

Title (Units): **ITEC2005 Web Design and Development with 2D/3D Animations (3,3,0)**

Course Aims: This course provides students with a comprehensive knowledge of animation and web design. Students will learn web design and development, standard 2D and 3D graphics and animation for the Web. On completion of the course, students will develop an interactive vibrant website reflecting the modern web design patterns and the advancement of the latest browser technologies.

Prerequisite: General Education Core Course from the Information Management Technology Category

Course Intended Learning Outcomes (CILOs):

Upon successful completion of this course, students should be able to:

No.	Course Intended Learning Outcomes (CILOs)
	Knowledge
1	Explain the importance and components of web applications
2	Describe the fundamentals of 2D/3D graphics and emerging 3D technologies
3	Identify the methodologies and techniques for developing web applications
	Professional Skill
4	Integrate graphics and image into animation
5	Design and develop interactive 2D/3D animations for websites
6	Design and develop dynamic and interactive web-based applications

Calendar Description: This course provides students with a comprehensive knowledge of animation and web design. Students will learn web design and development, standard 2D and 3D graphics and animation for the Web. On completion of the course, students will develop an interactive vibrant website reflecting the modern web design patterns and the advancement of the latest browser technologies.

Teaching and Learning Activities (TLAs):

CILOs	Type of TLA
1-6	Students will learn the technology and concepts on 2D/3D animations and web applications through lectures and assignments.
4-6	Students will acquire hands-on experience through laboratory sessions, and/or development projects.

Assessment:

No.	Assessment Methods	Weighting	CILOs to be addressed	Description of Assessment Tasks
1	Continuous Assessment	60%	1-6	Continuous Assessment, including assignments and project, is designed to measure how well the students have learned the basic concepts in web design, development and 2D/3D animations.
2	Examination	40%	1-3, 5-6	Final Examination questions are designed to see how far students have achieved their intended learning outcomes.

Assessment Rubrics:

	Excellent (A)	Good (B)	Satisfactory (C)	Marginal Pass (D)	Fail (F)
Integrate graphics and	Knows all prerequisites of	Knows most prerequisites of	Knows many prerequisites of	Knows some prerequisites of	Knows very few prerequisites of

images into animations	graphics integration, knows thoroughly how to search for web graphics for integration, uses integration tools very fluently, adjusts and modifies graphics very smoothly	graphics integration, knows sufficiently how to search for web graphics for integration, uses integration tools fluently, adjusts and modifies graphics smoothly	graphics integration, knows acceptably how to search for web graphics for integration, uses integration tools acceptably, adjusts and modifies graphics acceptably	graphics integration, knows some ways to search for web graphics for integration, uses basic integration tools, adjusts and modifies graphics with limitation	graphics integration, knows very limited ways to search for web graphics for integration, uses integration tools with problems, cannot adjust and modify graphics
Develop interactive 2D/3D animations for websites	Demonstrates thorough knowledge and skills in synopsis creation, planning, scene composing, and interaction creation, capable of using programming for advanced interaction features	Demonstrates sufficient knowledge and skills in synopsis creation, planning, scene composing, and interaction creation, capable of using basic programming for advanced interaction features	Demonstrates acceptable knowledge and skills in synopsis creation, planning, scene composing, and interaction creation, capable of using basic programming for advanced interaction features	Demonstrates some knowledge and skills in synopsis creation, planning, scene composing, and interaction creation, not capable of using basic programming for advanced interaction features	Demonstrates very little knowledge and skills in synopsis creation, planning, scene composing, and interaction creation, not capable of using basic programming for advanced interaction features
Develop dynamic and interactive web-based applications	Demonstrates thorough knowledge and skills in HTML components, client-side interaction, and server-side dynamic contents, capable of using programming for advanced features	Demonstrates sufficient knowledge and skills in HTML components, client-side interaction, and server-side dynamic contents, capable of using basic programming for advanced features	Demonstrates acceptable knowledge and skills in HTML components, client-side interaction, and server-side dynamic contents, capable of using basic programming for advanced features	Demonstrates some knowledge and skills in HTML components, client-side interaction, and server-side dynamic contents, not capable of using basic programming for advanced features	Demonstrates very little knowledge and skills in HTML components, client-side interaction, and server-side dynamic contents, not capable of using basic programming for advanced features
analytical and creative thinking	Uses critical and creative thinking with a high degree of effectiveness in developing interactive web animations and applications	Uses critical and creative thinking with a considerable degree of effectiveness in developing interactive web animations and applications	Uses critical and creative thinking with an acceptable degree of effectiveness in developing interactive web animations and applications	Uses critical and creative thinking with a moderate degree of effectiveness in developing interactive web animations and applications	Uses critical and creative thinking with a limited degree of effectiveness in developing interactive web animations and applications

Course Content and CILOs Mapping:

Content		CILO No.
I	Introduction to Webpage Design and Development	1, 3, 6
II	Web Application Design and Development	1, 3, 6
III	Introduction to 3D Graphics	2, 4, 5
IV	2D/3D Graphics in Action	1-6

References:

- Alan Forbes, The Joy of Bootstrap: A smarter way to learn the world's most popular web framework, CreateSpace Independent Publishing Platform; 2nd edition, 2014.
- Michael R. McNeil and Irl I. Nathan, Sails.js in Action, Manning Publication, 2015.
- Jos Dirksen, Three.js Cookbook, Packt Publishing, 2015.
- F. Ganovelli, M. Corsini, S. Pattanaik, M. Di Benedetto, Introduction to Computer Graphics: A Practical Learning Approach, CRC Press, 2014.
- R. Williams, Non-Designer's Design Book, fourth edition, Peachpit Press, 2014.

Course Content:**Topic**

- I. Introduction to Webpage Design and Development
 - A. HTML and CSS
 - B. Interactive HTML5 animations
 - C. Modern web design patterns

- II. Web Application Design and Development
 - A. User interface design and interaction
 - B. Server-side dynamic contents
 - C. Basic database concepts

- III. Introduction to 3D Graphics
 - A. 3D graphics representations
 - B. Basic 3D transformations
 - C. Lighting and texture

- IV. 2D/3D Graphics in Action
 - A. Interactive 2D/3D animations for the web
 - B. 3D object modeling
 - C. Other 3D technologies