INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

INFORMATION TECHNOLOGY

COURSE DESCRIPTION FORM

Course Title	**WEB TECHNOLOGIES**			
Course Code	**A60512**			
Regulation	**R15 - JNTUH**			
Course Structure	Lectures	Tutorials	Practicals	Credits
	4	-	-	4
Course Coordinator	Mr A Krishna Chaitanya, Associate Professor, IT			
Team of Instructors	Mr A Krishna Chaitanya, Associate Professor, IT			

I. COURSE OVERVIEW:

The World Wide Web continues to provide a foundation for the development of a broad range of increasingly influential and strategic technologies, supporting a large variety of applications and services, both in the private and public sectors. There is a growing need for management and decision makers to gain a clearer understanding of the application development process, from planning through to deployment and maintenance. This module will give you an insight into architectures, protocols, standards, languages, tools and techniques; an understanding of approaches to more dynamic and mobile content; and demonstrate how you can analyze requirements, plan, design, implement and test a range of web applications.

II. PREREQUISITE(S):

Level	Credits	Periods/ Week	Prerequisites
UG	4	4	Object Oriented Programming through Java, Mathematics - I

III. MARKS DISTRIBUTION:

Sessional Marks	University End Exam marks	Total marks
Midterm Test There shall be two midterm examinations. Each midterm examination consists of essay paper, objective paper and assignment. The essay paper is for 10 marks of 60 minutes duration and shall contain 4 questions. The student has to answer 2 questions, each carrying 5 marks. The objective paper is for 10 marks of 20 minutes duration. It consists of 10 multiple choice and 10 fill-in-the blank questions, the student has to answer all the questions and each carries half mark. First midterm examination shall be conducted for the first two and half units of syllabus and second midterm examination shall be conducted for the remaining portion. Five marks are earmarked for assignments. There shall be two assignments in every theory course. Assignments are usually issued at the time of commencement of the semester. These are of problem solving in nature with critical thinking. Marks shall be awarded considering the average of two midterm tests in each course.	75	100

IV. EVALUATION SCHEME:

S. No	Component	Duration	Marks
1.	I Mid Examination	80 minutes	20
2.	I Assignment	-	5
3.	II Mid Examination	80 minutes	20
4.	II Assignment	-	5
5.	External Examination	3 hours	75

V. COURSE OBJECTIVES:

At the end of the course, the students will be able to:

I. Analyze the basic HTML tags and design and develop basic web pages.
II. Understand the features of PHP
III. Understand the syntax and semantics of java script programming language.
IV. Use the basic building blocks of XML documents and validation of XML documents.
V. Apply the knowledge of JSP, Servlets and develop the applications.

VI. COURSE OUTCOMES:

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

1. Understand the basic HTML tags.
2. Identify the methods to read data from web pages using PHP.
3. Identify the engineering structural design of XML and parse tree.
4. Understand the concept of JAVA SCRIPTS.
5. Understand Beans concepts.
6. Create applications by using the concepts like JSP and Servlet.
7. Apply JDBC and ODBC technologies to create database.

VII. HOW PROGRAM OUTCOMES ARE ASSESSED:

Program Outcomes		Level	Proficiency assessed by
PO1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.	S	Assignments, Tutorials
PO2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.	H	Assignments
PO3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.	H	Mini Projects
PO4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.	S	Projects
PO5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.	H	Mini Projects

PO6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.	N	--
PO7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.	N	--
PO8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.	N	--
PO9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.	H	Tutorials, Exams
PO10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.	N	--
PO11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	H	Mini Projects
PO12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.	S	Projects

N - None **S - Supportive** **H - Highly Related**

VIII. HOW PROGRAM SPECIFIC OUTCOMES ARE ASSESSED:

Program Specific Outcomes		Level	Proficiency assessed by
PSO1	**Professional Skills:** The ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data analytics, and networking for efficient analysis and design of computer - based systems of varying complexity.	H	Lectures, Assignments
PSO2	**Software Engineering Practices:** The ability to apply standard practices and strategies in software service management using open-ended programming environments with agility to deliver a quality service for business success.	H	Projects
PSO3	**Successful Career and Entrepreneurship:** The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies.	H	Guest Lectures

N - None **S - Supportive** **H - Highly Related**

IX. SYLLABUS:

UNIT - I

Introduction to PHP: Declaring variables, data types, arrays, strings, operators, expressions, control structures, functions, Reading data from web form controls like text boxes, radio buttons, lists etc., Handling File uploads, Connecting to database (My SQL as reference), executing simple queries, handling results, Handling sessions and cookies.

File Handling in PHP: File operations like opening, closing, reading, writing, appending, deleting etc. on text and binary files, listing directories.

UNIT - II

XML: Introduction to XML, Defining XML tags, their attitudes and values, Document Type Definition, XML Schemas, Document Object Model, XHTML.

Parsing XML Data – DOM and SAX Parsers in Java.

UNIT - III

Introduction Servlets: Common Interface (CGI), Lifecycle of a Servlet, deploying a Servlet, The Servlet API Reading Servlet parameters, Reading Initialization parameters, Handling Http Request & Responses, Using Cookies and Sessions, Connecting to a database using JDBC.

UNIT – IV

Introduction to JSP: The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects, Using Beans in JSP Pages, Using Cookies and session for session tracking, connecting to database in JSP.

UNIT – V

Client Side Scripting: Introduction to Javascript: Javascript language – declaring variables, scope of variables, functions, event handles (on click, on submit etc.), Object Model, From validation.
Simple AJAX application.

TEXT BOOKS:

1. Web Technologies, Uttam K Roy, Oxford University Press.
2. The Complete Reference PHP – Steven Holzner, Tata McGraw-Hill.

REFERENCES

1. Web Programming, building internet applications, Chris Bates 2nd edition, Wiley Dreamtech.
2. Java Server Pages – Hans Bergsten, SPD O" Reilly.
3. Java Script, D.Flangagan, O'Reilly, SPD.
4. Beginning Web Programming-Jon Duckett WROX.
5. Programming world wide web, R.W.Sebesta, Fourth Edition, Pearson.
6. Internet and World Wide Web – How to program, Dietel and Nieto, Pearson.

X. COURSE PLAN:

At the end of the course, the students are able to achieve the following course learning outcomes:

Lecture No	Topics to be covered	Course Learning Outcomes	References
UNIT – I 1	Introduction to World Wide Web	Introduction to Web Technologies	T1
2-7	Basic HTML tags	To gain knowledge about the basic HTML tags	T1
	Lists, Images, Tables		T1
	Forms, Frames		T1
	Cascading style sheets		T1
8-9	Introduction to PHP	To understand the basics of PHP	T2
	Declaring variables		T2
10-12	Data types	Understand the data types in PHP	T2
	Arrays		T2
	Strings		T2
13-16	Operators, Expressions, Control structures,	To gain knowledge about basic building blocks of PHP	T2
17-23	Reading data from web form controls	To understand the methods to read data, upload into files and connection to database	T2
	Handling File uploads		T2
	Connecting to database (MySQL)		T2
	Executing simple queries		T2
	Handling results		T2
	Handling sessions and cookies		T2
24-26	File operations on text	Summarize the file handling mechanism of PHP	T2
	File operations on binary files		T2
	listing directories		T2
UNIT – II 27-29	Introduction to XML	Discover XML, add user defined tag names in HTML	T1
	Defining XML tags		T1
	XML attitudes and values		T1
30	Document Type Definition	Summarize validation techniques in XML using DTD	T1
31-34	XML Schemas	Examine disadvantages of DTD and know the importance of XML Schema	T1
	Document Object Model		T1
	Document Object Model		T1
	XHTML		T1
35-36	DOM Parsers in Java	Apply programming language features on xml document using parsers	T1
	SAX Parsers in Java		T1
UNIT – III 37-40	Introduction Servlets	Gain knowledge on web servers	T1
	Common Interface (CGI)		T1
	Lifecycle of a Servlet		T1
	Deploying a Servlet		T1
41-43	The Servlet API	Discuss the initialization of parameters.	T1
	Reading Servlet parameters		T1
	Reading Initialization parameters		T1
44	Handling Http Request & Responses	Understanding the HTTP requests and responses.	T1
45	Using Cookies and Sessions	Applying the Cookies and sessions on servlets.	T1
46	Connecting to a database using JDBC.	Create connection between Servlets and database	T1
UNIT – IV 47-53	Introduction to JSP	Understand the JSP Processing	T1
	The Anatomy of a JSP Page		T1
	JSP Processing		T1
	Declarations		T1
	Directives		T1
	Expressions		T1

	Code Snippets		T1
54	Implicit objects	Understand the JSP objects	T1
55	Using Beans in JSP Pages	Gain the knowledge on EJBs	T1
56	Using Cookies and session for session tracking	Gain knowledge on memory usage	T1
57	Connecting to database in JSP.	Create connection between JSP and database	T1
UNIT – V 58-61	Introduction to Javascript	Add dynamic content into HTML code using java Script	T1
	Declaring variables		T1
	Scope of variables		T1
	Functions		T1
62	Event handles	Understand various types of Event handlers in java script	T1
63-64	Object Model	Discuss pre-defined objects, Dynamic HTML	T1
	Form validation.		T1
65	Simple AJAX application	Gain knowledge about AJAX	T1

XI. MAPPING COURSE OBJECTIVES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:

Course Objectives	Program Outcomes												Program Specific Outcomes		
	PO	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
I		S	H								H		S		
II			S								S				S
III		S	S											S	
IV								S			S				S
V			S					S			H		H	S	

S – Supportive **H - Highly Related**

XII. MAPPING COURSE OUTCOMES LEADING TO THE ACHIEVEMENT OF PROGRAM OUTCOMES AND PROGRAM SPECIFIC OUTCOMES:

Course Outcomes	Program Outcomes												Program Specific Outcomes		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1		S								S			S		
2			S								S			S	
3		S					S							S	
4											H				S
5											H				H
6							S				S		H		
7			S								S				H

S – Supportive **H - Highly Related**

Prepared by: Mr. A Krishna Chaitanya, Associate Professor

HOD, IT