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**UNIVERSITY OF PETROLEUM & ENERGY STUDIES**

**College of Engineering Studies**

**Dehradun**

**COURSE PLAN**

Programme : B. Tech in Computer Science spl. in Graphics and Gaming

Course : Web Programming for Graphics and Gaming(HTML5 & WebGL)

Course Code : CSEG338

No. of credits : 3

Semester : V

Session : 2017-18

Batch : 2015-19

Prepared by : Mr. Bhupendra Singh

Email : [bhupendra.singh@ddn.upes.ac.in](mailto:bhupendra.singh@ddn.upes.ac.in)

**Approved By**

HOD/ Prog. Head

UPES Campus Tel : +91-135-2770137

“Energy Acres” Fax : +91 135- 27760904

P.O. Bidholi, , Dehradun

**COURSE PLAN**

1. **PREREQUISITE:**
   1. Basic Knowledge of Mathematics like Matrix and Geometry.
   2. Good knowledge of any programming language like C or C++.
   3. Basic of any web programming script like HTML, CSS and Java Script.
2. **PROGRAM OUTCOMES (POs) and PROGRAM SPECIFIC OUTCOMES (PSOs) for ADE:**

**B1. PROGRAM OUTCOMES (POs)**

PO1: Apply knowledge of mathematics and Sciences in Computer Engineering and Information Technology.

PO2: Understand the impact of Computer Science and Engineering and Information Technology over global economics, environment and social structure to cater the needs of the society.

PO3: Understand the importance of team work with professional and ethical responsibilities.

PO4: Communicate effectively in various forms useful during all professional activities.

PO5: Implement, and evaluate computer-based systems, processes, components, or programs to meet the desired goal of the business/research domains.

PO6: Develop software by analyzing a problem to identify and define its computational requirements.

PO7: Acquire new technologies for individual and professional development.

PO8: Use current techniques, skills, and tools necessary for computing practices and to solve Engineering problems for the furtherance of the various application domains.

PO9: Apply design and development principles in the development of software systems of varying complexity.

PO10:

PO11:

PO12:

**B2. Program Specific Outcomes (PSOs)**

PSO1. Apply the tools and algorithms of graphics to design games and animations on digital systems.

PSO2. Apply the tools and algorithms for retrieval, modification and restoring of images on digital systems.

PSO3. Apply the principles of computing to graphics and game development.

1. **COURSE OUTCOMES FOR AUTOMOTIVE TRANSMISSION SYSTEMS: At the end of this course student should be able to**

CO1. Able to design a web page with HTML5 features.

CO2. Able to design a minimal website with HTML5 and Javascript.

CO3. Have practical understanding of the working of WebGL API.

CO4. Able to develop interactive 2D and 3D graphics applications using WebGL.

CO5. Able to apply realistic effects to graphic web content with WebGL.

**Table: Correlation of POs and PSOs v/s COs**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| PO/CO | PO  1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO  9 | PO  10 | PO  11 | PO  12 | PSO  1 | PSO  2 | PSO  3 |
| CO1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CO2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CO3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CO4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

1. **PEDAGOGY**

* **Presentation,**
* **flipped classroom session,**
* **think-pair and share,**
* **youtube videos as a startup**

1. **COURSE COMPLETION PLAN**

|  |  |
| --- | --- |
| **Total Class room sessions** | 36 |
| **Total Quizzes** | 02 |
| **Total Test** | 02 |
| **Total Assignment** | 03 |

One Session = 60 minutes

1. **EVALUATION & GRADING**

Students will be evaluated based on the following 3 stages.

* 1. Internal Assessment - 30%

5.2 Mid-term Examination - 20%

* 1. End term Examination - 50%

**F1. INTERNAL ASSESSMENT: WEIGHTAGE – 30%**

Internal Assessment shall be done based on the following:

|  |  |  |
| --- | --- | --- |
| Sl. No. | Description | % of Weightage out of 30% |
| 1 | Class Tests and Quizzes | 40% |
| 2 | Assignments (Problems/Presentations) | 50% |
| 3 | Attendance and performance in the class and presentation | 10% |

**F2*. Internal Assessment Record Sheet (including Mid Term Examination marks)*** *will be displayed online at the end of semester i.e. last week of regular classroom teaching.*

**F3. CLASS TESTS/QUIZZES:** Two Class Tests based on descriptive type theoretical & numerical questions and Two Quizzes based on objective type questions will be held; one class test and one quiz at least ten days before the Mid Term Examination and second class test and second quiz at least ten days before the End Term Examination. Those who do not appear in Viva-Voce and quiz examinations shall lose their marks.

*The marks obtained by the students will be displayed on LMS a week before the start of Mid Term and End Term Examinations respectively.*

**F4. ASSIGNMENTS:** After completion of each unit or in the mid of the unit, there will be home assignments based on theory and numerical problems. Those who fail to submit the assignments by the due date shall lose their marks.

**F5. GENERAL DISCIPLINE:** Based on student’s regularity, punctuality, sincerity and participation in the interactions.

*The marks obtained by the students will be displayed on LMS at the end of semester.*

**F6. MID TERM EXAMINATION: WEIGHTAGE – 20%**

Mid Term examination shall be Two Hours duration and shall be a combination ofShort and Long theory Questions.

***Date of showing Mid Term Examination Answer Sheets: Within a week after completion of mid Sem examination.***

**F7. END TERM EXAMINATION: WEIGHTAGE – 50%**

End Term Examination shall be Three Hours duration and shall be a combination of Short and Long theory/numerical Questions.

**F8. GRADING:**

The overall marks obtained at the end of the semester comprising all the above three mentioned shall be converted to a grade.

1. **COURSE DELIVERY PLAN**

|  |  |  |  |
| --- | --- | --- | --- |
| **TOPICS/SUB TOPICS** | **NO. OF SESSION** | **Course Outcomes Addressed** | **Assignment(s)/Quizzes/ Tests** |
| **Unit 1: Introduction to HTML5** |  | CO1 |  |
| Introduction, Page layout with HTML5, Page Structure | 02 |  |
| HTML5 Tags, Browser supports, HTML5 – How we got here, HTML5 Specifications | 01 |
| Sections and Articles, section tag, article tag, audio tag and attributes, video tag and attributes, dealing with non-supporting browsers, creating and converting video files | 03 |  | Assignment – 1 |
| **UNIT 2:HTML5 Forms** |  |  |  |
| HTML5 forms, new input types, search types, telephone, url and email, date/time input types, number, range, color | 02 | CO1 & CO2 |  |
|  |
| HTML5 new form attributes, Overview of HTML5 web storage | 01 | Quiz 1 |
| **UNIT-3: HTML5 Canvas** |  | CO2 |  |
|  |
| HTML5 Canvas, drawing lines, color, transparency, images | 01 |  |
| drawimage() - basic , Integrated APIs, offline application API, drawing bezier curve in HTML5 | 02 | **Test 1** |
| **Mid Sem** |  |  |  |
| **Unit 4: Introduction and Background WebGL** |  |  |  |
| Overview of WebGL, WebGL Demos, A simple webGL example, OpenGL and WebGL, attributes, uniforms, varying | 04 | CO4 |  |
| Getting started with WebGL – WebGL rendering pipeline, VBO, fragment shader, vertex shader, frame buffer | 04 |
| Square program and its description: HTML file and JavaScript, OpenGL Shading language and interaction, Color, Input and Interaction, Animation, Buttons, Menus, keyboard, sliders | 04 |
| Displaying Geometry in WebGL, picking, Matrices, vertex transformations, homogenous coordinates | 03 | **Quiz 2, Assignment 2** |
| **Unit 5: Transformation and Viewing in WebGL** |  |  |  |
| Affine transformations, Rotation, translation, scaling, concatenating transformations | 03 | CO5 |  |
| 3 D viewing, camera control in WebGL, representing a Cube, animating the Cube, Projection in WebGL | 02 | Assignment3 |
| Meshes, Lighting and Shading, Texture in WebGL | 02 |  | Test2 |
| **Revision** | 02 |  |  |
| **36** |  |  |

1. **SUGGESTED READINGS:**

**H1. TEXT BOOK:**

1. WebGL Beginner's Guide by Diego Cantor, Packt Publishing Limited 18 May 2012
2. HTML & CSS: The Complete Reference, by Thomas Powell, McGraw Hill Education Fifth Edition1 July 2017

**H2. REFERRENCE BOOKS:**

1. WebGL programming guide : Interactive 3D Graphics Programming with WebGL by Kouichi Matsuda, Addison Wesley, 9 July 2013

2. OpenGL Programming Guide: The Official Guide to Learning OpenGL by Dave Shreiner, Version 4.3 Addison Wesley, 20 Mar 2013

3. OpenGL Shading Language (3rd Edition) 3rd Edition Addison-Wesley by Randi J. Rost, (July 30, 2009)

**H3. OTHER RESOURCES**

**H4. VIDEO RESOURCES:**

1. **VIDEO RESOURCES: - PPT & VIDEO - Info during Course Curriculum**

**H5. WEB RESOURCES:**

* **Printed Handout - Info during Course Curriculum**

**GUIDELINES**

***Cell Phones and other Electronic Communication Devices*:** Cell phones and other electronic communication devices (such as Blackberries/Laptops) are not permitted in classes during Tests or the Mid/Final Examination. Such devices MUST be turned off in the class room.

***E-Mail and online learning tool:*** Each student in the class should have an e-mail id and a pass word to access the LMS system regularly. Regularly, important information – Date of conducting class tests, guest lectures, via online learning tool. The best way to arrange meetings with us or ask specific questions is by email and prior appointment. All the assignments preferably should be uploaded on online learning tool. Various research papers/reference material will be mailed/uploaded on online learning platform time to time.

***Attendance:*** Students are required to have **minimum attendance of 75%** in each subject. Students with less than said percentage shall **NOT** be allowed to appear in the end semester examination.

**Course outcome assessment:** To assess the fulfilment of course outcomes two different approaches have been decided. Degree of fulfillment of course outcomes will be assessed in different ways through direct assessment and indirect assessment. In Direct Assessment, it is measured through quizzes, tests, assignment, Mid-term and/or End-term examinations. It is suggested that each examination is designed in such a way that it can address one or two outcomes (depending upon the course completion). Indirect assessment is done through the student survey which needs to be designed by the faculty (sample format is given below) and it shall be conducted towards the end of course completion. The evaluation of the achievement of the Course Outcomes shall be done by analyzing the inputs received through Direct and Indirect Assessments and then corrective actions suggested for further improvement. Capping

***Passing criterion:*** Student has to secure minimum 30%/40% marks of the “highest marks in the class scored by a student in that subject (in that class/group class)” individually in both the ‘End-Semester examination’ and ‘Total Marks’ in order to pass in that paper.

* Passing Criterion for B. Tech: Minimum 30% and 40% of the highest marks in the class applicable to the students admitted before July 2015 and onwards July 2015 respectively.
* Passing Criterion for M. Tech: minimum 40% of the highest marks in the class

**Sample format for Indirect Assessment of Course outcomes**

|  |
| --- |
| NAME: |
| ENROLLMENT NO: |
| SAP ID: |
| COURSE: |
| PROGRAM: |

Please rate the following aspects of course outcomes of Automotive transmissions systems.

Use the scale 1-4\*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sl. No. |  | 1 | 2 | 3 | 4 |
| 1 | CO1. Able to design a web page with HTML5 features. |  |  |  |  |
| 2 | CO2. Able to design a minimal website with HTML5 and Javascript. |  |  |  |  |
| 3 | CO3. Have practical understanding of the working of WebGL API. |  |  |  |  |
| 4 | CO4. Able to develop interactive 2D and 3D graphics applications using WebGL. |  |  |  |  |
| 5 | CO5. Able to apply realistic effects to graphic web content with WebGL. |  |  |  |  |

3

Below Average

Good

1

**\***

Very Good

Average

4

2