Course Designers		
Experts from Industry	**Experts from Higher Technical Institutions**	**Internal Experts**
Dr.P.J,Mr. S. Karthik, IT Analyst, Tata Consultancy Services	Dr. Neelanarayanan,, Professor, School of Computer Science and Engineering, VIT Chennai	1.Mr.D.RajKumar 2.Dr .P.J. Arul Leena Rose

Course Code	UCS20D01J	Course Name	WEB DEVLEOPMENT USING NODEJS AND MONGO	Course Category	E	Discipline Specific Electives	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	Program Learning Outcomes (PLO)

		1	2	3
CLR-1 :	Understand the benefits of combining language and data formats while creating web applications			
CLR-2 :	Encourage the reusability of programming resources			
CLR-3 :	Utilize the light weight applications across distributed devices			
CLR-4 :	Understand multiuser conversations and data serialization			
CLR-5 :	Understand the request and response model that works for client and server side applications			
CLR-6 :	Take up the role of a full stack developer			

Course Learning Outcomes (CLO):	At the end of this course, learners will be able to:	Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
					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
CLO-1 :	Write code for client and server	2	85	85	H	L	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-2 :	Create modules and use the same in applications	3	90	90	H	M	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-3 :	Code using callback functions for scaLaboratoryle functions	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	85	85		H	M	M	M	H	-	-	-	-	-	-	-	M	M	H
CLO-6 :	Understand and build logical relationships between documents using MongoDB	4	90	90		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, lastIndexOf, toString	Add HTTP header	Streams – Reading a Stream	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	Example programs	Stream – Writing to a stream	ii)*Document with Documents as values*
S-2	SLO-1	Script tag in HTML	Function Definition	Read the Query String	Piping the Stream	iii)*Document with Array as values*
	SLO-2	Java Script declaration	Function Parameters	Split the Query String	Chaining the Streams	CRUD operation :Insert Operation i)*insertOne() and ii)insertMany()* with examples
S-3	SLO-1	Output printing – document. Write, innerHTML	Calling a Function	Node.js URL Module	Node.js as a File Server	Perform Query Operation for the following situations *i)Query on nested documents ii)Query an array*
	SLO-2	window .alert, console.log	Return Statements	Node.js File Server	Create Files, Reading Files	*ii)Query an array of nested documents iv)Geospatial Queries Query Operation Examples*
S-4	SLO-1	Java script statements	Nested Functions	Node.js – NPM Package	Delete Files	Update Operation: *updateOne(), updateMany()*
	SLO-2	Comments and Variables	Example Programs	Downloading and Using a Package	Update and rename files	*replaceOne(), findAndModify()* Update operation :Examples
S 5-8	SLO-1 / SLO-2	Laboratory 1 – Java Script Input and Output	Laboratory 4 - Functions	Laboratory 7 –Query String	Laboratory 10 – Streams and Files	*Laboratory 13 : Working with CRUD operations* - Insert and Query
S-9	SLO-1	Java script Operators -Logical, Bitwise	Web stacks introduction	Callback – Blocking code example	Creating a Upload Form	Delete Operation: deleteMany(), deleteOne()
	SLO-2	Arithmetic and Assignment	LAMP, LEMP, MEAN, MERN	Callback – Non- Blocking code	Parse the uploaded files	iii)findOne() And Delete()

		operators		example		Delete operation Examples
S-10	SLO-1	Java Script Datatypes - numeric	Difference between php and java script	Event Driven Programming	Save the files	Operation on Mongodb Data: projection
	SLO-2	Java Script Datatypes – non numeric	Node introduction and evolution	Working of node Application	Display the uploaded files	Limiting Records Sorting Records
S-11	SLO-1	Conditional statements	Installing node.js and npm in windows	Node Even emitter class	Nodemailer Modules	Indexes in Mongodb, default _id index
	SLO-2	If else statements	Installing node.js and npm in Linux	add Listener(), on(), once()	Sending a email	Creating and Index createIndex method
S-12	SLO-1	Switch statements	Built in modules in node.js – http, https	removeListener(), removeAllListeners()	Multiple Receivers	IndexMethods : Single Field, Compound, Multikey
	SLO-2	Iteration statements	Built in modules in node.js – querystring, readline	setMaxListemers(), listeners()	Sending HTML	text Index, Hashed Index, Geospatial
S 13-16	SLO-1 SLO-2	Laboratory 2 – Java Script Operators and Conditions	Laboratory 5 – Installing Node.js	Laboratory 8 – Event Driver classes	Laboratory 11 – Sending Mail	*Laboratory 14 :Working with CRUD operations* Update and Delete
S-17	SLO-1	Loop Controls – for loop	Include modules	Creating Buffers, writing to buffers	MongodbDatatypes: 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	Writing first sample application	Reading from Buffers	Installing Mongo DB in Windows, Linux and Mac Operating Systems	iii)Sparse Indexes iv)TTL Indexes
S-18	SLO-1	Do whileLoop	Creating own modules	Converting Buffer to JSON	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	Including your own module	Concatenate Buffer	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	Node.js – REPL Terminal – Read, Eval	Compare, Copy Buffer	Database: i)*createDatabase()*method with example	*MongoDB Backup: Export/Import data backup using shell*

						i)mongodump ii)mongorestore
	SLO-2	Accessing arrays	Node.js – REPL Terminal – Print, Loop	Slice Buffer and Buffer Length	ii)*dropDatabase()* method with example	*MongoDB Backup:* *Export/Import data backup using Mongo Compass*
S-20	SLO-1	Array Properties : index, input length, prototype	Node.js as built in HTTP module	isEncoding(), isBuffer()	Collections: i)*createCollection()* method with example	Monitoring Deployment using MongoDB: i)*mongostat*, *mongotop*
	SLO-2	Array Methods :concat, every, forEach	Node.js as a Web Server	byteLength	ii)*dropCollection()* method with example	iii)serverStatus, dbStats, collStats
S 21-24	SLO-1	Laboratory 3 - Looping Statements	Laboratory 6 - Running sample application using node.js	Laboratory 9 - Buffers	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 iv)Working with mongo deployment commands
	SLO-2					

Learning Resources	1. Basarat Syed, (2014), "Practical Node.js: Building Real-World Scale Web Apps", APress 1. URL: https://nodejs.org/dist/latest-v12.x/docs/api/ 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.,

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