Sample_Autonomous_Syllabus_Web X.0

Course Code: ITC302	**Course Title:**	**Credit**
ITC402	Web X.0	3
Prerequisite: **Object Oriented Programming, Python Programming, HTML and CSS**		
2) Course Objectives: The course aims:		
1	To understand the digital evolution of web technology.	
2	To learn Typescript and understand how to use it in web applications.	
3	To empower the use of AngularJS to create web applications that depend on the Model-View-Controller Architecture.	
4	To gain expertise in a leading document-oriented NoSQL database, designed for speed, scalability, and developer agility using MongoDB.	
5	To build web applications quickly and with less code using the Flask framework.	
6	To gain knowledge of Rich Internet Application Technologies.	
3) Course Outcomes: On successful completion, of course, learner/student will be able to:		
1	Understand the basic concepts related to web analytics and semantic web.	
2	Understand how TypeScript can help you eliminate bugs in your code and enable you to scale your code.	
3	Understand AngularJS framework and build dynamic, responsive single-page web applications.	
4	Apply MongoDB for frontend and backend connectivity using REST API. Apply Flask web development framework to build web applications with less code.	
5	Develop Rich Internet Application using proper choice of Framework.	

4) Syllabus

Module	Module Name	Content	Hrs
Module 1	Introduction to WebX.0	Evolution of WebX.0; Web Analytics 2.0: Introduction to Web Analytics, Web Analytics 2.0, Clickstream Analysis, Strategy to choose your web analytics tool, Measuring the success of a website; Web3.0 and Semantic Web: Characteristics of Semantic Web, Components of Semantic Web, Semantic Web Stack, N-Triples and Turtle, Ontology, RDF and SPARQL	**4**
Module 2	Typescript	Overview, TypeScript Internal Architecture, TypeScript Environment Setup, TypeScript Types, variables and operators, Decision Making and loops, TypeScript Functions, TypeScript Classes and Objects, TypeScript Modules	**6**
Module 3	Introduction to AngularJS	Overview of AngularJS, Need of AngularJS in real web sites, AngularJS modules, AngularJS built-in directives, AngularJS custom directives, AngularJS expressions, AngularJS Data Binding, AngularJS filters, AngularJS controllers, AngularJS scope, AngularJS **dependency** injection, AngularJS **Services**, Form Validation, Routing using ng-Route, ng-Repeat, ng-style, ng-view, Built-in **Helper Functions**, Us**ing Angular JS with Typescri**pt	9
Module 4	MongoDB and Building REST API using MongoDB	MongoDB: Understanding MongoDB, MongoDB Data Types, Administering User Accounts, Configuring Access Control, Adding the MongoDB Driver to Node.js, Connecting to MongoDB from Node.js, Accessing and Manipulating Databases, Manipulating MongoDB Documents from Node.js, Accessing MongoDB from Node.js, Using Mongoose for Structured Schema and Validation. REST API: Examining the rules of REST APIs, Evaluating API patterns, Handling typical CRUD functions (create, read, update, delete), Using Express and Mongoose to interact with MongoDB, Testing API endpoints	**9**
Module 5	Flask	Introduction, Flask Environment Setup, App Routing, URL Building, Flask HTTP Methods, Flask Request Object, Flask cookies, File Uploading in Flask	**6**
Module 6	Rich Internet Application	AJAX: Introduction and Working Developing RIA using AJAX Techniques: CSS, HTML, DOM, XML HTTP Request, JavaScript, PHP, AJAX as REST Client	**5**

		Introduction to Open Source Frameworks and CMS for RIA: Django, Drupal, Joomla	
		Total	37

5) Textbooks:

1. Boris Cherny, “Programming TypeScript- Making Your Javascript Application Scale”, O’Reilly Media Inc.
2. Adam Bretz and Colin J. Ihrig, “Full Stack JavaScript Development with MEAN”, SitePoint Pty. Ltd.
3. Simon Holmes Clive Harber, “Getting MEAN with Mongo, Express, Angular, and Node”, Manning Publications.
4. Miguel Grinberg, “Flask Web Development: Developing Web Applications with Python”, O’Reilly.
5. Dr. Deven Shah, “Advanced Internet Programming”, StarEdu Solutions

6) Reference Books:

1. Yakov Fain and Anton Moiseev, “TypeScript Quickly”, Manning Publications.
2. Steve Fenton, “Pro TypeScript: Application - Scale Javascript Development”, Apress
3. Brad Dayley, Brendan Dayley, Caleb Dayley, “Node.js, MongoDB and Angular Web Development: The definitive guide to using the MEAN stack to build web applications”, 2nd Edition, Addison-Wesley Professional

7) Internal Assessment:
Assessment consists of one Mid Term Test of 20 marks and Continuous Assessment of 20 marks.(Total 40)
Mid Term test is to be conducted when approx. 50% syllabus is completed Duration of the midterm test shall be one hour.

8) Continuous Assessment:-
Continuous Assessment **is of 20 marks.** The rubrics for assessment will be considered on approval by the subject teachers. The rubrics can be any 2 or max 4 of the following:-

Sr.no	Rubrics	Marks
1.	Participation in event/workshop/talk / competition followed by small report and certificate of participation relevant to the subject(in other institutes)	10 marks
2.	Quiz	10 marks

9) Rubrics for slow learners:-
1.) Project based Learning and evaluation / Extra assignment / Question paper solution (10 marks)
2) Extra Assignment (5 marks)

10) Rubrics for Indirect Assessment :-

1. Mock Viva/Practical
2. Skill Enhancement Lecture

11) End Semester Theory Examination:	
1	Question paper will be of 60 marks
2	Question paper will comprise a total of five questions
3	All question carry 20 marks
4	Any three questions out of five need to be solved.

Sample Template for Lab Work

Lab Code	Lab Name	Credit
ITL602	**Web Lab**	**1**

1)Prerequisite:	
2) Lab Objectives: The course aims:	
1	Open Source Tools for Web Analytics and Semantic Web.
2	Programming in TypeScript for designing Web Applications.
3	AngularJS Framework for Single Page Web Applications.
4	AJAX for Rich Internet Applications.
5	REST API and MongoDB for Frontend and Backend Connectivity.
6	Flask Framework for building web applications.
3) Lab Outcomes: On successful completion, of course, learner/student will be able to:	
1	Understand open source tools for web analytics and semantic web apps development and deployment.
2	Understand the basic concepts of TypeScript for designing web applications.
3	Implement Single Page Applications using AngularJS Framework.
4	Develop Rich Internet Applications using AJAX.
5	Create REST Web services using MongoDB.
6	Design web applications using Flask.

4)Suggested Experiments: (minimum number of experiments to be completed can be specified)	
Sr. No.	**Name of the Experiment**
1.	Study of Web Analytics Open Source Tool
2.	Study of Semantic Web Open Source Tool
3.	Develop code snippets in Typescript to demonstrate concepts of Inheritance, Access specifiers, Interface
4.	Create an AngularJS app to demonstrate AngularJS concepts like directives (builtin and custom), controllers, filters, data binding (one way and two way) validators,events
5.	Build a RESTful API using MongoDB.
6.	Develop a Rich Internet Application using AJAX
7.	Design a Flask application to demonstrate the usage of Routing, Request Object and Templating

5) Useful Links:	
1	https://analytics.google.com/analytics/web/
2	https://www.javatpoint.com/typescript-tutorial
3	https://www.w3schools.com/angular/default.asp
4	https://realpython.com/tutorials/flask/
5	https://www.udemy.com/course/introduction-to-the-mongodb/

6) Term Work:	
1	Term Work shall consist of at least 7 Practical's based on the above list.

	Term Work Marks: 25 Marks (Total marks) = 20 Marks (Experiment) + 5 Marks (Attendance)
7) Continuous assessment exam	
1	Experiment submission on time
2	Web page design aspects considered in Web page development
3	Explanation/concepts
4	Documentation