGULATIONS

***Participation***

Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance*. It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in a non-attendance being recorded.**

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

***Plagiarism***

Plagiarism is considered a serious academic offence and can result in your work losing marks or being failed. HU expects its students to adopt and abide by the highest standards of conduct in their interaction with their professors, peers, and the wider University community. As such, a student is expected not to engage in behaviours that compromise his/her own integrity as well as that of the Hashemite University.

Plagiarism includes the following examples and it applies to all student assignments or submitted work:

- **Use of the work, ideas, images or words of someone else without his/her permission or reference to them.**
- **Use of someone else's wording, name, phrase, sentence, paragraph or essay without using quotation marks.**
- **Misrepresentation of the sources that were used.**

**The instructor has the right to fail the coursework or deduct marks where plagiarism is detected**

***Late or Missed Assignments***

In all cases of assessment, students who fails to attend an exam, class project or deliver a presentation on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a fail grade for this part of the assessment.

- Submitting a term paper on time is a key part of the assessment process. Students who fail to submit their work by the deadline specified will automatically receive a 10% penalty. Assignments handed in more than 24 hours late will receive a further 10% penalty. Each subsequent 24 hours will result in a further 10% penalty.
- In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with University regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

***Student Complaints Policy***

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

## COURSE ASSESSMENT

***Course Calendar and Assessment***

Students will be graded through the following means of assessment and their final grade will be calculated from the forms of assessment as listed below with their grade weighting taken into account. The criteria for grading are listed at the end of the syllabus

| Assessment | Grade Weighting | Deadline Assessment |
|---|---|---|
| Mid Exam | 35 % | |
| Assignments, quizzes | 20% | |
| Final Exam | 45% | |

**Description of Exams**

Test questions will predominately come from material presented in the lectures. Semester exams will be conducted during the regularly scheduled lecture period. Exam will consist of a combination of multiple choice, short answer, writing code or descriptive questions.
No make-up exams, homework or quizzes will be given. Only documented absences will be considered as per HU guidelines.
Grades are not negotiable and are awarded according to the following criteria*:

| Letter Grade | Description | Grade Points |
|---|---|---|
| A+ | Excellent | 4.00 |
| A | | 3.75 |
| A- | | 3.50 |
| B+ | Very Good | 3.25 |
| B | | 3.00 |
| B- | | 2.75 |
| C+ | Good | 2.50 |
| C | | 2.25 |
| C- | | 2.00 |
| D+ | Pass | 1.75 |
| D | Pass | 1.50 |
| F | Fail | 0.00 |
| I | Incomplete | - |

| WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION | | |
|---|---|---|
| **Topic** | **Chapter in Text** | **Week #** |
| Introduction | Selected material | Week1 |
| Frontend design | Selected material | Week2, Week3 |
| Introduction to Frontend programming | Selected material | Week4, Week5 |
| Responsive Web Design | Selected material | Week6, Week7 |
| Introduction to backend programming | Selected material | Week8, Week9 |
| Web servers | Selected material | Week10, Week11 |
| Persistence layer | Selected material | Week12, Week13 |
| Advances features | Selected material | Week14 |