

Course Code	Course Name	Teaching Scheme (Contact Hours)		Credits Assigned		
		Theory	Practical	Theory	Practical	Total
ITL602	Web Lab	--	02	--	01	01

Course Code	Course Name	Examination Scheme						
		Theory					Term Work	Pract / Oral
		Internal Assessment			End Sem Exam	Exam Duration (in Hrs)		
		Test1	Test 2	Avg.				
ITL602	Web Lab	--	--	--	--	--	25	25
								50

Lab Objectives:

Sr. No.	Lab Objectives
	The Lab experiments 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.

Lab Outcomes:

Sr. No.	Lab Outcomes	Cognitive Levels of Attainment as per Bloom's Taxonomy
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.	L1, L2
2	Understand the basic concepts of TypeScript for designing web applications.	L1, L2, L3
3	Implement Single Page Applications using AngularJS Framework.	L1, L2, L3

4	Develop Rich Internet Applications using AJAX.	L1, L2, L3
5	Create REST Web services using MongoDB.	L1, L2, L3, L4
6	Design web applications using Flask.	L1, L2, L3, L4

Prerequisite: HTML/HTML5, CSS/CSS3, JavaScript, Python

Hardware & Software requirements:

Hardware Specifications	Software Specifications
PC with following Configuration 1. Intel Core i3/i5/i7 2. 4 GB RAM 3. 500 GB Hard disk	Angular IDE, Visual Studio Code, Notepad++, Python Editors, MySQL, XAMPP, MongoDB, JDK

DETAILED SYLLABUS:

Sr. No.	Module	Detailed Content	Hours	LO Mapping
I	Web Analytics & Semantic Web	Study Any 1 tool in each 1. Study web analytics using open source tools like Matomo, Open Web Analytics, AWStats, Countly, Plausible. 2. Study Semantic Web Open Source Tools like Apache TinkerPop, RDFLib, Apache Jena, Protégé, Sesame.	02	LO1
II	TypeScript	Perform Any 3 from the following 1. Small code snippets for programs like Hello World, Calculator using TypeScript. 2. Inheritance example using TypeScript 3. Access Modifiers example using TypeScript 4. Building a Simple Website with TypeScript	04	LO2
III	AngularJS	Perform Any 2 from the following 1. Create a simple HTML “Hello World” Project using AngularJS Framework and apply ng-controller, ng-model and expressions. 2. Events and Validations in AngularJS. (Create functions and add events, adding HTML validators, using \$valid property of Angular, etc.) 3. Create an application for like Students Record using AngularJS	06	LO3
IV	Rich Internet Application using AJAX	Perform Any 3 from the following 1. Write a JavaScript program for a AJAX. 2. Write a program to use AJAX for user validation using and to show the result on the same page below the submit button.	06	LO4

		3. Design and develop small web application using AJAX, HTML and JSP.		
V	MongoDB and Building REST API using MongoDB	Perform Any 1 from the following 1. Build a RESTful API using MongoDB. 2. Build a TypeScript REST API using MongoDB.	04	LO5
VI	Flask	Perform Any 3 from the following 1. Design Feedback Form using Flask. 2. Design Weather App using Flask. 3. Design Portfolio Website using Flask. 4. Create a complete Machine learning web application using React and Flask.	04	LO6

Text Books:

1. John Hebler, Matthew Fisher, Ryan Blace, Andrew Perez-Lopez, "Semantic Web Programming", Wiley Publishing, Inc, 1st Edition, 2009.
2. Boris Cherny, "Programming TypeScript- Making Your Javascript Application Scale", O'Reilly Media Inc., 2019 Edition.
3. Adam Bretz and Colin J. Ihrig, "Full Stack JavaScript Development with MEAN", SitePoint Pty. Ltd., 2015 Edition.
4. Simon Holmes Clive Harber, "Getting MEAN with Mongo, Express, Angular, and Node", Manning Publications, 2019 Edition.
5. Dr. Deven Shah, "Advanced Internet Programming", StarEdu Solutions, 2019 Edition.
6. Miguel Grinberg, "Flask Web Development: Developing Web Applications with Python", O'Reilly, 2018 Edition.

References:

1. John Davies, Rudi Studer and Paul Warren, "Semantic Web Technologies Trends and Research in Ontology-based Systems", Wiley, 2006 Edition.
2. Yakov Fain and Anton Moiseev, "TypeScript Quickly", Manning Publications, 2020 Edition.
3. Steve Fenton, "Pro TypeScript: Application - Scale Javascript Development", Apress, 2014 Edition.
4. 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, 2018 Edition.

Term Work:

Term Work shall consist of at least 10 to 12 practical's based on the above list. Also Term Work Journal must include at least 2 assignments.

Term Work Marks:

25 Marks (Total marks) = 15 Marks (Experiment) + 5 Marks (Assignments) + 5 Marks (Attendance)

Oral Exam: An Oral exam will be held based on the above syllabus.