NANDHA ENGINEERING COLLEGE

(Autonomous)

Affiliated to Anna University Chennai ✣ Approved by AICTE ✣ Accredited by NBA - New Delhi

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1.1.2 Details of Courses where syllabus revision was carried out

Master of Computer Applications

R-22 Curriculum

Course Code	Course Name	% of Change
22CAX21	Deep Learning and its Applications	100
22CAX22	Full Stack Framework	100
	Average	**100**

28/12/24

HoD

Dr.S.Devi

Head of the Department

Department of Master of Computer Applications

Nandha Engineering College (Autonomous)

22CAX21 DEEP LEARNING AND ITS APPLICATIONS				
	L	T	P	C
	3	0	0	3

PREREQUISITE : NIL

Course Objective:	• Understand about Neural Networks architectures and how to train deep learning models efficiently. • Learn about deep unsupervised learning and mastering Deep Neural Networks.

Course Outcomes The Student will be able to		**Cognitive Level**	**Weightage of COs in End Semester Examination**
CO1	Analyse optimization techniques to find the weights of the network during training.	An	20%
CO2	Apply unsupervised techniques for organizing large datasets into clusters.	Ap	20%
CO3	Equip with advanced skills in deep learning, enabling them to tackle real-time problems.	An	20%
CO4	Apply neural networks to various real-world problems in fields like image recognition, natural language processing, etc.	Ap	20%
CO5	Foster innovation for projects and explore current research trends in deep learning.	An	20%

UNIT I - NEURAL NETWORKS	**(9)**
Overview of neural networks - Loss functions – Hyperparameters - Defining Deep Learning - Common Architectural Principles of Deep Networks: Core Components - Building Blocks of Deep Networks: RBMs. Data Representation for neural networks.	
UNIT II – FEEDFORWARD NETWORKS	**(9)**
Multilayer Perception, Gradient Descent, Back Propagation, Empirical Risk Minimization, Regularization, Optimization Methods.	
UNIT III – DEEP NEURAL NETWORKS	**(9)**
Difficulty of training deep neural networks, Recurrent Neural Networks: Back Propagation through time, Long Short Term Memory, Convolutional Neural Networks: LeNet, Alex.	
UNIT IV - DEEP UNSUPERVISED LEARNING	**(9)**
Boltzman machine, Auto encoders – standard, denoising, contractive, Variational Auto encoders, Generative Adversarial Networks.	
UNIT V - APPLICATIONS	
Sentiment Analysis – Computer Vision – Image Compression – Cartoon Character Generation – Speech Recognition – Natural Language Processing.	
TOTAL (L:45) : 45 PERIODS	

REFERENCES:

1. Ian Goodfellow, YoshuaBengio and Aaron Couville, "Deep Learning", MIT Press, USA, 2016.
2. Adam Gibson and Josh Patterson, "Deep Learning A practitioner's approach", O'Reilly, USA, 2016.
3. Yusuke Sugomori, "Deep Learning: Practical Neural Networks with Java", Packet Publishing, New York, 2016.
4. Lovelyn Rose, L. Ashok Kumar, D. KarthikaRenuka, "Deep Learning using Python", Wiley India Pvt. Ltd. 2019.

Mapping of COs with POs / PSOs

Cos	Pos												PSOs	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	3													
2	3													
3			3											
4				3			3						3	
5									3					
6										3				
CO	3		3	3			3		3	3			3	

22CAX22 FULL STACK FRAMEWORK				
	L	T	P	C
	3	0	0	3

PREREQUISITE : NIL

Course Objective:	• Prepare students as full stack developers. • Equip with the skills and knowledge needed to build modern web applications. • Use frontend to backend, manage databases, deploy applications, and collaborate effectively.

Course Outcomes The Student will be able to		**Cognitive Level**	**Weightage of COs in End Semester Examination**
CO1	To explain the basics needed for web application development.	Ap	20%
CO2	To apply frontend and backend technologies with a flexible database solution.	Ap	20%
CO3	To empower with the skills and tools necessary to build scalable, modern web applications efficiently.	An	20%
CO4	To design reusable UI components and server-side programming efficiently.	Ap	20%
CO5	To create dynamic and feature-rich applications to meet the demands.	C	20%

UNIT I - BASICS OF MERN STACK	**(9)**
MERN Introduction-MERN Components - React - Node.js - Express - MongoDB - Need for MERN - Server-Less Hello World - Server Setup - nvm - Node.js npm.	
UNIT II - BOOTSTRAP AND MONGODB	**(9)**
Introduction to Bootstrap - Bootstrap Basics - Bootstrap Grids - Bootstrap Themes - Bootstrap CSS - Bootstrap JS. MongoDB - MongoDB Basics - Documents -Collections - Query Language - Installation - The mongo Shell - Schema Initialization - MongoDB Node.js Driver - Reading from MongoDB - Writing to MongoDB.	
UNIT III – ANGULAR JS	**(9)**
Angular JS Introduction - Creating Reusable Components with Directives - Data Handling - Dependency Injection and Services – Scope – Modules - Jasmine testing framework - Automating the Workflow.	
UNIT IV - NODE JS and EXPRESS JS	**(9)**
Node.js basics - Local and Export Modules - Node Package Manager - Node.js web server - Node.js File system - Node Inspector - Node.js Event Emitter - Node.js Data Access - Express REST APIs - REST - Resource Based - HTTP Methods as Actions - JSON- Express - Routing - Handler Function – Middleware-Rest API.	
UNIT V – jQuery	**(9)**
Introduction to jQuery - jQuery Syntax - jQuery Selectors - jQuery Events - jQuery Effects - jQuery HTML - jQuery Traversing - jQuery AJAX & Misc.	
TOTAL (L:45) : 45 PERIODS	

REFERENCES:

1. Pro MERN Stack, Full Stack Web App Development with Mongo, Express, React, and Node, Vasan Subramanian, A Press Publisher, 2019.
2. Bradshaw, S., Brazil, E., & Chodorow, K. (2019). MongoDB: the definitive guide: powerful and scalable data storage. O'Reilly Media.
3. Rodrigo Branas, "Angular Js Essentials", Packet Publishing Ltd, 2014.
4. Mardan, A. (2014). Express. js Guide: The Comprehensive Book on Express. js. Azat Mardan.
5. Kogent Learning Solutions Inc. "HTML5 Black Book: Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP and JQUERY", Wiley India Pvt. Limited, 2011.
6. Deitel and Deitel and Nieto, "Internet and World Wide Web – How to Program", Prentice Hall, 5th Edition, 2011.
7. Zammetti, F. (2020). Modern Full-Stack Development: Using TypeScript, React, Node. js, Webpack, and Docker. Apress.

Mapping of COs with POs / PSOs

COs	POs												PSOs	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	3													
2	3	3												
3		3	3								3		3	3
4		3	3								3		3	3
5		3	3								3		3	3
CO	**3**	**3**	**3**								**3**		**3**	**3**