Course Coordinator Report

Course Name: Certificate Course in Deep Learning

A free Add-On Course for PG studentsin the Department of Computer Science, Shri Shivaji Education Society Amravati's Science College, Congress Nagar, and Nagpurwas held from 01/09/2023 to 23/12/2023. The course title was "Deep Learning".Welcome to the Deep Learning Add-On Course! This advanced course is perfect for those with a basic understanding of machine learning looking to specialize in deep learning techniques. We will cover topics such as convolutional neural networks (CNNs), recurrent neural networks (RNNs), and generative adversarial networks (GANs). You'll gain hands-on experience with industry-standard tools like TensorFlow and PyTorch. Through practical projects and real-world applications, you'll learn to design, implement, and optimize deep learning models. By the end of the course, you'll be prepared to apply deep learning in various domains, from image and speech recognition to natural language processing. Join us to elevate your AI skills and stay ahead in this rapidly evolving field!

The course duration was 10 weeks (30 hours). Two theory classes were engaged on Friday & Saturday and one Practical was engaged in every week. The structure of marking system was 80 marks on theory paper and 20 marks on practical execution. The question paper of theory examination was in MCQ type of 40 questions with four multiple choices. Practical examination was also taken on this course for 20 marks. All the 60 students were present in both theory and practical examination. The result was prepared and certificates were also distributed to the students.

Dr. M.T.Wanjari and Mr.A.A.Bodkhe
Course Coordinator

Assistant Professor
Department of Computer Science
S.S.E.S. Amt's Science College
Congress Nagar, Nagpur

To,
The Principal
SSES Amt's Science College,
Congress Nagar, Nagpur-12

Subject: For permission to conduct the add on courses in Computer Science department during the session 2023-2024

Respected Sir,

This is to request you that, the teachers of Computer Science department have prepared the syllabus and modules of the 30 hours certificate courses for the session 2023-2024

The details of the course module, syllabus and time table is submitted here with

Hence please permit to run the add on courses and oblige me

Thanking you

Yours sincerely

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur

Department of Computer Science

NOTICE

Date: 15/08/2023

We are pleased to announce that the Department of Computer Science is offering a Certificate Course on **Deep Learning** for all M. Sc. (CS)/MCA Students free of cost starting from first week of September 2023.

Course Highlights:
- Introduction to Deep Learning
- Identify deep learning techniques
- Introduce ideas of artificial neural network
- Implementing deep learning model using TensorFlow and Pytorch
- Design deep learning model for machine learning problem

Course Duration: 10 Weeks (30 Hours)

Eligibility: Open to all students of M.Sc. (CS)/MCA, Shri Shivaji Education Society Amravati's, Science College, Congress Nagar, Nagpur

Registration: Interested students can register at the Department of Computer Science office on or before**31/08/2023**.

Contact Information:
For further details, please contact:

Dr. Manish T. Wanjari
Mob.8329153206
Mr. Amol A. Bodkhe
Mob.9423609630
Course Coordinator

Assistant Professor
Department of Computer Science
S.S.E.S. Amt's Science College,
Congress Nagar, Nagpur

Professor & Head
Department of Computer Science
S.S.E.S. Amt's Science College
Congress Nagar, Nagpur

CERTIFICATE COURSE IN DEEP LEARNING (COMPUTER SCIENCE)

Course Objectives:

1) To understand major deep learning algorithms.
2) To identify deep learning techniques
3) To introduce the idea of artificial neural networks and their architecture.
4) To introduce techniques used for training artificial neural networks.
5) To enable design of an artificial neural network for classification
6) To enable design and deployment of deep learning models for machine learning problems.

Department of Computer Science
SSES Amt's Science College, Congress Nagar, Nagpur

Free Certificate Course for College Students

Duration – 30 Hours (10 Weeks)

Process of Registration - Limited Seats Available

This Deep Learning course provides a comprehensive introduction to the principles and practices of deep learning. Students will explore neural networks, including feedforward, convolutional, and recurrent architectures. The course covers essential topics such as backpropagation, optimization techniques, and regularization methods. Practical sessions focus on implementing and training deep learning models using popular frameworks like TensorFlow and PyTorch. Applications in computer vision, natural language processing, and reinforcement learning are examined. By the end of the course, students will be equipped to design, train, and evaluate deep learning models for real-world tasks, preparing them for advanced research or industry roles in AI.

SSES Amravati's Science College, Congress Nagar, Nagpur-12

DEPARTMENT OF COMPUTER SCIENCE

COURSE MODULE AND SYLLABUS

Course Title: Certificate Course in Deep Learning (Computer Science)

Course Coordinator: Dr. M. T. Wanjari & Mr. A. A. Bodkhe

Course description:

This Deep Learning course provides a comprehensive introduction to the principles and practices of deep learning. Students will explore neural networks, including feedforward, convolutional, and recurrent architectures. The course covers essential topics such as backpropagation, optimization techniques, and regularization methods. Practical sessions focus on implementing and training deep learning models using popular frameworks like TensorFlow and PyTorch. Applications in computer vision, natural language processing, and reinforcement learning are examined. By the end of the course, students will be equipped to design, train, and evaluate deep learning models for real-world tasks, preparing them for advanced research or industry roles in AI.

Course Objectives:

1)To understand major deep learning algorithms.
2) To identify deep learning techniques
3) To introduce the idea of artificial neural networks and their architecture.
4) To introduce techniques used for training artificial neural networks.
5) To enable design of an artificial neural network for classification
6) To enable design and deployment of deep learning models for machine learning problems.

Instructional Strategies: Theory class, Practical, Video clips etc.

Evaluation Strategies: Oral discussions and Final MCQ examination.

Course outline: Course Outlines: (Relevance)

1) Understand the main fundamentals that drive Deep Learning
2) Be able to build, train and apply fully connected deep neural networks
3) Know how to implement efficient CNN or RNN.
4) Understand the key features in a neural network's architecture
5) Fundamentals of deep learning
6) Convolutional neural networks

7) Representation learning and generative learning
8) Deep learning applications and reinforcement learning and NLP

Course Outcomes (COs):

1) Able to understand the mathematics behind functioning of artificial neural networks
2) Able to analyze the given dataset for designing a neural network based solution
3) Able to carry out design and implementation of deep learning models for signal/image processing applications
4) Able to design and deploy simple TensorFlow-based deep learning solutions to classification problems
5) Solve various deep learning problems
6) Apply autoencoders for unsupervised learning problems
7) Implement Convolutional Neural Networks to image classification problems
8) Apply recurrent neural network to sequence Learning Problem.

Duration of course: Ten weeks (30 Hours)

The Structure of Syllabus and system of evaluation -

Course	Theory Papers and Practical	Total Marks	
		Theory	Practical
Certificate Course in Deep Learning	Theory paper- Deep Learning (Computer Science) * Theory examination will be of MCQ pattern having 40 questions each with equal marks.	80	20
	* Practical examination will be based on performance evaluation in the laboratory	100	

Coordinator

IQAC Coordinator
Internal Quality Assurance Cell
(IQAC)
S. S. E. S. A. Science College,
Congress Nagar, Nagpur.

Principal
S. S. E. S. Amravati's
Science College, Nagpur.

SYLLABUS

Certificate course (10 weeks)

(Deep Learning (Computer Science)

Theory-

UNIT- I

Introduction to Deep Learning, Bayesian Learning, Decision SurfacesLinear Classifiers, Linear Machines with Hinge LossOptimization Techniques, Gradient Descent, Batch OptimizationIntroduction to Neural Network,

Unit-II

Multilayer Perceptron, Back Propagation LearningUnsupervised Learning with Deep Network, AutoencodersConvolutional Neural Network, Building blocks of CNN, Transfer LearningConvolutional Neural Network, Building blocks of CNN, Transfer LearningEffective training in Deep Net- early stopping, Dropout,

Unit-III

Batch Normalization, Instance Normalization, Group NormalizationRecent Trends in Deep Learning Architectures, Residual Network, Skip Connection Network, Fully Connected CNN etcClassical Supervised Tasks with Deep Learning, Image Denoising, Semantic Segmentation, Object Detection etc.LSTM NetworksGenerative Modeling with DL, Variational Autoencoder, Generative Adversarial Network Revisiting Gradient Descent, Momentum Optimizer.

Practicals-

a) Write a program to construct an Artificial Neural Network using medical data. Demonstrate the diagnosis of heart disease analysis and classification in patients using a standard Heart Disease Dataset.

b) Write a program to construct an Artificial Neural Network using medical data. Demonstrate the diagnosis of diabetes prediction in patients using a standard diabetes dataset.

c) Develop a program that constructs a Convolutional Neural Network (CNN) with medical data. Illustrate its use in predicting COVID diagnosis for patients using a standard COVID dataset.

d) Create a program that utilizes data from a .csv file to build a Recurrent Neural Network (RNN). Illustrate its effectiveness by predicting Google stock prices using a well-known dataset.

e) Develop a program leveraging a .csv dataset to construct an LSTM model.illustrate its effectiveness by spam email classification using a well-known dataset.

Distribution of marks: -

1. Introduction to Deep Learning -	05
2. Introduction to Neural Network -	05
3. Implementation of CNN algorithm -	05
3. LSTM Networks Generative Modeling with DL-	05

Week-wise Teaching Plan:

Week	Hrs.	Syllabus
Week 1	1	Introduction to Deep Learning
	1	Bayesian Learning,
	1	Decision SurfacesLinear Classifiers
Week 2	1	Linear Machines with Hinge LossOptimization Techniques
	2	Gradient Descent, Batch OptimizationIntroduction to Neural Network
Week 3	1	Multilayer Perceptron
	2	Back Propagation LearningUnsupervised Learning with Deep Network
Week 4	1	Autoencoders Convolutional Neural Network
	1	Building blocks of CNN
Week 5	2	Transfer LearningConvolutional Neural Network
	1	Building blocks of CNN
Week 6	2	Transfer LearningEffective training in Deep Net- early stopping, Dropout
	1	Batch Normalization, Instance Normalization
Week 7	2	Group NormalizationRecent Trends in Deep Learning Architectures
	1	Residual Network, Skip Connection Network, Fully Connected CNN etc
Week 8	2	Classical Supervised Tasks with Deep Learning
	1	Image Denoising, Semanticd Segmentation, Object Detection etc.
Week 9	2	LSTM NetworksGenerative Modeling with DL
	1	Variational Autoencoder
Week 10	1	Generative Adversarial Network Revisiting Gradient Descent
	2	Momentum Optimizer.

SSES Amravati's Science College
Congress Nagar, Nagpur-12

Certificate Course in Deep Learning (Computer Science)

Time Table

Day	Theory
Friday	MTW (B6) Theory 01.30 PM – 02.30 PM
Saturday	MTW (M.Sc. Lab.) practical, 01.30 PM – 02.30 PM
	AAB (B6) Theory, 02.30 PM – 03.30 PM

Assistant Professor
Department of Computer Science
S.S.E.S. Amt's Science College
Congress Nagar, Nagpur

Professor & Head
Department of Computer Science
S S E S Amt's Science College
Congress Nagar, Nagpur

SSESA's, Science College, Congress Nagar, Nagpur

Certificate Course in Deep Learning

Theory Examination

Registration List

Session 2023-24

Sr. No.	Name of Students	Signature
1.	AishwiniArunNaranje	
2.	Anjali Pradeep Fender	
3.	Arushi Satish Adkane	
4.	Chaitali Arvind Shripatre	
5.	MadhaviShankararoChoudhari	
6.	MadhuriChandrabhushan Singh	
7.	Mrunali Prakash Vaidya	
8.	Nikhil ManojGharat	
9.	Nikhil Sjanlal Gupta	
10.	Payal Ganesh Shahu	
11.	PayalYashwantSharnagat	
12.	PrachiRameshraoWasake	
13.	Pranali Raju Watane	
14.	Pratik Vijay Pahade	
15.	Sakshi Prakash Manapure	
16.	SarangIshwarDhanorkar	
17.	Swati DilipIsad	
18.	TanuSubhashSangole	
19.	AanchalAshwani Yadav	
20.	Aditya Bansule	
21.	Ankit Singade	
22.	AnkitaWaghare	
23.	AshviniSurkar	
24.	Bhagyashree S Rane	
25.	BhagyashriDiwakarraoMahulkar	
26.	Deepti P Kharatkar	
27.	Devyani A Wasnik	
28.	DivyaPawar	
29.	IqraSabri	
30.	KalashPadwe	
31.	KetanMendhule	
32.	Khushi V Sanodiya	
33.	MadhavKarkare	
34.	MitaliBonde	
35.	PayalPaunikar	
36.	PrafulKhonde	

37.	PranayGatfane	
38.	RitikaWankar	
39.	RutujaKalbande	
40.	SagarYedaskar	
41.	SahilAsutkar	
42.	Shrish C Kalambe	
43.	Simran Kaur bedi	
44.	Sonal Prashant Ulabhaje	
45.	SufiyanKureshi	
46.	Sumit A Rodge	
47.	Swati Jamgade	
48.	TanmayAmbulkar	
49.	TejasThakre	
50.	Vidhi S Sharma	
51.	Vidhi Soneji	
52.	VidhitGanthale	

Coordinator

Department of Computer Science

Assistant Professor
Department of Computer Science
S.S.E.S. Amt's Science College
Congress Nagar, Nagpur

Head

Department of Computer Science

Professor & Head
Department of Computer Science
S.S.E.S. Amt's Science College
Congress Nagar Nagpur

rse: Deep Learning
ory/Practical:

Shri Shivaji Education Society Amravati's
Science College, Nagpur
Attendance Sheet

Roll No.	Name of Students	Periods →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Date →	01	02	03	04	25	25	29	30	29	30	06	07	13	14	20	21	27	28	03	04
		Contact No.	09	09	09	09	09	09	09	09	09	09	10	10	10	10	10	10	10	10	11	11
101	Aishwinii Arun Narantje		P	P	P	P	P	P	.	P	P	P	P	P	P	P	P	.	.	P	P	P
102	Anjali Pradeep Fender		P	P	.	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P	.	P
103	Arushi Satish Adkane		P	P	P	P	P	P	P	P	P	P	P	P	.	P	P	.	P	P	P	.
104	Chaitali Arvind Shripatre		P	P	P	.	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P	P
105	Madhavi Shankararo Choudhari		P	P	P	P	.	P	P	P	P	P	P	P	.	.	P	P	P	.	P	P
106	Madhuri Chandrabhushan Singh		.	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P	P	P	P	P
107	Mrunali Prakash Vaidya		P	P	P	P	P	P	P	P		P	P	P	P	P	.	.	P	P	P	P
108	Nikhil Manoj Gharat		P	P	P	P		P	P	P	P	P	P	P	P	P	.	P	P	P	P	P
109	Nikhil Sjanlal Gupta		P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P	.	P	P	.
110	Payal Ganesh Shahu		P	P	P	P	P	P	P	P	P	.	.	P	P	P	P	.	P	P		P
111	Payal Yashwant Sharnagat		P	.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	P	P	P
112	Prachi Rameshrao Wasake		P	P	P	P	P	P	P	P	P	.	P	P	P	P	P	P	.	P	P	P
113	Pranali Raju Watane		P	.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
114	Pratik Vijay Pahade		P	P	P	P	P	P	P	.	P	P	P	P	P	P	P	P	P	P	.	P
115	Sakshi Prakash Manapure		P	P	P	P	.	P	P	P	P	P	P	P	P	P	.	P	P	.	P	P
116	Sarang Ishwar Dhanorkar		P	P	P	P	P	P	P	P	P	P	.	.	.	P	P	P	P	P	P	P
117	Swati Dilip Isad		P	P	.	.	P	P	.	P	P	P	P	P	P	P	P	P	P	P	P	P
118	Tanu Subhash Sangole		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
119	Aanchal Ashwani Yadav		P	P	.	.	P	.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
120	Aditya Bansule		P	P	P	P	P	.	P	P	P	P	P	P	P	.	P	P	.	P	P	.
121	Ankit Singade		P	P	P	P	P	P	P	.	P	P	P	P	P	.	.	P	P	P	P	P
122	Ankita Waghare		P	P	.	P	P	P	P	.	.	P	P	P	P	P	P	P	P	.	P	P
123	Ashvini Surkar		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
124	Bhagyashree S Rane		.	P	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P	P	P	P
125	Bhagyashri Diwakarrao Mahulkar		P	P	.	.	P	P	P	P	P	P	P	P	P	P	.	P	P	P	P	P
126	Deepti P Kharatkar		P	P	P	.	.	.	P	P	P	P	P	P	P	P	P	P	P	P	P	.
127	Devyani A Wasnik		P	P	P	P	P	P	P	P	P	.	P	P	P	P	P	P	P	.	P	P

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur

28.	128	Divya Pawar		P	P	P	.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	P	P
29.	129	Iqra Sabri		P	P	P	P	P	P	P	.	.	P	P	P	P	P	P	P	P	P	P	.	P
30.	130	Kalash Padwe		P	.	P	P	P	P	P	P	P	P	P	P	P	P		P	P	P	.	P	P
31.	131	Ketan Mendhule		P	P	P	P	P	P	P	P	.	P	P	.	P	P	P	P	P	P	P	P	.
32.	132	Khushi V Sanodiya		.	P	P	P	P	P	P	P	P	.	P	P	P	P	P	P	P	P	P	.	P	P
33.	133	Madhav Karkare		.	P	P	.	P	P	P	P	P	P	P	P	P	.	P	P	P	P	.	P	P
34.	134	Mitali Bonde		P	P	P	P	P	P	P	.	P	P	P	P	.	.	P	P	P	P	P	P	P
35.	135	Payal Paunikar		P	P	P	.	.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
36.	136	Praful Khonde		P	P	P	P	P	P	.	P	P	P	P	P	P	P	P	.	.	P	P	P	P
37.	137	Pranay Gatfane		P	P	P	P	.	P	P	P	P	.	P	P	P	P	P	P	P	P	P	P	.
38.	138	Ritika Wankar		P	P	P	P	P	P	P	P	.	P	P	P	P	P	P	P	P	P	P	P	P
39.	139	Rutuja Kalbande		P	P	P	P	P	.	P	P	.	P	P	P	P	P	P	P	P	P	.	P	.
40.	140	Sagar Yedaskar		P	P	P	.	.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	P
41.	141	Sahil Asutkar		P	P	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P	P	.	P	P
42.	142	Shrish C Kalambe		P	P	P	P	P	.	.	P	P	P	P	P	P	P	P	P	P	P	P	P	.
43.	143	Simran Kaur bedi		P	P	P	P	P	P	.	P	P	P	P	P	P	P	P	P	P	P	P	P	P
44.	156	Sonal Prashant Ulabhaje		P	.	P	P	P	P	P	P	P	P	P	.	.	P	P	P	P	P	P	.	
45.	157	Sufiyan Kureshi		P	P	P	P	P	P	.	.	.	P	P	P	P	P	P	P	P	P	P	P	P
46.	145	Sumit A Rodge		P	P	P	P	P	P	P	P	P	P	.	P	P	P	P	P	P	P	P	P	P
47.	158	Swati Jamgade		P	P	P	.	P	P	P	P	P	.	P	P	P	P	P	P	P	P	P	P	.
48.	150	Tanmay Ambulkar		P	.	P	P	P	P	.	P	P	P	P	P	P	P	P	P	P	P	.	P	P
49.	149	Tejas Thakre		.	.	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
50.	155	Vidhi S Sharma		P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	.	.	P	P	P	P
51.	154	Vidhi Soneji		P	P	P	P	P	P	P	P	P	P	P	P	.	P	P	P	P	P	P	P	P
52.	148	Vidhit Ganthale		P	.	P	P	P	P	P	.	P	P	P	P	P	P	P	P	P	P	.	P	P

Coordinator
Department of Computer Science

Assistant Professor
Department of Computer Science
S.S.E.S. Amt's Science College
Congress Nagar, Nagpur

Head of Department
Department of Computer Science

Professor & Head
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S.S.E.S. Amt's Science College
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Course: Deep Learning
Theory/Practical:

Shri Shivaji Education Society Amravati's
Science College, Nagpur
Attendance Sheet

S. N.	Roll No.	Name of Students	Periods →	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			Date →	24/11	25/11	01/12	02/12	08/12	09/12	15/12	16/12	22/12	23/12									
			Contact No.																			
1.	101	Aishwini Arun Naranje		P	P	.	P	P	P	P	P	P	P									
2.	102	Anjali Pradeep Fender		P	P	P	P	P	P	P	P	P	P									
3.	103	Arushi Satish Adkane		P	P	P	P	.	P	P	P	P	P									
..	104	Chaitali Arvind Shripatre		P	P	P	P	P	P	P	P	P	P									
5.	105	Madhavi Shankararo Choudhari		P	.	P	P	P	P	P	P	P	P									
6.	106	Madhuri Chandrabhushan Singh		.	P	P	P	P	P	.	P	P	P									
7.	107	Mrunali Prakash Vaidya		P	.	P	P	P	P	P	P	P	P									
8.	108	Nikhil Manoj Gharat		P	P	P	P	P	.	P	P	P	P									
9.	109	Nikhil Sjanlal Gupta		P	P	P	P	P	P	P	P	P	.									
10.	110	Payal Ganesh Shahu		P	P	P	P	P	P	P	.	P	P									
11.	111	Payal Yashwant Sharnagat		P	P	P	P	P	P	P	P	P	P									
12.	112	Prachi Rameshrao Wasake		P	P	P	.	P	P	P	P	P	P									
13.	113	Pranali Raju Watane		P	P	P	P	P	P	P	P	P	P									
14.	114	Pratik Vijay Pahade		P	P	.	.	P	P	P	P	P	P									
15.	115	Sakshi Prakash Manapure		P	P	P	P	P	P	P	P	P	P									
16.	116	Sarang Ishwar Dhanorkar		P	P	P	P	.	P	P	P	P	P									
17.	117	Swati Dilip Isad		P	P	P	P	P	P	P	P	P	P									
18.	118	Tanu Subhash Sangole		P	P	P	P	P	P	P	P	P	P									
19.	119	Aanchal Ashwani Yadav		P	P	.	P	P	P	P	P	P	P									
20.	120	Aditya Bansule		P	.	P	P	P	P	P	P	P	P									
21.	121	Ankit Singade		P	P	P	P	P	P	P	P	P	.									
22.	122	Ankita Waghare		P	P	P	P	P	P	P	P	P	P									
23.	123	Ashvini Surkar		P	P	P	P	P	P	P	P	P	P									
24.	124	Bhagyashree S Rane		P	P	P	P	P	P	P	P	P	P									
25.	125	Bhagyashri Diwakarrao Mahulkar		P	P	P	P	P	P	.	P	P	P									
26.	126	Deepti P Kharatkar		P	P	P	.	P	P	P	P	P	P									
27.	127	Devyani A Wasnik		P	P	P	P	P	P	.	P	P	P									

128	Divya Pawar		P	P	P	P	P	P	P	P	P	P	
129	Iqra Sabri		P	P	P	P	P	.	P	P	P	P	
130	Kalash Padwe		P	P	.	P	P	P	P	P	P	P	
131	Ketan Mendhule		P	P	P	.	P	P	.	P	P	P	
132	Khushi V Sanodiya		P	P	P	P	P	P	P	.	P	P	
133	Madhav Karkare		.	P	P	P	P	P	P	P	P	P	
134	Mitali Bonde		P	P	P	P	P	.	P	P	P	P	
135	Payal Paunikar		P	P	P	P	P	P	P	P	P	P	
136	Praful Khonde		P	P	P	P	P	P	P	P	.	P	
137	Pranay Gatfane		.	P	P	P	P	P	P	P	P	P	
138	Ritika Wankar		P	.	P	P	P	P	P	P	P	P	
139	Rutuja Kalbande		P	P	-	P	P	P	P	P	P	P	
140	Sagar Yedaskar		P	P	P	P	.	P	P	P	P	P	
141	Sahil Asutkar		P	P	P	P	P	P	P	P	P	.	
142	Shrish C Kalambe		P	P	P	P	P	P	P	P	P	P	
143	Simran Kaur bedi		P	P	P	P	P	P	P	P	P	P	
156	Sonal Prashant Ulabhaje		P	P	.	.	P	P	P	P	P	P	
157	Sufiyan Kureshi		P	P	P	P	P	P	P	P	.	P	
145	Sumit A Rodge		P	P	P	P	P	P	.	P	P	P	
158	Swati Jamgade		P	P	P	P	P	P	P	P	P	P	
150	Tanmay Ambulkar		P	P	P	P	P	.	P	P	P	P	
149	Tejas Thakre		P	P	P	P	P	P	P	P	P	P	
155	Vidhi S Sharma		P	P	P	P	P	P	P	P	P	P	
154	Vidhi Soneji		P	P	P	P	P	P	P	P	P	P	
148	Vidhit Ganthale		P	P	P	P	P	P	P	P	P	P	

Coordinator
tment of Computer Science

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Department of Computer Science
S.S.E.S. Amt's Science College
Congress Nagar, Nagpur

Head of Department
Department of Computer Scienc

Professor & Head
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S S E S Amt's Science College
Congress Nagar, Nagpur

Shri Shivaji Education Society Amravati's
Science College, Congress Nagar, Nagpur

Department of Computer Science

Certified Course on Deep Learning

Announcement of Theory and Practical Examination Dates for Deep Learning Certificate Course

NOTICE

Date: 06/12/2023

This is to inform all students enrolled in the Certificate Course on Deep Learning that the dates for the Theory and Practical Examinations have been scheduled as follows:

Theory Examination:

Date: **29 December 2023, Friday**

Time: 01:30 pm to 02:30 pm

Venue: Room No B6

Practical Examination:

Date: **30 December 2023, Saturday**

Time: 01:30 pm to 02:30 pm

Venue: M. Sc. Lab., Ist Floor

All students are required to be present at the examination venue at least 15 minutes before the scheduled time. Please ensure you bring your college ID card and any other necessary materials.

For any further queries, please contact the Department of Computer Science office.

Dr. Manish T. Wanjari
Mr. Amol A. Bodkhe
Course Co-ordinator

Assistant Professor
Department of Computer Science
S.S.E.S. Amt's Science College
Congress Nagar, Nagpur

Professor & Head
Department of Computer Science
S S E S Amt's Science College
Congress Nagar, Nagpur

SSESA's, Science College, Congress Nagar, Nagpur
Certificate Course in Deep Learning
Theory Examination
Students Attendance List
Session 2023-24

Sr. No.	Name of Students	Signature
1.	AishwiniArunNaranje	
2.	Anjali Pradeep Fender	
3.	Arushi Satish Adkane	
4.	Chaitali Arvind Shripatre	
5.	MadhaviShankararoChoudhari	
6.	MadhuriChandrabhushan Singh	
7.	Mrunali Prakash Vaidya	
8.	Nikhil ManojGharat	
9.	Nikhil Sjanlal Gupta	
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16.	SarangIshwarDhanorkar	
17.	Swati DilipIsad	
18.	TanuSubhashSangole	
19.	AanchalAshwani Yadav	
20	Aditya Bansule	
21.	Ankit Singade	
22.	AnkitaWaghare	
23..	AshviniSurkar	
24.	Bhagyashree S Rane	
25.	BhagyashriDiwakarraoMahulkar	
26.	Deepti P Kharatkar	
27.	Devyani A Wasnik	
28.	DivyaPawar	
29.	IqraSabri	
30.	KalashPadwe	
31.	KetanMendhule	
32.	Khushi V Sanodiya	
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34.	MitaliBonde	
35.	PayalPaunikar	
36.	PrafulKhonde	

37.	PranayGatfane	
38.	RitikaWankar	
39.	RutujaKalbande	
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47.	Swati Jamgade	
48.	TanmayAmbulkar	
49.	TejasThakre	
50.	Vidhi S Sharma	
51.	Vidhi Soneji	
52.	VidhitGanthale	

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Head

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SSESA's, Science College, Congress Nagar, Nagpur

Certificate Course in Deep Learning

Practical Examination

Students Attendance List

Session 2023-24

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9.	Nikhil Sjanlal Gupta	
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11.	PayalYashwantSharnagat	
12.	PrachiRameshraoWasake	
13.	Pranali Raju Watane	
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Congress Nagar, Nagpur

Head

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SSES Amravati's Science College, Congress Nagar, Nagpur-12

DEPARTMENT OF COMPUTER SCIENCE

Final Examination
Session 2023-2024
Add - on Certificate Course in Deep Learning

Maximum Marks: 80

Students Name: Ashwini Arun Naranje

Roll No: 101 **Date:** 29/12/2023 **Time: 1 HOUR**

Name and Signature of Invigilator: Shalaka. S. Sayyamkar

Note: 1. All Questions are compulsory and carry equal marks.
2. Tick the Correct option only.

1. What is Deep Learning?

A) A subset of Machine learning that involves neural networks with many layers.

B) A data preprocessing technique.

C) A type of database management system.

D) A programming language.

2. Which of the following is a popular framework for Deep Learning?

A) Tensor Flow B) MySQL

C) Hadoop D) Spark

3. In Bayesian Learning, what does the posterior probability represent?

A) The initial belief about a hypothesis. B) The probability of the data given the hypothesis.

C) The updated belief after observing the data. D) The overall probability of the data.

4. What is Bayes' theorem used for in Bayesian Learning?

A) To calculate the likelihood of data. B) To update the probability estimate for a hypothesis.

C) To generate random samples. D) To determine the maximum likelihood estimate.

5. What is a decision surface in machine learning?

A) A tool for data preprocessing. B) A boundary that separates different classes.

C) An algorithm for clustering data.A)technique for reducing dimensionality.

6. Which of the following best describes the decision surface of a linear classifier?

A) A non-linear curve. B) A hyperplane.

C) A cluster of points. D) A decision tree.

7. Which loss function is commonly used in linear classifiers?

A) Mean Squared Error B) Cross-Entropy Loss

C) Hinge Loss D) Log Loss

8. What does the term "linear" in linear classifiers refer to?

A) The linearity of the decision boundary. B) The linearity of the data distribution.

C) The linear complexity of the algorithm. D) The linear relationship between features.

9. What is the goal of hinge loss in SVMs?

A) To minimize the distance between data points and the hyperplane.

B) To maximize the margin between classes.

C) To reduce the number of features.

D) To increase the number of support vectors.

10. In hinge loss optimization, what happens when a data point is correctly classified and falls outside the margin?

A) The loss is zero. B) The loss is maximized.

C) The loss is minimized but not zero. D) The loss is constant.

11. What is the primary purpose of optimization techniques in machine learning?

A) To find the best hyperparameters. B) To improve the speed of the algorithm.

C) To minimize the loss function. D) To preprocess the data.

12. Which of the following is a common optimization technique used in training neural networks?

A) Gradient Descent B) k-Nearest Neighbors

C) Principal Component Analysis D) Random Forests

13. What is the main idea behind Gradient Descent?

A) To ascend the gradient of the loss function.

B) To iteratively update parameters in the direction of the steepest increase.

C) To iteratively update parameters in the direction of the steepest decrease.

D) To use the gradient to transform features.

14. Which of the following is a variant of Gradient Descent?

A) Newton's Method B) Backpropagation

C) Stochastic Gradient Descent (SGD) D) Support Vector Machines

15. In the context of batch optimization, what is a "batch"?

A) A single data point used for training. B) A subset of the dataset used for one iteration of optimization.

C) The entire dataset used for training. D) The final trained model.

16. What is the main objective of the backpropagation algorithm?

A) Increase the complexity of the model B) Minimize the cost function

C) Maximize the output of the neural network D) Add more layers to the network

17. In a Multilayer Perceptron (MLP), which of the following activation functions is commonly used?

A) Linear B) Sigmoid

C) Step function D) Hyperbolic tangent (tanh)

18. What is the primary purpose of an autoencoder?

A) Classification of data B) Dimensionality reduction

C) Predicting future data points D) Clustering data

19. In an autoencoder, what is the role of the encoder?

A) To reconstruct the input data B) To compress the input data into a lower-dimensional representation

C) To classify the input data D) To increase the dimensionality of the input data

20. Which of the following is a key component of a Convolutional Neural Network (CNN)?

A) Recurrent layers B) Convolutional layers

C) Fully connected layers D) Both B and C

21. What is the purpose of pooling layers in a CNN?

A) To increase the dimensionality of the feature mapsB) To reduce the computational complexity

C) To introduce non-linearity D) To connect layers of the network

22. In transfer learning, which part of a pre-trained network is typically reused?

A) The input layer B) The final output layer

C) The feature extraction layers D) The optimizer

23. What is the main purpose of early stopping in training neural networks?

A) To decrease training time B) To prevent overfitting

C) To reduce the learning rate D) To increase the size of the dataset

24.How does dropout help in regularizing a neural network?

A) By adding noise to the input data B) By removing random neurons during training

C) By increasing the number of neurons D) By decreasing the learning rate

25. Which of the following is a common activation function used in CNNs?

A) Sigmoid B) ReLU (Rectified Linear Unit)

C) Softmax D) Step function

26. What type of learning is used in autoencoders?

A) Supervised learning B) Unsupervised learning

C) Reinforcement learning D) Semi-supervised learning

27. Which of the following techniques is used to prevent overfitting in neural networks?

A) Increasing the number of epochs B) Using a larger batch size

C) Applying dropout D) Using a linear activation function

28. What is the primary purpose of Batch Normalization in deep neural networks?

A. To reduce the number of layers B. To stabilize and accelerate training

C. To increase the model complexity D. To perform feature scaling

29. How does Instance Normalization differ from Batch Normalization?

A. It normalizes across the batch dimension B. It normalizes each instance separately

C. It normalizes across groups of instances D. It does not normalize at all

30. Group Normalization is particularly useful in which scenario?

A. Small batch sizes B. Large batch sizes

C. Only for recurrent neural networks D. When using non-linear activation functions

31. What is a key characteristic of Residual Networks (ResNets)?

A. Use of deep layers without any connections B. Inclusion of skip connections to mitigate vanishing gradients

C. Reliance solely on convolutional layers D. Absence of normalization techniques

32. What is a Skip Connection in neural networks?

A. A technique to skip training on certain batches B. A connection that bypasses one or more layers

C. A type of layer that skips input normalization D. A dropout mechanism

33. What is the advantage of a Fully Connected Convolutional Network (FCCN)?

A. It only uses fully connected layers B. It applies convolutional layers to any input size

C. It is more efficient than standard convolutional networks D. It performs classification without any convolutional layers

34. Which task involves predicting pixel-wise class labels in an image?

A. Image Classification B. Image Denoising

C. Semantic Segmentation D. Object Detection

35. Which deep learning task focuses on removing noise from images?

A. Semantic Segmentation B. Image Denoising

C. Object Detection D. Image Classification

36. What does Object Detection aim to achieve in an image?

A. Classifying the entire image into a category

B. Identifying and localizing objects within the image

C. Denoising the image

D. Segmenting the image into different regions

37. What does LSTM stand for in neural networks?

A. Long Short-Term Memory B. Large Scale Temporal Memory

C. Long Sequence Training Model D. Least Square Temporal Model

38. What is a primary advantage of LSTM networks over traditional RNNs?

A. Simpler architecture B. Better handling of long-term dependencies

C. Faster training time D. Lower computational requirements

39. Which of the following components is used to reduce the spatial dimensions of feature maps in CNNs?

A. Convolutional layerB. Pooling layer

C. Fully connected layer D. Dropout layer

40. What distinguishes a VariationalAutoencoder (VAE) from a traditional autoencoder?

A. It uses a deterministic approach to encoding B. It introduces stochasticity to the encoding process

C. It does not use a decoder D. It is designed for supervised learning tasks

SSES Amravati's Science College, Congress Nagar, Nagpur-12

DEPARTMENT OF COMPUTER SCIENCE

Final Examination
Session 2023-2024
Add - on Certificate Course in Deep Learning
Practical Exam

Maximum Marks: 20

Students Name: Ashwini Arun Narayje

Roll No: 101 **Date:** 30/12/2023 **Time: 1 HOUR**

Name and Signature of Invigilator: Aarya A. Chandekar Chandekar

Solve Any One

1. A) Write a program to construct an Artificial Neural Network using medical data. Demonstrate the diagnosis of heart disease analysis and classification in patients using a standard Heart Disease Dataset.
   B) Write a program to construct an Artificial Neural Network using medical data. Demonstrate the diagnosis of diabetes prediction in patients using a standard diabetes dataset.

OR

2. A) Develop a program that constructs a Convolutional Neural Network (CNN) with medical data. Illustrate its use in predicting COVID diagnosis for patients using a standard COVID dataset.
   B) Create a program that utilizes data from a .csv file to build a Recurrent Neural Network (RNN). Illustrate its effectiveness by predicting Google stock prices using a well-known dataset.

Shri Shivaji Education Society, Amravati's

SCIENCE COLLEGE

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Mentor College under 'PARAMARSH Scheme', UGC, New Delhi

Add-on Course

Course Exam Name: Certificate Course in Deep Learning
Theory Examination Answer Key

Name of Student: .....

Roll No.: | | | | **Session: 2023-24**

Test Date: 29/12/2023 | **Max. Marks: 80**

Invigilator Signature | **Obtained Marks:** | |

INSTRUCTIONS FOR FILLING THE SHEET

1. This sheet should not be folded or crushed.
2. Use only blue/ black ball point pen to fill the circles.
3. Use of pencil is strictly prohibited.
4. Circles should be darkened completely and properly.
5. Cutting and erasing on this sheet is not allowed.
6. Do not use any stray marks on the sheet.
7. Do not use marker or white fluid to hide the mark.

WRONG METHODS ⊗ ⊙ ⊘ ✓ CORRECT METHOD ○ ○ ○ ●

	A	B	C	D
1	●	○	○	○
2	●	○	○	○
3	○	○	●	○
4	○	●	○	○
5	○	●	○	○
6	○	●	○	○
7	○	○	●	○
8	●	○	○	○
9	○	●	○	○
10	●	○	○	○
11	○	○	●	○
12	●	○	○	○
13	○	○	●	○
14	○	○	●	○
15	○	●	○	○
16	○	●	○	○
17	○	●	○	○
18	○	●	○	○
19	○	●	○	○
20	○	○	○	●
21	○	●	○	○
22	○	○	●	○
23	○	●	○	○
24	○	●	○	○
25	○	●	○	○
26	○	●	○	○
27	○	○	●	○
28	○	●	○	○
29	○	●	○	○
30	●	○	○	○
31	○	●	○	○
32	○	●	○	○
33	○	●	○	○
34	○	○	●	○
35	○	●	○	○
36	○	●	○	○
37	●	○	○	○
38	○	●	○	○
39	○	●	○	○
40	○	●	○	○
41	○	○	○	○
42	○	○	○	○
43	○	○	○	○
44	○	○	○	○
45	○	○	○	○
46	○	○	○	○
47	○	○	○	○
48	○	○	○	○
49	○	○	○	○
50	○	○	○	○

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Add-on Course

Course Exam Name: Certificate Course in Deep Learning
Theory Examination Answer Key

Name of Student: Aishwini Arun Nashane

Roll No.: 1 0 1

Session: 2023-24

Test Date: 29/12/2023

Max. Marks: 80

Invigilator Signature

Obtained Marks:

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WRONG METHODS ⊗ ⊙ ⊘ ✓ CORRECT METHOD ○ ○ ○ ●

	A	B	C	D
1	●	○	○	○
2	○	○	○	○
3	○	○	●	○
4	○	●	○	○
5	●	○	○	○
6	○	●	○	○
7	○	○	○	○
8	●	○	○	○
9	○	○	○	○
10	●	○	○	○
11	○	○	●	○
12	●	○	○	○
13	○	○	○	○
14	○	○	●	○
15	○	○	○	○
16	○	●	○	○
17	○	○	○	○
18	○	●	○	○
19	○	○	○	○
20	○	○	○	●
21	○	○	○	○
22	○	○	●	○
23	○	●	○	○
24	○	●	○	○
25	○	○	○	○
26	○	○	○	○
27	○	○	●	○
28	○	●	○	○
29	○	●	○	○
30	●	○	○	○
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35	○	○	○	○
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45	○	○	○	○
46	○	○	○	○
47	○	○	○	○
48	○	○	○	○
49	○	○	○	○
50	○	○	○	○

SSES Amravati's Science College, Congress Nagar, Nagpur-12

DEPARTMENT OF COMPUTER SCIENCE

Certificate course (10 weeks)
Certificate Course in Deep Learning
Mark Sheet

Session 2023-24

Sr. No.	Full Name of Student	Max. Marks: 80 (Theory)	Max Marks: 20 (Practical)	Total Marks 100	Grade obtained
1	Aishwini Arun Naranje	44	18	62	B
2	Anjali Pradeep Fender	53	18	71	B
3	Arushi Satish Adkane	54	18	72	B
4	Chaitali Arvind Shripatre	67	20	87	A
5	Madhavi S Choudhari	45	17	62	B
6	Madhuri C Singh	59	20	79	A
7	Mrunali Prakash Vaidya	47	17	64	B
8	Nikhil Manoj Gharat	63	20	83	A
9	Nikhil Sjanlal Gupta	46	16	62	B
10	Payal Ganesh Shahu	64	20	84	A
11	Payal Yashwant Sharnagat	54	18	72	B
12	Prachi Rameshrao Wasake	56	19	75	A
13	Pranali Raju Watane	60	20	80	A
14	Pratik Vijay Pahade	57	20	77	A
15	Sakshi Prakash Manapure	53	19	72	B
16	Sarang Ishwar Dhanorkar	44	18	62	B
17	Swati Dilip Isad	53	18	71	B
18	Tanu Subhash Sangole	54	18	72	B
19	Aanchal Ashwani Yadav	67	20	87	A
20	Aditya Bansule	54	17	71	B
21	Ankit Singade	60	16	76	A
22	Ankita Waghare	57	18	75	A
23	Ashvini Surkar	39	16	55	C
24	Bhagyashree S Rane	67	20	87	A
25	Bhagyashri DMahulkar	45	17	62	B
26	Deepti P Kharatkar	59	20	79	A
27	Devyani A Wasnik	47	17	64	B
28	Divya Pawar	63	20	83	A
29	Iqra Sabri	46	16	62	B
30	Kalash Padwe	64	20	84	A
31	Ketan Mendhule	54	18	72	B
32	Khushi V Sanodiya	56	19	75	A
33	Madhav Karkare	36	16	52	C
34	Mitali Bonde	43	17	60	B
35	Payal Paunikar	36	16	52	C
36	Praful Khonde	54	17	71	B
37	Pranay Gatfane	53	18	71	B
38	RitikaWankar	62	17	79	A
39	Rutuja Kalbande	45	17	62	B
40	SagarYedaskar	75	20	95	A+
41	SahilAsutkar	45	17	62	B

42	Shrish C Kalambe	63	20	83	A
43	Simran Kaur bedi	60	20	80	A
44	Sonal Prashant Ulabhaje	60	20	80	A
45	SufiyanKureshi	54	19	73	B
46	Sumit A Rodge	40	17	57	C
47	Swati Jamgade	44	17	61	B
48	Tanmay Ambulkar	45	18	63	B
49	TejasThakre	60	18	78	A
50	Vidhi S Sharma	49	18	67	B
51	Vidhi Soneji	51	19	70	B
52	VidhitGanthale	75	20	95	A+

A+ Grade =>Maeks=90 and above, A Grade =>Marks=75 and <90
B Grade =>Marks=60 and <75, C Grade =>Marks=40 and <60, Fail Grade =>Marks<40

Dr.M.P.Wanjari and Mr. A.A.Bodkhe
Course Coordinator

Assistant Professor
Department of Computer Science
S.S.E.S. Amt's Science College
Congress Nagar, Nagpur

Shri Shivaji Education Society Amravati's

SCIENCE COLLEGE, CONGRESS NAGAR, NAGPUR

Accredited with CGPA of 3.51 at 'A+' Grade
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CERTIFICATE

Mr./Ku. Ashwini Arun Naranje is awarded with certificate on successful completion of the course entitled, Certificate course in *"Deep Learning"*.

Session 2023-24 under Add-on course conducted for 30 hours from 01/09/2023 to 23/12/2023 by Department of Computer Science, SSESA's, Science College, congress Nagar, Nagpur 440012.

He/She has passed the Examination with 'A' Grade.

Dr. M. T. Wanjari
Coordinator, Department of Computer Science

Mr. A. A. Bodkhe
Coordinator, Department of Computer Science

Prof. M. P. Dhore
Principal, Science College, Nagpur

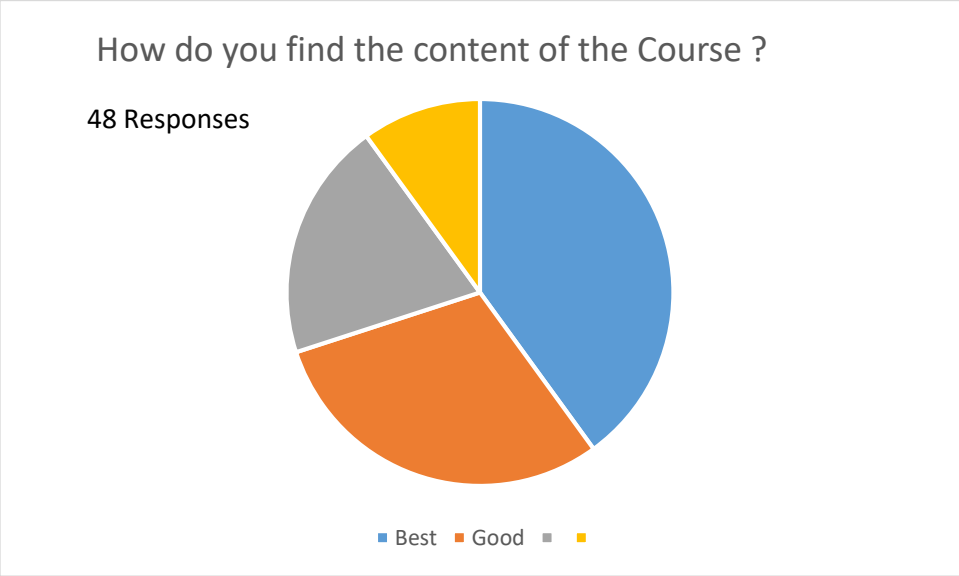
Feedback Analysis

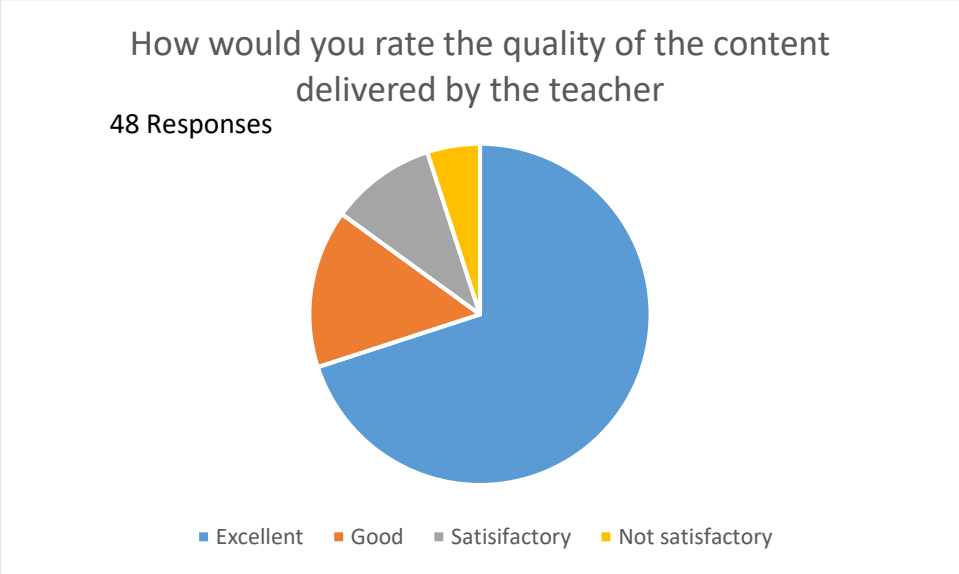
I) No of students registered and admitted for the workshop: 52
II) No of students submitted the feedback form: 48
III) Question wise Analysis of the Feedback:

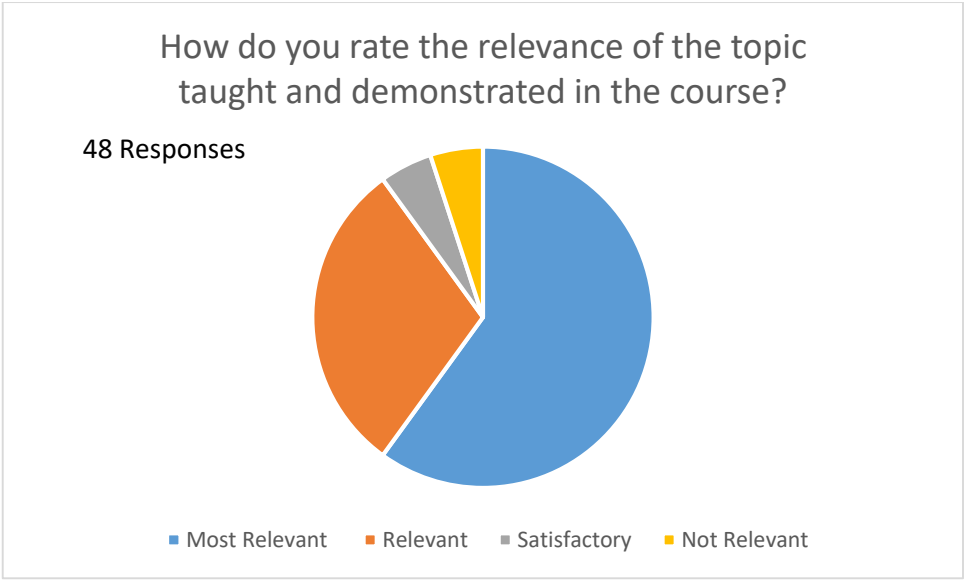
Sr. No.	Question	Response in Percent(%)			
1.	How do you find the content of the Course?	Best/Excellent	Good	Satisfactory	Not Satisfactory
		40%	30%	20%	10%
2.	How would you rate the quality of the content delivered by the teacher?	Excellent	Good	Satisfactory	Not Satisfactory
		70%	15%	13%	2%
3.	How do you rate the relevance of the topic taught and demonstrated in the course?	Most Relevant	Relevant	Satisfactory	Not Satisfactory
		60%	30%	5%	5%
4.	The content of the course were as per the syllabus	Excellent	Good	Satisfactory	Not Satisfactory
		70%	15%	10%	5%
5.	How relevant and helpful do you think the course would be in your personal as well as in your professional life?	Very Useful	Useful	Not Useful	--
		75%	20%	5%	--
6.	Any Suggestions	No Suggestions:30%,Nothing:25%, Best Course 5.9%, Good 35%, Nice Course 10%, etc.			

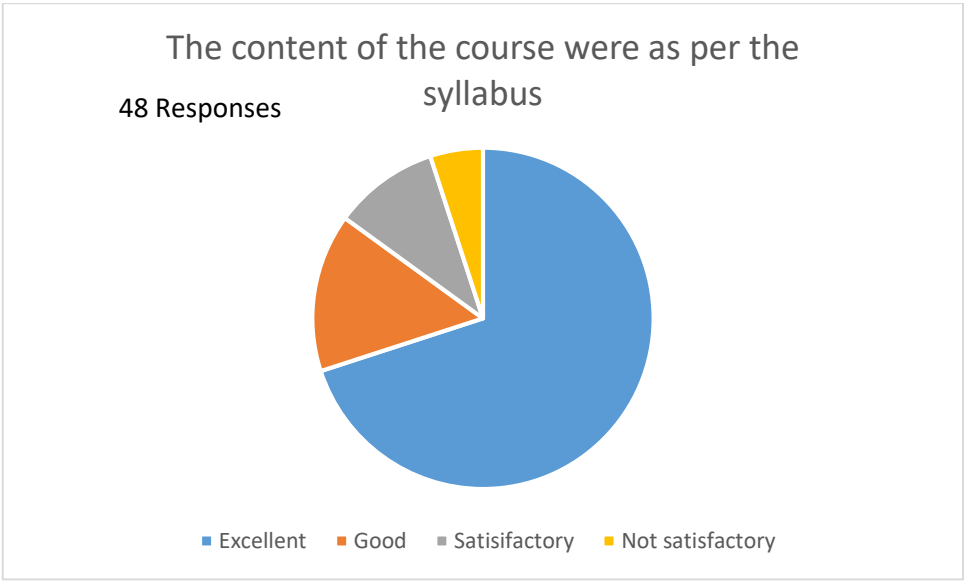
Remark: The students commented that course will be useful in their personal and professional life. The department will keep on improving the overall quality of the course.

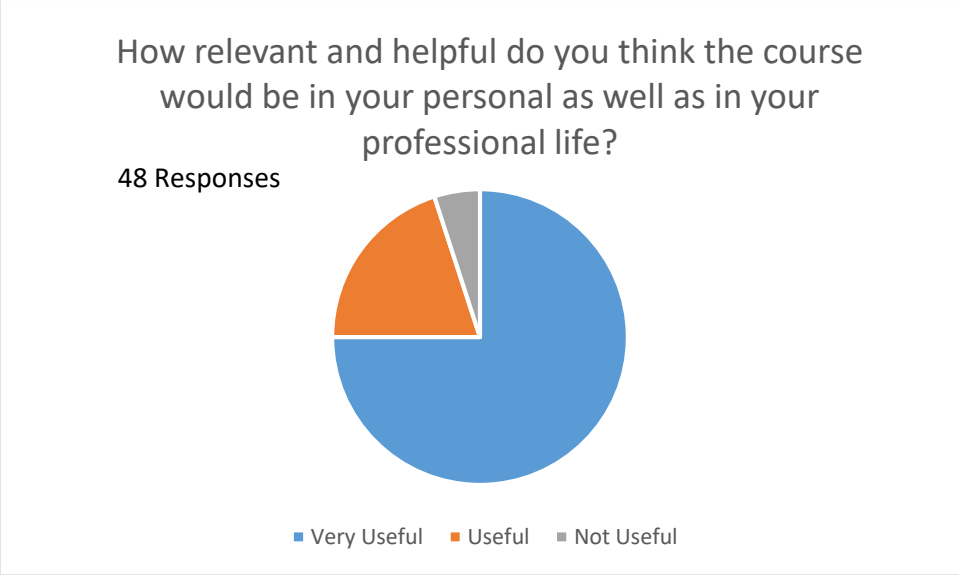
Feedback Analysis

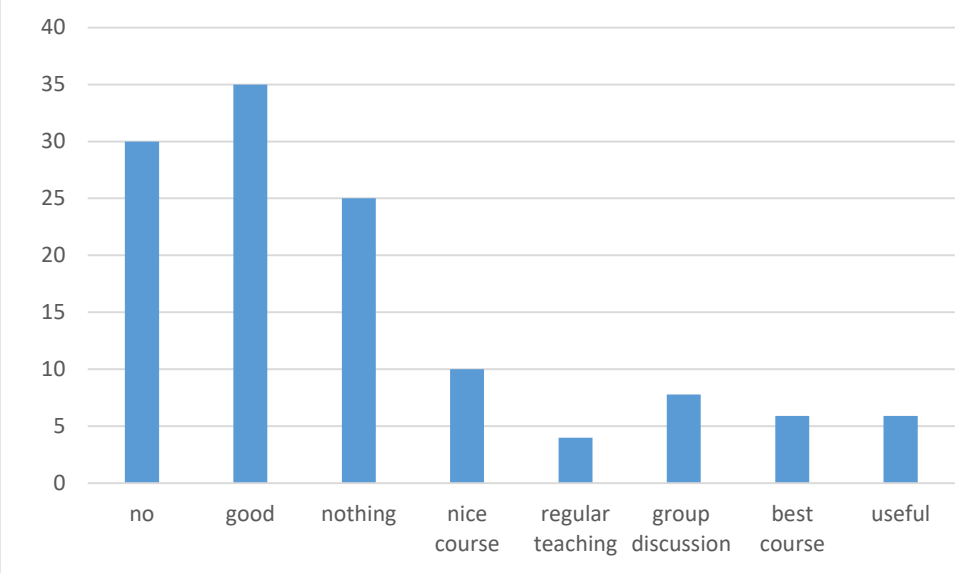





How do you rate the relevance of the topic taught and demonstrated in the course?
48 Responses
Most Relevant
Relevant
Satisfactory
Not Relevant


The content of the course were as per the syllabus
48 Responses
Excellent
Good
Satisifactory
Not satisfactory





SEAL

Dr. M. P. Dhore

Principal
S. S. E. S. Amravati's
Science College, Nagpur.