Course Designers		
Experts from Industry	**Experts from Higher Technical Institutions**	**Internal Experts**
Mr. S. Karthik, IT Analyst, Tata Consultancy Services	Dr. Neelanarayanan,, Professor, School of Computer Science and Engineering, VIT Chennai	Dr.P.Muthulakshmi
		Mrs.E.Aarthi

Course Code	UCS20D02J	Course Name	WEB DEVELOPMENT USING REACTJS AND MONGO	Course Category	E	Discipline Specific Elective	L	T	P	C
							4	0	4	6

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Computer Science	Data Book / Codes/Standards	Nil		

Course Learning Rationale (CLR):	The purpose of learning this course is to:	Learning
CLR-1 :	To understand the User Interfaces/User interactive components as a DOM tree	
CLR-2 :	Understand MVC framework/architecture of web programming	
CLR-3 :	Develop single page applications for mobile and web applications	
CLR-4 :	Understanding the concurrent model	
CLR-5 :	Understand CRUD operations of MongoDB	
CLR-6 :	Understanding JSON in DBs, helps building applications for large scale data storage	

Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:	Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)
CLO-1 :	Create meaningful User Interfaces for web and mobile applications	3	90	90
CLO-2 :	Understand the need for immutable data	3	90	90
CLO-3 :	Distinguish class components and functional components	3	85	85
CLO-4 :	Distinguish RDBMS and schema design of MongoDB	4	90	90
CLO-5 :	Perform query operations using MongoDB	3	90	90
CLO-6 :	Understand and build logical relationships between documents using MongoDB	4	85	85

Program Learning Outcomes (PLO)

	1 Engineering Knowledge	2 Problem Analysis	3 Design & Development	4 Analysis, Design, Research	5 Modern Tool Usage	6 Society & Culture	7 Environment & Sustainability	8 Ethics	9 Individual & Team Work	10 Communication	11 Project Mgt. & Finance	12 Life Long Learning	13 PSO - 1	14 PSO - 2	15 PSO – 3
CLO-1 :		H	L	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-2 :		H	M	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-3 :		H	M	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-4 :		H	M	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-5 :		H	M	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-6 :		H	H	H	H	H	-	-	-	-	-	-	-	M	M	H

Duration (Hour)		24	24	24	24	24
S-1	SLO-1	Need of Scripting Language	Array Methods :indexOf, join, lasIndexOf, toString	Arrow Functions return value by Default	Adding Events	Document with different types of values i)*Document with Scalar Values*
	SLO-2	Difference between client and server side scripting	Array Methods : reduce, reverse, slice, some, sort	Arrow Functions with Parameters	Event Handler	ii)*Document with Documents as values*
S-2	SLO-1	Script tag in HTML	Function Definition	Arrow Function without Parentheses	React Event Object	iii)*Document with Array as values*
	SLO-2	Java Script declaration	Function Parameters	React Render HTML	Adding Forms in REACT	CRUD operation :Insert Operation *i)insertOne() and ii)insertMany()* with examples
S-3	SLO-1	Output printing – document. Write, innerHTML	Calling a Function	Render Function	Handling Forms	Perform Query Operation for the following situations *i)Query on nested documents* *ii)Query an array*
	SLO-2	window .alert, console.log	Return Statements	HTML and root node	Conditional Rendering	*ii)Query an array of nested documents* *iv)Geospatial Queries* *Query Operation Examples*
S-4	SLO-1	Java script statements	Nested Functions	REACT JSX	Submitting Forms	Update Operation: *updateOne(), updateMany()*
	SLO-2	Comments and Variables	Example Programs	Coding and expressions in JSX	Multiple Input Fields	*replaceOne(), findAndModify()* Update operation :Examples
S 5-8	SLO-1 SLO-2	Laboratory 1 – Java Script Input and Output	Laboratory 4 - Functions	Laboratory 7 – arrow functions	Laboratory 10 - binding function to a component	*Laboratory 13 :Working with CRUD operations* Insert and Query
S-9	SLO-1	Java script Operators -Logical, Bitwise	Web stacks introduction	Inserting a Large Block of HTML	Validating Form Input	Delete Operation: deleteMany(), deleteOne()
	SLO-2	Arithmetic and Assignment operators	LAMP and LEMP	Example Programs	Running Validation form	iii)findOneAndDelete() Delete operation Examples
S-10	SLO-1	Java Script Datatypes - numeric	Difference between php and java script	REACT Components	Adding Error messages	Operation on MongodbData:projection
	SLO-2	Java Script Datatypes – non numeric	MEAN, MERN	Creating a Class Component	Textarea, select	Limiting RecordsSorting Records

S-11	SLO-1	Conditional statements	REACT Environment set up - windows	Creating a Function Component	REACT CSS	Indexes in Mongodb, default _id index
	SLO-2	If else statements	Creating a Sample REACT Program	Component Constructor	Inline Styling	Creating and Index createIndex method
S-12	SLO-1	Switch statements	Creating a REACT APP	Components in Components	CSS Style sheet	Single Field, Compound, Multikey
	SLO-2	Iteration statements	Running the REACT Application	Components in Files	CSS Modules	Geospatial, text Index, Hashed Index
S 13-16	SLO-1 SLO-2	Laboratory 2 – Java Script Operators and Conditions	Laboratory 5 – simple React program	Laboratory 8 –class and function component	Laboratory 11 - validating form inputs	*Laboratory 14 :Working with CURD operations* Update and Delete
S-17	SLO-1	Loop Controls – for loop	REACT Directly in HTML	REACT Props	MongoDB Datatypes: i)Integer ii)Boolean iii)Double iv)String v)Arrays vi)Object vii)Null viii)Regular expression ix)Timestamp x)Date xi)Object ID	Properties of Index i)Unique Indexes ii)Partial Indexes
	SLO-2	While loop	Running and Modifying REACT Application	Pass Data , Props Constructor	Installing Mongo DB in Windows, Linux and Mac Operating Systems	iii)Sparse Indexes iv)TTL Indexes
S-18	SLO-1	Do whileLoop	ECMA Script 6 – ES6	REACT state object	Installing and Working with MongoDB interfaces: i)Mongo Shell, ii)Mongo Compass	Aggregation in MongoDB: i)aggregate() method Aggregate expressions: i) $sum ii) $avg iii) $min iv) $max
	SLO-2	For each loop	Versions of ECMA	Using the state object	Introduction to entities of MongoDB: i)Databases i)Collections and iii)Documents	v) $push vi) $addToSet vii) $first viii) $last
S-19	SLO-1	Arrays Introduction and declaring	Classes	Changing the state object	Database: i)*createDatabase()*method with example	*MongodDB Backup:* *Export/Import data backup using shell* i)mongodump ii)mongorestore
	SLO-2	Accessing arrays	Methods in Class	Life cycle components - Mounting	ii)*dropDatabase()* method with example	*MongoDB Backup:* *Export/Import data backup using Mongo Compass*

S-20	SLO-1	Array Properties : index, input length, prototype	Class Inheritance	Life cycle components - Updating	Collections: i)*createCollection()* method with example	Monitoring Deployment using MongoDB: i)*mongostat*, *mongotop*
	SLO-2	Array Methods :concat, every, forEach	Arrow Functions	Life cycle components - UnMounting	ii)*dropCollection()* method with example	iii)serverStatus, dbStats, collStats
S 21-24	SLO-1 SLO-2	Laboratory 3 - Looping Statements	Laboratory 6 –using inheritance	Laboratory 9 –props and state object	Laboratory 12 - creating dbs	Laboratory 15 : i)Creating different types of indexes ii)Aggregate data using different Aggregate expressions iii)Perform MongoDB data *Export* and *Import* using shell Working with mongo deployment commands

Learning Resources	1.Alex Banks, Eve Porcello (2017), "Learning React: Functional Web Development with Reactand Redux",O'REILLY	1.URL: https://reactjs.org/docs/getting-started.html 2.URL: https://docs.mongodb.com/manual/tutorial/

Learning Assessment											
Bloom's Level of Thinking		Continous Learning Assessment(50% Weightage)								Final Examination (50% weightage)	
		CLA – 1 (10%)		CLA – 2 (10%)		CLA – 3 (20%)		CLA – 4# (10%)			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember	20%	20%	15%	15%	15%	15%	15%	15%	15%	15%
	Understand										
Level 2	Apply	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
	Analyze										
Level 3	Evaluate	10%	10%	15%	15%	15%	15%	15%	15%	15%	15%
	Create										
	Total	100 %		100 %		100 %		100 %		100%	

CLA – 4 can be from any combination of these: Assignments, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc.,

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Course Learning Rationale (CLR):	The purpose of learning this course is to:	Learning	Program Learning Outcomes (PLO)

		1	2	3		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CLR-1 :	Create single page applications and understand the functional behavior of dynamic web pages	Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)		Engineering Knowledge	Problem Analysis	Design & Development	Analysis, Design, Research	Modern Tool Usage	Society & Culture	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO - 1	PSO - 2	PSO – 3
CLR-2 :	Understand presentation components that look like HTML elements																			
CLR-3 :	Build corner to corner interactive components in dynamic web pages																			
CLR-4 :	Understand MVC framework/architecture of web programming/client-server architecture																			
CLR-5 :	Build synchronized objects across view and model components																			
CLR-6 :	Understanding JSON in DBs, helps building applications for large scale data storage																			
Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:																			
CLO-1 :	Make use of expressions, do data binding with external components	3	90	90		H	L	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-2 :	Distinguish the role of MVC in creating dynamic web applications	3	90	90		H	M	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-3 :	Understand the role of reusability and data encapsulation in the form of objects	3	85	85		H	M	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-4 :	Distinguish RDBMS and schema design of MongoDB	4	90	90		H	M	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-5 :	Perform query operations using MongoDB	3	90	90		H	M	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-6 :	Understand and build logical relationships between documents using MongoDB	4	85	85		H	H	H	H	H	-	-	-	-	-	-	-	M	M	H