



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)

Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada

L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING COURSE HANDOUT

PART-A

Name of Course Instructor : T.N.V.S PRAVEEN
Course Name & Code : CLOUD COMPUTING & S157
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., CSE., VIII-Sem., Section A A.Y : 2019-20

PRE-REQUISITE: Knowledge of issues related to computing.

COURSE EDUCATIONAL OBJECTIVES (CEOs): Cloud computing is a scalable services consumption and delivery platform that provides on-demand computing service for shared pool of resources, namely servers, storage, networking, software, database, applications etc., over the Internet. It is a model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources, which can be rapidly provisioned and released with minimal management effort. This course will introduce various aspects of cloud computing, including fundamentals, management issues, security challenges and future research trends.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Understand various delivery and deployment models.
CO 2	Analyze the virtual machine provisioning and virtualized storage strategies.
CO 3	Explore the Platform As A Service based Services.
CO 4	Explore the Software As A Service based Services.
CO 5	Identify the issues in monitoring and management in cloud environment and also identifying the components for deployment of applications on the cloud.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3		1	-	-	-	-	-	-	-	-	1	-	-	1
CO2	3	1	1	-	-	-	-	-	-	-	-	1	-	2	-
CO3	2	-	1	-	-	-	-	-	-	-	-	1	-	2	-
CO4	2	-	1	-	-	-	-	-	-	-	-	1	-	2	-
CO5	2	1	2	-	1	1		-	-	-	-	1	-	2	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 – Moderate (Medium), 3 - Substantial (High).

TEXT BOOKS:

- T1** “Cloud Computing: principles and Paradigms”, Raj Kumar Bunya, James Bromberg, Andrej Kosciusko, Wiley, New York, USA

REFERENCE BOOKS:

- R1** NIST Cloud computing definition, <http://src.nist.gov/groups/SNS/cloud-computing/index.html>, 2009.
- R2** National Institute of Standards and Technology, <http://www.nist.gov>, 2009.
- R3** Financial Services Modernization Act (GrammLeachBliley), Pub. L. No. 106-102, 113 Stat. 1338 (November 12, 1999), codified at 15 U.S.C. yy6801-09.

PART-B**COURSE DELIVERY PLAN (LESSON PLAN):****UNIT-I: Foundation, Cloud computing services**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Subject	1	25-11-19		TLM1	CO1	T1	
2.	Course Outcomes	1	26-11-19		TLM1	CO1	T1	
3.	Introduction to UNIT-I	1	27-11-19		TLM1	CO1	T1	
4.	Foundation : Importance of cloud computing	1	28-11-19		TLM1	CO1	T1	
5.	Introduction to cloud computing	1	29-11-19		TLM1	CO1	T1	
6.	Importance of migration		02-12-19		TLM1,TLM2	CO1	T1	
7.	Migration into a cloud	1	03-12-19		TLM1,TLM2	CO1	T1	
8.	Enriching Integration As a Service	1	04-12-19		TLM1,TLM2	CO1	T1	
9.	Cloud computing services	1	05-12-19		TLM1,TLM1	CO1	T1	
10.	Roots of cloud computing	1	06-12-19		TLM1,TLM2	CO1	T1	
11.	Tutorial-1	1	09-12-19		TLM3	CO1	T1	
12.	Challenges of Migration	1	10-12-19		TLM1,TLM2	CO1	T1	
13.	Paradigm for the cloud era	1	11-12-19		TLM1,TLM2	CO1	T1	
14.	Integration with public, homogeneous and heterogeneous	1	12-12-19		TLM1,TLM2	CO1	T1	
15.	Jitter bit in Integration and .NET service Bus,ISB	1	13-12-19		TLM1,TLM2	CO1	T1	
16.	Tutorial-2	1	16-12-19		TLM3	CO1	T1	
17.	Cloud computing for enterprise applications	1	17-12-19		TLM1,TLM2	CO1	T1	

18.	Adoption strategy and five stages of cloud	1	18-12-19		TLM1,TLM2	CO1	T1	
No. of classes required to complete UNIT-I		18			No. of classes taken:			

UNIT-II: Infrastructure as a Service(IaaS)

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
19.	Introduction to UNIT-II	1	19-12-19		TLM1	CO2	T1	
20.	Virtual Machines Provisioning	1	20-12-19		TLM1	CO2	T1	
21.	Tutorial-3		23-12-19		TLM3	CO2	T1	
22.	Migration services	1	24-12-19		TLM1,TLM2	CO2	T1	
23.	On the management of Virtual Machines for cloud infrastructure	1	26-12-19		TLM1,TLM2	CO2	T1	
24.	On the management of Virtual Machines for cloud infrastructure	1	27-12-19		TLM1,TLM2	CO2	T1	
25.	Tutorial-4	1	30-12-19		TLM3	CO2	T1	
26.	Enhancing cloud computing environments using cluster as a service	1	31-12-19		TLM1,TLM2	CO2	T1	
27.	Enhancing cloud computing environments using cluster as a service	1	01-01-20		TLM1,TLM2	CO2	T1	
28.	Secured distributed data storage in cloud computing	1	02-01-20		TLM1,TLM2	CO2	T1	
29.	Secured distributed data storage in cloud computing	1	03-01-20		TLM1,TLM2	CO2	T1	
30.	Tutorial-5	1	06-01-20		TLM3	CO2	T1	
31.	Rivision unit-1	1	07-01-20		TLM1,TLM2	CO1	T1	
32.	Rivision unit-2	1	09-01-20		TLM1,TLM2	CO2	T1	
No. of classes required to complete UNIT-II		14			No. of classes taken:			
I-MID EXAMINATIONS 20-1-20 TO 22-1-20								

UNIT-III: Platform and Software as a Service(Aphasias)

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
33.	Introduction to UNIT-III	1	23-01-20		TLM1	CO3	T1	
34.	Aneka	1	24-01-20		TLM1,TLM2	CO3	T1	
35.	Tutorial-6	1	27-01-20		TLM3	CO3	T1	
36.	Integration of private and public clouds	1	28-01-20		TLM1,TLM2	CO3	T1	
37.	Comet cloud	1	29-01-20		TLM1,TLM2	CO3	T1	

38.	An autonomic cloud engine	1	30-01-20		TLM1,TLM2	CO3	T1	
39.	T-systems	1	31-01-20		TLM1,TLM2	CO3	T1	
40.	Tutorial-7	1	03-02-20		TLM3	CO3	T1	
41.	Cloud based solutions for business applications	1	04-02-20		TLM1,TLM2	CO3	T1	
42.	Work flow engines for clouds	1	05-02-20		TLM1,TLM2	CO3	T1	
43.	Understanding scientific applications	1	06-02-20		TLM1,TLM2	CO3	T1	
44.	Understanding scientific cloud environments	1	07-02-20		TLM1,TLM2	CO3	T1	
45.	Tutorial-8	1	10-02-20		TLM3	CO3	T1	
46.	The Map reduce programming Model	1	11-02-20		TLM1,TLM2	CO3	T1	
47.	Map reduce implementations	1	12-02-20		TLM1,TLM2	CO3	T1	
48.	Rivision	1	13-02-20		TLM1,TLM2	CO3	T1	
No. of classes required to complete UNIT-III		16			No. of classes taken:			

UNIT-IV: Monitoring and Management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
49.	Introduction to UNIT-IV	1	14-02-20		TLM1	CO4	T1	
50.	Tutorial-9	1	17-02-20		TLM3	CO4	T1	
51.	Monitoring and management	1	18-02-20		TLM1,TLM2	CO4	T1	
52.	An architecture for federated cloud computing	1	19-02-20		TLM1,TLM2	CO4	T1	
53.	SLA management in cloud computing	1	20-02-20		TLM1,TLM2	CO4	T1	
54.	Tutorial-10	1	24-02-20		TLM3	CO4	T1	
55.	A service providers perspective	1	25-02-20		TLM1,TLM2	CO4	T1	
56.	A service providers perspective	1	26-02-20		TLM1,TLM2	CO4	T1	
57.	Performance prediction	1	27-02-20		TLM1,TLM2	CO4	T1	
58.	HPC on clouds	1	28-02-20		TLM1,TLM2	CO4	T1	
59.	Rivision	1	02-03-20		TLM1,TLM2	CO4	T1	
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

UNIT-V: Applications of Cloud Computing

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
60.	Introduction to UNIT-V	1	03-03-20		TLM1	CO5	T1	
61.	Architecting applications for the Amazon Cloud	1	04-03-20		TLM1,TLM2	CO5	T1	
62.	Massively multiplayer Online Game hosting on Cloud	1	05-03-20		TLM1,TLM2	CO5	T1	

	resources							
63.	Massively multiplayer Online Game hosting on Cloud resources	1	06-03-20		TLM1,TLM2	CO5	T1	
64.	Tutorial-11	1	09-03-20		TLM3	CO5	T1	
65.	Building Content delivery networks	1	11-03-20		TLM1,TLM2	CO5	T1	
66.	Building Content delivery networks	1	12-03-20		TLM1,TLM2	CO5	T1	
67.	Resources of Cloud	1	13-03-20		TLM1,TLM2	CO5	T1	
68.	Tutorial-12		16-03-20		TLM3	CO5	T1	
69.	Resource cloud mashups	1	17-03-20		TLM1,TLM2	CO5	T1	
70.	Resource cloud mashups	1	18-03-20		TLM1,TLM2	CO5	T1	
71.	Tutorial-13	1	23-03-20		TLM3	CO5	T1	
72.	Rivision	1	24-03-20		TLM6	CO5	T1	
No. of classes required to complete UNIT-V		13			No. of classes taken:			
II-MID EXAMINATIONS 26-03-20 TO 28-03-20								

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
73.	Research trend in Cloud Com Research trend in Cloud Computing	1	19-03-20		TLM1			
74.	Open Source and Commercial Clouds, Cloud Simulator	1	20-03-20		TLM1			

Teaching Learning Methods

TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)
TLM2	PPT	TLM5	ICT (NPTEL/Swayam Prabha/MOOCs)
TLM3	Tutorial	TLM6	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\%$ of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
umulative Internal Examination : A+B	1,2,3,4,5	A+B=25
Semester End Examinations	1,2,3,4,5	C=75
Total Marks: A+B+C	1,2,3,4,5	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Programming Paradigms: To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.
PSO 2	Data Engineering: To inculcate an ability to Analyze, Design and implement data driven applications into the students.
PSO 3	Software Engineering: Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

Course Instructor

Course Coordinator

Module Coordinator

HOD



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : A.Praneetha
Course Name & Code : Cloud Computing – S157
L-T-P Structure : 4-1-0 Credits : 3
Program/Sem/Sec : B.Tech., CSE., VIII-Sem., Sections- B A.Y : 2019-20

PRE-REQUISITE:

COURSE EDUCATIONAL OBJECTIVES (CEOs):

Cloud computing is a scalable services consumption and delivery platform that provides on-demand computing service for shared pool of resources, namely servers, storage, networking, software, database, applications etc., over the Internet. It is a model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources, which can be rapidly provisioned and released with minimal management effort. This course will introduce various aspects of cloud computing, including fundamentals, management issues, security challenges and future research trends.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Understand various delivery and deployment models.
CO 2	Analyze the virtual machine provisioning and virtualized storage strategies.
CO 3	Explore the Platform As A Service based Services.
CO 4	Explore the Software As A Service based Services.
CO 5	Identify the issues in monitoring and management in cloud environment and also identifying the components for deployment of applications on the cloud.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	1	-	-	-	-	-	-	-	-	1	-	-	1
CO2	3	1	1	-	-	-	-	-	-	-	-	1	-	2	-
CO3	2	-	1	-	-	-	-	-	-	-	-	1	-	2	-
CO4	2	-	1	-	-	-	-	-	-	-	-	1	-	2	-
CO5	2	1	2	-	1	1	-	-	-	-	-	1	-	2	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 – Moderate (Medium), 3 - Substantial (High).

TEXT BOOKS:

T1 “Cloud Computing: principles and Paradigms”, Raj Kumar Bunya, James Bromberg, Andrej Kosciusko, Wiley, New York, USA

REFERENCE BOOKS:

R1 NIST Cloud computing definition, <http://csrc.nist.gov/groups/SNS/cloud-computing/index.html>, 2009.

R2 National Institute of Standards and Technology, <http://www.nist.gov>, 2009.

R3 Financial Services Modernization Act (GrammLeachBliley), Pub. L. No. 106-102, 113 Stat. 1338 (November 12, 1999), codified at 15 U.S.C. yy6801-09.

PART-B**COURSE DELIVERY PLAN (LESSON PLAN):****UNIT-I: Foundation, Cloud computing services**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Subject	1	25-11-19		TLM1	CO1	T1	
2.	Course Outcomes	1	26-11-19		TLM1	CO1	T1	
3.	Introduction to UNIT-I	1	27-11-19		TLM1	CO1	T1	
4.	Foundation : Importance of cloud computing	1	28-11-19		TLM1	CO1	T1	
5.	Introduction to cloud computing	1	29-11-19		TLM1	CO1	T1	
6.	Importance of migration		02-12-19		TLM1,TLM2	CO1	T1	
7.	Migration into a cloud	1	03-12-19		TLM1,TLM2	CO1	T1	
8.	Enriching Integration As a Service	1	04-12-19		TLM1,TLM2	CO1	T1	
9.	Cloud computing services	1	05-12-19		TLM1,TLM1	CO1	T1	
10.	Roots of cloud computing	1	06-12-19		TLM1,TLM2	CO1	T1	
11.	Tutorial-1	1	09-12-19		TLM3	CO1	T1	
12.	Challenges of Migration	1	10-12-19		TLM1,TLM2	CO1	T1	
13.	Paradigm for the cloud era	1	11-12-19		TLM1,TLM2	CO1	T1	
14.	Integration with public, homogeneous and heterogeneous	1	12-12-19		TLM1,TLM2	CO1	T1	
15.	Jitter bit in Integration and .NET service Bus,ISB	1	13-12-19		TLM1,TLM2	CO1	T1	
16.	Tutorial-2	1	16-12-19		TLM3	CO1	T1	
17.	Cloud computing for enterprise applications	1	17-12-19		TLM1,TLM2	CO1	T1	

18.	Adoption strategy and five stages of cloud	1	18-12-19		TLM1,TLM2	CO1	T1	
No. of classes required to complete UNIT-I		18			No. of classes taken:			

UNIT-II: Infrastructure as a Service(IaaS)

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
19.	Introduction to UNIT-II	1	19-12-19		TLM1	CO2	T1	
20.	Virtual Machines Provisioning	1	20-12-19		TLM1	CO2	T1	
21.	Tutorial-3		23-12-19		TLM3	CO2	T1	
22.	Migration services	1	24-12-19		TLM1,TLM2	CO2	T1	
23.	On the management of Virtual Machines for cloud infrastructure	1	26-12-19		TLM1,TLM2	CO2	T1	
24.	On the management of Virtual Machines for cloud infrastructure	1	27-12-19		TLM1,TLM2	CO2	T1	
25.	Tutorial-4	1	30-12-19		TLM3	CO2	T1	
26.	Enhancing cloud computing environments using cluster as a service	1	31-12-19		TLM1,TLM2	CO2	T1	
27.	Enhancing cloud computing environments using cluster as a service	1	01-01-20		TLM1,TLM2	CO2	T1	
28.	Secured distributed data storage in cloud computing	1	02-01-20		TLM1,TLM2	CO2	T1	
29.	Secured distributed data storage in cloud computing	1	03-01-20		TLM1,TLM2	CO2	T1	
30.	Tutorial-5	1	06-01-20		TLM3	CO2	T1	
31.	Rivision unit-1	1	07-01-20		TLM1,TLM2	CO1	T1	
32.	Rivision unit-2	1	09-01-20		TLM1,TLM2	CO2	T1	
No. of classes required to complete UNIT-II		14			No. of classes taken:			
I-MID EXAMINATIONS 20-1-20 TO 22-1-20								

UNIT-III: Platform and Software as a Service(Aphasias)

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
33.	Introduction to UNIT-III	1	23-01-20		TLM1	CO3	T1	
34.	Aneka	1	24-01-20		TLM1,TLM2	CO3	T1	
35.	Tutorial-6	1	27-01-20		TLM3	CO3	T1	
36.	Integration of private and public clouds	1	28-01-20		TLM1,TLM2	CO3	T1	
37.	Comet cloud	1	29-01-20		TLM1,TLM2	CO3	T1	

38.	An autonomic cloud engine	1	30-01-20		TLM1,TLM2	CO3	T1	
39.	T-systems	1	31-01-20		TLM1,TLM2	CO3	T1	
40.	Tutorial-7	1	03-02-20		TLM3	CO3	T1	
41.	Cloud based solutions for business applications	1	04-02-20		TLM1,TLM2	CO3	T1	
42.	Work flow engines for clouds	1	05-02-20		TLM1,TLM2	CO3	T1	
43.	Understanding scientific applications	1	06-02-20		TLM1,TLM2	CO3	T1	
44.	Understanding scientific cloud environments	1	07-02-20		TLM1,TLM2	CO3	T1	
45.	Tutorial-8	1	10-02-20		TLM3	CO3	T1	
46.	The Map reduce programming Model	1	11-02-20		TLM1,TLM2	CO3	T1	
47.	Map reduce implementations	1	12-02-20		TLM1,TLM2	CO3	T1	
48.	Rivision	1	13-02-20		TLM1,TLM2	CO3	T1	
No. of classes required to complete UNIT-III		16			No. of classes taken:			

UNIT-IV: Monitoring and Management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
49.	Introduction to UNIT-IV	1	14-02-20		TLM1	CO4	T1	
50.	Tutorial-9	1	17-02-20		TLM3	CO4	T1	
51.	Monitoring and management	1	18-02-20		TLM1,TLM2	CO4	T1	
52.	An architecture for federated cloud computing	1	19-02-20		TLM1,TLM2	CO4	T1	
53.	SLA management in cloud computing	1	20-02-20		TLM1,TLM2	CO4	T1	
54.	Tutorial-10	1	24-02-20		TLM3	CO4	T1	
55.	A service providers perspective	1	25-02-20		TLM1,TLM2	CO4	T1	
56.	A service providers perspective	1	26-02-20		TLM1,TLM2	CO4	T1	
57.	Performance prediction	1	27-02-20		TLM1,TLM2	CO4	T1	
58.	HPC on clouds	1	28-02-20		TLM1,TLM2	CO4	T1	
59.	Rivision	1	02-03-20		TLM1,TLM2	CO4	T1	
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

UNIT-V: Applications of Cloud Computing

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
60.	Introduction to UNIT-V	1	03-03-20		TLM1	CO5	T1	
61.	Architecting applications for the Amazon Cloud	1	04-03-20		TLM1,TLM2	CO5	T1	
62.	Massively multiplayer Online Game hosting on Cloud	1	05-03-20		TLM1,TLM2	CO5	T1	

	resources							
63.	Massively multiplayer Online Game hosting on Cloud resources	1	06-03-20		TLM1,TLM2	CO5	T1	
64.	Tutorial-11	1	09-03-20		TLM3	CO5	T1	
65.	Building Content delivery networks	1	11-03-20		TLM1,TLM2	CO5	T1	
66.	Building Content delivery networks	1	12-03-20		TLM1,TLM2	CO5	T1	
67.	Resources of Cloud	1	13-03-20		TLM1,TLM2	CO5	T1	
68.	Tutorial-12		16-03-20		TLM3	CO5	T1	
69.	Resource cloud mashups	1	17-03-20		TLM1,TLM2	CO5	T1	
70.	Resource cloud mashups	1	18-03-20		TLM1,TLM2	CO5	T1	
71.	Tutorial-13	1	23-03-20		TLM3	CO5	T1	
72.	Rivision	1	24-03-20		TLM6	CO5	T1	
No. of classes required to complete UNIT-V		13			No. of classes taken:			
II-MID EXAMINATIONS 26-03-20 TO 28-03-20								

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
73.	Research trend in Cloud Com Research trend in Cloud Computing	1	19-03-20		TLM1			
74.	Open Source and Commercial Clouds, Cloud Simulator	1	20-03-20		TLM1			

Teaching Learning Methods			
TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)
TLM2	PPT	TLM5	ICT (NPTEL/Swayam Prabha/MOOCs)
TLM3	Tutorial	TLM6	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5

II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Communication: Design and develop modern communication technologies for building the inter disciplinary skills to meet current and future needs of industry.
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PSO 2	VLSI and Embedded Systems: Design and Analyze Analog and Digital Electronic Circuits or systems and Implement real time applications in the field of VLSI and Embedded Systems using relevant tools
PSO 3	Signal Processing: Apply the Signal processing techniques to synthesize and realize the issues related to real time applications

Course Instructor
(Name)

Course Coordinator
(Name)

Module Coordinator
(Name)

HOD
(Name)



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)

Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada

L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : B.Udaya Lakshmi
Course Name & Code : Operations Research & S329
L-T-P Structure : 4-1-0 Credits : 3
Program/Sem/Sec : B.Tech., CSE., VIII-Sem., Section- B A.Y : 2019-20

PRE-REQUISITE: Knowledge of linear programming.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of this course is to:

CEO1: Underline the applications of operations research techniques in Industries.

CEO2: Discuss the difference between deterministic and stochastic models.

CEO3: Familiarize the concepts of simulation and dynamic programming.

CEO4: Describe the concept of feasible region, optimal solution.

CEO5: Illustrate the applications of Transportation and Assignment models.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Develop mathematical models for real engineering problems.
CO 2	Demonstrate the familiarity in identifying the key parameters influencing the production cost.
CO 3	Exhibit knowledge in solving inventory control problems.
CO 4	Choose optimal strategy using OR techniques.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	2	-	-	-	1	-	-
CO2	-	-	-	2	-	-	1	-	-	-	-	-	-	2	-
CO3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
CO4	-	-	2	-	-	-	-	1	-	-	-	-	2	-	-
CO5	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 – Moderate (Medium), 3 - Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Kantiswarup. P.K.Gupta, Man Mohan, "Operations Research", Sultan Chand& Sons, Educational Publications, New Delhi 2008, 14th Edition.

T2 Hiller & Libermann, "Introduction to Operations Research" TMH 2009, 9TH EDITION

BOS APPROVED REFERENCE BOOKS:

R1 Singiresu S Rao, "Engineering Optimization: Theory and Practice", A WileyInterscience Publication 2009, 4th edition. 3. Taha, "Introduction to O.R .PHI", 9th edition, 2010.

R2 A.M.Natarajan, P.Balasubramani, A. Tamilarasi, "Operations Research", Pearson Education 2014, 2nd edition.

R3 Taha, "Introduction to O.R .PHI", 9th edition, 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to CEOs,COs & Operations Research	1	25.11.19		TLM1	
2.	Operations research models, applications.	1	26.11.19		TLM1	
3.	Linear Programming Problem Formulation for Maximization	1	27.11.19		TLM1	
4.	Linear Programming Problem Formulation for Minimization	1	28.11.19		TLM1	
5.	Tutorial - I	1	29.11.19		TLM3	
6.	Graphical solution for Maximization	1	02.12.19		TLM1	
7.	Graphical solution for Minimization	1	03.12.19		TLM1	
8.	Graphical solution for Special cases	1	04.12.19		TLM1	
9.	Simplex method	1	05.12.19		TLM1	
10.	Tutorial - II	1	06.12.19		TLM3	
11.	Two-phase simplex method	1	09.12.19		TLM1	
12.	Problems	1	10.12.19		TLM1	
13.	Big-M method	1	11.12.19		TLM1	
14.	Problems	1	12.12.19		TLM1	
15.	Tutorial - III	1	13.12.19		TLM3	
16.	Artificial variables techniques	1	16.12.19		TLM1	
No. of classes required to complete UNIT-I: 16				No. of classes taken:		

UNIT-II: TRANSPORTATION & ASSIGNMENT PROBLEMS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	17.12.19		TLM1	
2.	Transportation Problem Formulation	1	18.12.19		TLM1	
3.	Transportation Problem Optimal solution	1	19.12.19		TLM1	
4.	unbalanced transportation problem	1	20.12.19		TLM1	
5.	Tutorial - IV	1	23.12.19		TLM3	
6.	Degeneracy in transportation problem	1	24.12.19		TLM1	
7.	Assignment problem (Model -I)	1	26.12.19		TLM1	
8.	Assignment problem (Model-II)	1	27.12.19		TLM1	
9.	Assignment problem optimal solution	1	30.12.19		TLM1	
10.	Tutorial - V	1	31.12.19		TLM3	
11.	Variants of Assignment Problem	1	02.01.20		TLM1	
12.	unbalanced transportation problem - I	1	03.01.20		TLM1	
13.	unbalanced transportation problem - II	1	06.01.20		TLM1	
14.	Traveling Salesman problem	1	07.01.20		TLM1	
15.	Problems	1	08.01.20		TLM1	
16.	Tutorial - VI	1	09.01.20		TLM3	
No. of classes required to complete UNIT-II: 16				No. of classes taken:		

UNIT-III: THEORY OF GAMES & INVENTORY CONTROL

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	10.01.20		TLM1	
2.	Minimax (maximin) Criterion	1	23.01.20		TLM1	
3.	optimal strategy	1	24.01.20		TLM1	
4.	Tutorial-VII	1	27.01.20		TLM3	
5.	Solution of games with saddle points	1	28.01.20		TLM1	
6.	Rectangular games without saddle points	1	29.01.20		TLM1	
7.	2 X 2 games – dominance principle	1	30.01.20		TLM1	
8.	Tutorial-VIII	1	31.01.20		TLM3	
9.	m X 2 & 2 X n games	1	03.02.20		TLM1	
10.	Graphical method	1	04.02.20		TLM1	
11.	Inventory control: Introduction, EOQ model	1	05.02.20		TLM1	
12.	Shortages not allowed	1	06.02.20		TLM1	
13.	Tutorial-IX	1	07.02.20		TLM3	
14.	Deterministic models	1	10.02.20		TLM1	
15.	Probabilistic models, Price breaks	1	11.02.20		TLM1	
16.	Problems	1	12.02.20		TLM1	
No. of classes required to complete UNIT-III: 16				No. of classes taken:		

UNIT-IV : THEORY OF REPLACEMENT & WAITING LINES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	13.02.20		TLM1	
2.	Replacement of equipment that Deteriorates Gradually	1	14.02.20		TLM1	
3.	Replacement of Equipment that fails suddenly	1	17.02.20		TLM1	
4.	Group Replacement	1	18.02.20		TLM1	
5.	Waiting Lines: Introduction	1	19.02.20		TLM1	
6.	Single Channel Poisson arrivals	1	20.02.20		TLM1	
7.	Tutorial – X	1	21.02.20		TLM3	
8.	exponential service times	1	24.02.20		TLM1	
9.	Exponential service times with infinite population	1	25.02.20		TLM1	
10.	Exponential service times with finite population	1	26.02.20		TLM1	
11.	Poisson arrivals	1	27.02.20		TLM1	
12.	Tutorial-XI	1	28.02.20		TLM3	
13.	Single channel Poisson arrivals	1	02.03.20		TLM1	
14.	Problems	1	03.03.20		TLM1	
15.	Multichannel Poisson arrivals	1	04.03.20		TLM1	
No. of classes required to complete UNIT-IV: 15				No. of classes taken:		

UNIT-V : DYNAMIC PROGRAMMING & INTRODUCTION TO OPTIMIZATION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Dynamic Programming: Introduction	1	05.03.20		TLM1	
2.	Bellman's Principle of optimality	1	06.03.20		TLM1	
3.	Applications of dynamic programming	1	09.03.20		TLM1	
4.	capital budgeting problem	1	10.03.20		TLM1	
5.	Shortest path problem, linear programming problem.	1	11.03.20		TLM1	
6.	Engineering Applications of Optimization	1	12.03.20		TLM1	
7.	Tutorial-XII	1	13.03.20		TLM3	
8.	Problem Statement	1	16.03.20		TLM1	
9.	Design Vector, Design Constraints	1	17.03.20		TLM1	
10.	Objective function, Objective function Surfaces	1	18.03.20		TLM1	
11.	Classification of optimization problems	1	19.03.20		TLM1	
12.	Optimization Techniques – Introduction	1	20.03.20		TLM1	
13.	Tutorial – XIII	1	23.03.20		TLM3	
14.	Revision	1	24.03.20		TLM1	
15.	Contents beyond syllabus	1	25.03.20		TLM1	
No. of classes required to complete UNIT-V: 15				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)
TLM2	PPT	TLM5	ICT (NPTEL/Swayam Prabha/MOOCs)
TLM3	Tutorial	TLM6	Group Discussion/Project

PART-C

EVALUATION PROCESS (R14 Regulations):

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\%$ of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	1,2,3,4,5	A+B=25
Semester End Examinations	1,2,3,4,5	C=75
Total Marks: A+B+C	1,2,3,4,5	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

Graduate of the Computer Science & Engineering will have the ability to

PSO 1	Programming Paradigms: To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.
PSO 2	Data Engineering: To inculcate an ability to Analyse, Design and implement data driven applications into the students.
PSO 3	Software Engineering: Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

Course Instructor
Mrs B.Udaya
Lakshmi

Course Coordinator
Mr.B.Chaitanya

Module Coordinator
Mr.J.Subba Reddy

HOD
Dr.S.Pichi Reddy



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L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : V.Sankararao
Course Name & Code : Operations Research & S329
L-T-P Structure : 4-1-0 Credits : 3
Program/Sem/Sec : B.Tech., CSE., VIII-Sem., Section- B A.Y : 2019-20

PRE-REQUISITE: Knowledge of linear programming.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of this course is to:

CEO1: Underline the applications of operations research techniques in Industries.

CEO2: Discuss the difference between deterministic and stochastic models.

CEO3: Familiarize the concepts of simulation and dynamic programming.

CEO4: Describe the concept of feasible region, optimal solution.

CEO5: Illustrate the applications of Transportation and Assignment models.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Develop mathematical models for real engineering problems.
CO 2	Demonstrate the familiarity in identifying the key parameters influencing the production cost.
CO 3	Exhibit knowledge in solving inventory control problems.
CO 4	Choose optimal strategy using OR techniques.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	2	-	-	-	1	-	-
CO2	-	-	-	2	-	-	1	-	-	-	-	-	-	2	-
CO3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
CO4	-	-	2	-	-	-	-	1	-	-	-	-	2	-	-
CO5	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 – Moderate (Medium), 3 - Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Kantiswarup. P.K.Gupta, Man Mohan, "Operations Research", Sultan Chand& Sons, Educational Publications, New Delhi 2008, 14th Edition.

T2 Hiller & Libermann, "Introduction to Operations Research" TMH 2009, 9TH EDITION

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R2 A.M.Natarajan, P.Balasubramani, A. Tamilarasi, "Operations Research", Pearson Education 2014, 2nd edition.

R3 Taha, "Introduction to O.R .PHI", 9th edition, 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to CEOs,COs & Operations Research	1	25.11.19		TLM1	
2.	Operations research models, applications.	1	26.11.19		TLM1	
3.	Linear Programming Problem Formulation for Maximization	1	27.11.19		TLM1	
4.	Linear Programming Problem Formulation for Minimization	1	28.11.19		TLM1	
5.	Tutorial - I	1	29.11.19		TLM3	
6.	Graphical solution for Maximization	1	02.12.19		TLM1	
7.	Graphical solution for Minimization	1	03.12.19		TLM1	
8.	Graphical solution for Special cases	1	04.12.19		TLM1	
9.	Simplex method	1	05.12.19		TLM1	
10.	Tutorial - II	1	06.12.19		TLM3	
11.	Two-phase simplex method	1	09.12.19		TLM1	
12.	Problems	1	10.12.19		TLM1	
13.	Big-M method	1	11.12.19		TLM1	
14.	Problems	1	12.12.19		TLM1	
15.	Tutorial - III	1	13.12.19		TLM3	
16.	Artificial variables techniques	1	16.12.19		TLM1	
No. of classes required to complete UNIT-I: 16				No. of classes taken:		

UNIT-II: TRANSPORTATION & ASSIGNMENT PROBLEMS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	17.12.19		TLM1	
2.	Transportation Problem Formulation	1	18.12.19		TLM1	
3.	Transportation Problem Optimal solution	1	19.12.19		TLM1	
4.	unbalanced transportation problem	1	20.12.19		TLM1	
5.	Tutorial - IV	1	23.12.19		TLM3	
6.	Degeneracy in transportation problem	1	24.12.19		TLM1	
7.	Assignment problem (Model -I)	1	26.12.19		TLM1	
8.	Assignment problem (Model-II)	1	27.12.19		TLM1	
9.	Assignment problem optimal solution	1	30.12.19		TLM1	
10.	Tutorial - V	1	31.12.19		TLM3	
11.	Variants of Assignment Problem	1	02.01.20		TLM1	
12.	unbalanced transportation problem - I	1	03.01.20		TLM1	
13.	unbalanced transportation problem - II	1	06.01.20		TLM1	
14.	Traveling Salesman problem	1	07.01.20		TLM1	
15.	Problems	1	08.01.20		TLM1	
16.	Tutorial - VI	1	09.01.20		TLM3	
No. of classes required to complete UNIT-II: 16				No. of classes taken:		

UNIT-III: THEORY OF GAMES & INVENTORY CONTROL

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	10.01.20		TLM1	
2.	Minimax (maximin) Criterion	1	23.01.20		TLM1	
3.	optimal strategy	1	24.01.20		TLM1	
4.	Tutorial-VII	1	27.01.20		TLM3	
5.	Solution of games with saddle points	1	28.01.20		TLM1	
6.	Rectangular games without saddle points	1	29.01.20		TLM1	
7.	2 X 2 games – dominance principle	1	30.01.20		TLM1	
8.	Tutorial-VIII	1	31.01.20		TLM3	
9.	m X 2 & 2 X n games	1	03.02.20		TLM1	
10.	Graphical method	1	04.02.20		TLM1	
11.	Inventory control: Introduction, EOQ model	1	05.02.20		TLM1	
12.	Shortages not allowed	1	06.02.20		TLM1	
13.	Tutorial-IX	1	07.02.20		TLM3	
14.	Deterministic models	1	10.02.20		TLM1	
15.	Probabilistic models, Price breaks	1	11.02.20		TLM1	
16.	Problems	1	12.02.20		TLM1	
No. of classes required to complete UNIT-III: 16				No. of classes taken:		

UNIT-IV : THEORY OF REPLACEMENT & WAITING LINES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	13.02.20		TLM1	
2.	Replacement of equipment that Deteriorates Gradually	1	14.02.20		TLM1	
3.	Replacement of Equipment that fails suddenly	1	17.02.20		TLM1	
4.	Group Replacement	1	18.02.20		TLM1	
5.	Waiting Lines: Introduction	1	19.02.20		TLM1	
6.	Single Channel Poisson arrivals	1	20.02.20		TLM1	
7.	Tutorial – X	1	21.02.20		TLM3	
8.	exponential service times	1	24.02.20		TLM1	
9.	Exponential service times with infinite population	1	25.02.20		TLM1	
10.	Exponential service times with finite population	1	26.02.20		TLM1	
11.	Poisson arrivals	1	27.02.20		TLM1	
12.	Tutorial-XI	1	28.02.20		TLM3	
13.	Single channel Poisson arrivals	1	02.03.20		TLM1	
14.	Problems	1	03.03.20		TLM1	
15.	Multichannel Poisson arrivals	1	04.03.20		TLM1	
No. of classes required to complete UNIT-IV: 15				No. of classes taken:		

UNIT-V : DYNAMIC PROGRAMMING & INTRODUCTION TO OPTIMIZATION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Dynamic Programming: Introduction	1	05.03.20		TLM1	
2.	Bellman's Principle of optimality	1	06.03.20		TLM1	
3.	Applications of dynamic programming	1	09.03.20		TLM1	
4.	capital budgeting problem	1	10.03.20		TLM1	
5.	Shortest path problem, linear programming problem.	1	11.03.20		TLM1	
6.	Engineering Applications of Optimization	1	12.03.20		TLM1	
7.	Tutorial-XII	1	13.03.20		TLM3	
8.	Problem Statement	1	16.03.20		TLM1	
9.	Design Vector, Design Constraints	1	17.03.20		TLM1	
10.	Objective function, Objective function Surfaces	1	18.03.20		TLM1	
11.	Classification of optimization problems	1	19.03.20		TLM1	
12.	Optimization Techniques – Introduction	1	20.03.20		TLM1	
13.	Tutorial – XIII	1	23.03.20		TLM3	
14.	Revision	1	24.03.20		TLM1	
15.	Contents beyond syllabus	1	25.03.20		TLM1	
No. of classes required to complete UNIT-V: 15				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)
TLM2	PPT	TLM5	ICT (NPTEL/Swayam Prabha/MOOCs)
TLM3	Tutorial	TLM6	Group Discussion/Project

PART-C

EVALUATION PROCESS (R14 Regulations):

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\%$ of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	1,2,3,4,5	A+B=25
Semester End Examinations	1,2,3,4,5	C=75
Total Marks: A+B+C	1,2,3,4,5	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

Graduate of the Computer Science & Engineering will have the ability to

PSO 1	Programming Paradigms: To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.
PSO 2	Data Engineering: To inculcate an ability to Analyse, Design and implement data driven applications into the students.
PSO 3	Software Engineering: Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

Course Instructor
Mr.V.Sankararao

Course Coordinator
Mr.B.Chaitanya

Module Coordinator
Mr.J.Subba Reddy

HOD
Dr.S.Pichi Reddy



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING COURSE HANDOUT

PART-A

SECTION:A

PROGRAM : B.Tech CSE VIII-Semester.
ACADEMIC YEAR : 2019-20
COURSE NAME & CODE :
MANAGING INNOVATION AND ENTREPRENEURSHIP (S296)
L-T-P STRUCTURE : 4-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : K.RAVI KIRAN YASASWI
COURSE COORDINATOR : K.RAVI KIRAN YASASWI
PRE-REQUISITE : Nil

COURSE OBJECTIVES:

1. To understand the nature of entrepreneurship.
2. To motivate the Entrepreneurial instincts.
3. To give a clear picture about the process and involved in setting up an small scale industrial settings and bigger settings.
4. To make the potential entrepreneurs know about the possible risks and failures of the product make them learn how to overcome these problems

COURSE OUTCOMES (CO's):

At the end of the course, the student will be able to:

CO1: Would be in a position to convert and innovative thought into a commercial opportunity, which can boost up the economy.

CO2: Can understand the role of Entrepreneur in present changing Environment

CO3: Will be able to generate ideas for New entries, startups and handling the own enterprise.

CO4: Will be able to develop team building, planning skills and above all broad vision about the Financing and Managing.

CO5: Acquired the skills to handle the major Functional areas like Production management and Marketing management.

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2												
CO2					2				3						
CO3				1	2					3					
CO4					1					2	3				
CO5	2										3	2			

Note: Enter Correlation Levels **1** or **2** or **3**. If there is no correlation, put '-'
1- Slight(Low), **2** - Moderate(Medium), **3** - Substantial (High).

BOS APPROVED TEXT BOOKS:**T1:** Hisrich: Entrepreneurship, TMH, New Delhi, 2009.**T2:** "Managing innovation and entrepreneurship in technology based firm", by Martin M.J. 1994, John Wiley.**BOS APPROVED REFERENCE BOOKS:****R1:** Vasanth Desai Entrepreneurship, TMH, New Delhi, 2009**R2:** Rajeev Roy: Entrepreneurship, Oxford University Press, New Delhi, 2010.**R3:** V. Gangadhar, Narsimha Chary: Entrepreneurship Development, Kalyani Publishers, New Delhi, 2007**R4:** P. Narayana Reddy: Entrepreneurship, Cengage Learning, New Delhi, 2010.**PART-B****COURSE DELIVERY PLAN (LESSON PLAN): Section-A****UNIT-I: Introduction: Creativity and Innovation**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
1.	Introduction to the topic	01	25.11.19		TLM1	CO1	T1,R1	
2.	Creativity and Innovation concepts, Shifting	01	26.11.19		TLM1	CO1	T1,R1	
3.	Composition of the economy	01	27.11.19		TLM1	CO1	T1	
4.	Purposeful innovation and seven sources of innovative	01	28.11.19		TLM1	CO1	T1	
5.	Purposeful innovation and seven sources of innovative	01	29.11.19		TLM1	CO1	T1	
6.	Innovation Process	01	02.12.19		TLM1	CO1	T1	
7.	Innovation Process	01	03.12.19		TLM1	CO1	T1	
8.	Innovation Strategies	01	04.12.19		TLM1	CO1	T1	
9.	Innovation Strategies	01	05.12.19		TLM1	CO1	T1	
10.	Tutorial-1, Assignment-I	01	06.12.19		TLM1	CO1	T1	
11.	Strategies that aim at Introducing an innovation	01	09.12.19		TLM1	CO1	T1	
12.	Strategies that aim at Introducing an innovation	01	10.12.19		TLM1	CO1	T1	
13.	Innovation and Entrepreneurship: can they work together Planning	01	11.12.19		TLM1	CO1	T1	
14.	Innovation and Entrepreneurship: can they work together Planning	01	12.12.19		TLM1	CO1	T1	
15.	Incompatible with innovation and entrepreneurship	01	13.12.19		TLM1	CO1	T1	
16.	Innovation and Entrepreneurship	01	16.12.19		TLM1	CO1	T1	
No. of classes required to complete UNIT-I		16			No. of classes taken:			

UNIT-II : Introduction to Entrepreneurship

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
17.	Introduction to Entrepreneurship, Definition of Entrepreneurship	01	17.12.19		TLM1	CO2	T1	
18.	Entrepreneurial Traits	01	18.12.19		TLM1	CO2	T1	
19.	Traditional Entrepreneurship vs. Modern Entrepreneurship	01	19.12.19		TLM1	CO2	T1	
20.	Entrepreneur vs. Intrapreneur	01	20.12.19		TLM1	CO2	T1	
21.	The Entrepreneurial decision process	01	23.12.19		TLM1	CO2	T1	
22.	Role of Entrepreneurship in Economic development, Ethical	01	24.12.19		TLM1	CO2	T1	
23.	Environmental challenges and Social responsibility of Entrepreneurs	01	26.12.19		TLM1	CO2	T1	
24.	Environmental challenges and Social responsibility of Entrepreneurs	01	27.12.19		TLM1	CO2	T1	
25.	Opportunities for Entrepreneurs in India and abroad	01	30.12.19		TLM1	CO2	T1	
26.	Woman as Entrepreneur	01	31.12.19		TLM1	CO2	T1	
27.	Tutorial II, Assignment -II	01	02.01.20					
No. of classes required to complete UNIT II		11			No. of classes taken:			

UNIT-III : Creating and Starting the Venture

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
28.	Introduction to Creating and starting the venture, Sources of new ideas	01	03.01.20		TLM1	CO3	T1	
29.	Introduction to Creating and starting the venture, Sources of new ideas	01	06.01.20		TLM1	CO3	T1	
30.	Generation of new entry Opportunity	01	07.01.20		TLM1	CO3	T1	
31.	New entry opportunity analysis	01	08.01.20		TLM1	CO3	T1	
32.	Generation of new entry Opportunity	01	09.01.20		TLM1	CO3	T1	
33.	Opportunity Analysis, Creating Problem Solving	01	10.01.20		TLM1	CO3	T1	
34.	Product Planning and development process	01	23.01.20		TLM1	CO3	T1	
35.	SWOT analysis	01	24.01.20		TLM1	CO3	T1	
36.	First mover advantages and disadvantages	01	27.01.20		TLM1	CO3	T1	
37.	First mover advantages and disadvantages	01	28.01.20		TLM1	CO3	T1	
38.	Types of business organizations	01	29.01.20		TLM1	CO3	T1	

39.	Types of business organizations	01	30.01.20		TLM1	CO3	T1	
40.	Features and evaluation of joint ventures	01	31.01.20		TLM1	CO3	T1	
41.	Features and evaluation of joint ventures	01	03.02.20		TLM1	CO3	T1	
42.	Acquisitions	01	04.02.20		TLM1	CO3	T1	
43.	Acquisitions	01	05.02.20		TLM1	CO3	T1	
44.	Merges	01	06.02.20		TLM1	CO3	T1	
45.	Merges	01	07.02.20		TLM1	CO3	T1	
46.	Franchising	01	10.02.20		TLM1	CO3	T1	
47.	Franchising	01	11.02.20		TLM1	CO3	T1	
48.	Tutorial III, Assignment-III	01	12.02.20					
No. of classes required to complete UNIT-III		21			No. of classes taken:			

I MID EXAMINATION

20-01-2020 TO 22-01-2020

UNIT-IV : The Business plan, Financing and Managing

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
49.	Nature and Scope of Business Plan	01	13.02.20		TLM1	CO4	T1	
50.	Writing Business Plan	01	14.02.20		TLM1	CO4	T1	
51.	Evaluating Business plans	01	17.02.20		TLM1	CO4	T1	
52.	Using and implementing business plans ,Marketing plan	01	18.02.20		TLM1	CO4	T1	
53.	Introduction to financial plan and the organizational Launching formalities	01	19.02.20		TLM1	CO4	T1	
54.	Survival and Success	01	20.02.20		TLM1	CO4	T1	
55.	Sources of capital	01	21.02.20		TLM1	CO4	T1	
56.	Record keeping , Recruitment	01	24.02.20		TLM1	CO4	T1	
57.	Motivating and Leading teams	01	25.02.20		TLM1	CO4	T1	
58.	Financial controls, Tutorial IV	01	26.02.20		TLM1	CO4	T1	
59.	Marketing and sales Controls	01	27.02.20		TLM1	CO4	T1	
60.	Ecommerce in Entrepreneurship, Internet advertising	01	28.02.20		TLM1	CO4	T1	
61.	Unit-IV Revision	01	02.03.20		TLM1	CO4	T1	
No. of classes required to complete UNIT IV		13			No. of classes taken:			

UNIT-V : Production and Marketing Management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
62.	Thrust of production management	01	03.03.20		TLM1	CO5	T1	
63.	Selection of production techniques	01	04.03.20		TLM1	CO5	T1	
64.	Selection of production techniques	01	05.03.20		TLM1	CO5	T1	
65.	Plant utilization and maintenance	01	06.03.20		TLM1	CO5	T1	
66.	Requirements at work place	01	09.03.20		TLM1	CO5	T1	
67.	Requirements at work place	01	10.03.20		TLM1	CO5	T1	
68.	Materials management, Marketing Functions	01	11.03.20		TLM1	CO5	T1	
69.	Market segmentation	01	12.03.20		TLM1	CO5	T1	
70.	Market research and channels and channels of distribution	01	13.03.20		TLM1	CO5	T1	
71.	Sales Promotion and Product pricing,	01	16.03.20		TLM1	CO5	T1	
72.	Sales Promotion and Product pricing,	01	17.03.20		TLM1	CO5	T1	
73.	Tutorial –V	01	18.03.20		TLM3	CO5	T1	
74.	V th unit Revision	01	19.03.20		TLM1	CO5	T1	
75.	Assignment-V	01	20.03.20		TLM5	CO5	T1	
76.	V th unit Revision	01	23.03.20		TLM1	CO5	T1	
No.of classes required to complete Unit-V		15			No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
77.	Red bus and Future group business strategy	01	24.03.20		TLM2	CO5	T1	
78.	Reliance Jio business strategy	01	25.03.20		TLM2	CO2	T1	

II MID EXAMINATION	26-03-2020 TO 28-03-2020
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Teaching Learning Methods

TLM1	Chalk and Talk	TLM4	Problem Solving	TLM7	Seminars or GD
TLM2	PPT	TLM5	Programming	TLM8	Lab Demo
TLM3	Tutorial	TLM6	Assignment or Quiz	TLM9	Case Study

ACADEMIC CALENDAR:

Description	From	To	Weeks
Commencement of Next semesters Class Work 25-11-2019			
I Phase of Instructions-1	25-11-2019	11-01-2020	7W
Pongal Holidays	13-01-2020	18-01-2020	1W
I Mid Examinations	20-01-2020	22-01-2020	1/2W
II Phase of Instructions	23-01-2020	25-03-2020	9W
II Mid Examinations	26-03-2020	28-03-2020	½ W
Preparation and Practical's	30-03-2020	04-04-2020	1 W
Semester End Examinations	06-04-2020	11-04-2020	1 W

PART-C**EVALUATION PROCESS:**

Evaluation Task	COs	Marks
I-Mid Examination (Descriptive) =A	1,2	A=20
II-Mid Examination (Descriptive) =B	3,4,5	B=20
Evaluation of Mid Marks: A+B =75% of Max(A,B)+25% of Min(A,B)	1,2,3,4,5	A+B=20
Evaluation of assignments /quiz =C	1,2,3,4,5	C=5
Cumulative Internal Examination : A+B+C	1,2,3,4,5	A+B+C=25
Semester End Examinations =D	1,2,3,4,5	D=75
Total Marks: A+B+C+D	1,2,3,4,5	100

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

1. Programming Paradigms:

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

2. Data Engineering:

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

3. Software Engineering:

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

(K.Ravi Kiran Yasaswi)	(K.Ravi Kiran Yasaswi)	(Dr. V.V.Narsi reddy)	(Dr.A.Adishesha Reddy)
Course Instructor	Course Coordinator	Module Coordinator	HOD



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING COURSE HANDOUT

PART-A

SECTION:B

PROGRAM	: B.Tech CSE VIII-Semester.
ACADEMIC YEAR	: 2019-20
COURSE NAME & CODE	: MANAGING INNOVATION AND ENTREPRENEURSHIP (S296)
L-T-P STRUCTURE	: 4-0-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: K.RAVI KIRAN YASASWI
COURSE COORDINATOR	: K.RAVI KIRAN YASASWI
PRE-REQUISITE	: Nil

COURSE OBJECTIVES:

1. To understand the nature of entrepreneurship.
2. To motivate the Entrepreneurial instincts.
3. To give a clear picture about the process and involved in setting up an small scale industrial settings and bigger settings.
4. To make the potential entrepreneurs know about the possible risks and failures of the product make them learn how to overcome these problems

COURSE OUTCOMES (CO's):

At the end of the course, the student will be able to:

CO1: Would be in a position to convert and innovative thought into a commercial opportunity, which can boost up the economy.

CO2: Can understand the role of Entrepreneur in present changing Environment

CO3: Will be able to generate ideas for New entries, startups and handling the own enterprise.

CO4: Will be able to develop team building, planning skills and above all broad vision about the Financing and Managing.

CO5: Acquired the skills to handle the major Functional areas like Production management and Marketing management.

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2												
CO2					2				3						
CO3				1	2					3					
CO4					1					2	3				
CO5	2										3	2			

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight(Low), 2 - Moderate(Medium), 3 - Substantial (High).

BOS APPROVED TEXT BOOKS:**T1:** Hisrich: Entrepreneurship, TMH, New Delhi, 2009.**T2:** "Managing innovation and entrepreneurship in technology based firm", by Martin M.J. 1994, John Wiley.**BOS APPROVED REFERENCE BOOKS:****R1:** Vasanth Desai Entrepreneurship, TMH, New Delhi, 2009**R2:** Rajeev Roy: Entrepreneurship, Oxford University Press, New Delhi, 2010.**R3:** V. Gangadhar, Narsimha Chary: Entrepreneurship Development, Kalyani Publishers, New Delhi, 2007**R4:** P. Narayana Reddy: Entrepreneurship, Cengage Learning, New Delhi, 2010.**PART-B****COURSE DELIVERY PLAN (LESSON PLAN): Section-A****UNIT-I: Introduction: Creativity and Innovation**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
1.	Introduction to the topic	01	25.11.19		TLM1	CO1	T1,R1	
2.	Creativity and Innovation concepts, Shifting	01	26.11.19		TLM1	CO1	T1,R1	
3.	Composition of the economy	01	27.11.19		TLM1	CO1	T1	
4.	Purposeful innovation and seven sources of innovative	01	28.11.19		TLM1	CO1	T1	
5.	Purposeful innovation and seven sources of innovative	01	29.11.19		TLM1	CO1	T1	
6.	Innovation Process	01	02.12.19		TLM1	CO1	T1	
7.	Innovation Process	01	03.12.19		TLM1	CO1	T1	
8.	Innovation Strategies	01	04.12.19		TLM1	CO1	T1	
9.	Innovation Strategies	01	05.12.19		TLM1	CO1	T1	
10.	Tutorial-1, Assignment-I	01	06.12.19		TLM1	CO1	T1	
11.	Strategies that aim at Introducing an innovation	01	09.12.19		TLM1	CO1	T1	
12.	Strategies that aim at Introducing an innovation	01	10.12.19		TLM1	CO1	T1	
13.	Innovation and Entrepreneurship: can they work together Planning	01	11.12.19		TLM1	CO1	T1	
14.	Innovation and Entrepreneurship: can they work together Planning	01	12.12.19		TLM1	CO1	T1	
15.	Incompatible with innovation and entrepreneurship	01	13.12.19		TLM1	CO1	T1	
16.	Innovation and Entrepreneurship	01	16.12.19		TLM1	CO1	T1	
No. of classes required to complete UNIT-I		16			No. of classes taken:			

UNIT-II : Introduction to Entrepreneurship

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
17.	Introduction to Entrepreneurship, Definition of Entrepreneurship	01	17.12.19		TLM1	CO2	T1	
18.	Entrepreneurial Traits	01	18.12.19		TLM1	CO2	T1	
19.	Traditional Entrepreneurship vs. Modern Entrepreneurship	01	19.12.19		TLM1	CO2	T1	
20.	Entrepreneur vs. Intrapreneur	01	20.12.19		TLM1	CO2	T1	
21.	The Entrepreneurial decision process	01	23.12.19		TLM1	CO2	T1	
22.	Role of Entrepreneurship in Economic development, Ethical	01	24.12.19		TLM1	CO2	T1	
23.	Environmental challenges and Social responsibility of Entrepreneurs	01	26.12.19		TLM1	CO2	T1	
24.	Environmental challenges and Social responsibility of Entrepreneurs	01	27.12.19		TLM1	CO2	T1	
25.	Opportunities for Entrepreneurs in India and abroad	01	30.12.19		TLM1	CO2	T1	
26.	Woman as Entrepreneur	01	31.12.19		TLM1	CO2	T1	
27.	Tutorial II, Assignment -II	01	02.01.20					
No. of classes required to complete UNIT II		11			No. of classes taken:			

UNIT-III : Creating and Starting the Venture

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
28.	Introduction to Creating and starting the venture, Sources of new ideas	01	03.01.20		TLM1	CO3	T1	
29.	Introduction to Creating and starting the venture, Sources of new ideas	01	06.01.20		TLM1	CO3	T1	
30.	Generation of new entry Opportunity	01	07.01.20		TLM1	CO3	T1	
31.	New entry opportunity analysis	01	08.01.20		TLM1	CO3	T1	
32.	Generation of new entry Opportunity	01	09.01.20		TLM1	CO3	T1	
33.	Opportunity Analysis, Creating Problem Solving	01	10.01.20		TLM1	CO3	T1	
34.	Product Planning and development process	01	23.01.20		TLM1	CO3	T1	
35.	SWOT analysis	01	24.01.20		TLM1	CO3	T1	
36.	First mover advantages and disadvantages	01	27.01.20		TLM1	CO3	T1	
37.	First mover advantages and disadvantages	01	28.01.20		TLM1	CO3	T1	
38.	Types of business organizations	01	29.01.20		TLM1	CO3	T1	

39.	Types of business organizations	01	30.01.20		TLM1	CO3	T1	
40.	Features and evaluation of joint ventures	01	31.01.20		TLM1	CO3	T1	
41.	Features and evaluation of joint ventures	01	03.02.20		TLM1	CO3	T1	
42.	Acquisitions	01	04.02.20		TLM1	CO3	T1	
43.	Acquisitions	01	05.02.20		TLM1	CO3	T1	
44.	Merges	01	06.02.20		TLM1	CO3	T1	
45.	Merges	01	07.02.20		TLM1	CO3	T1	
46.	Franchising	01	10.02.20		TLM1	CO3	T1	
47.	Franchising	01	11.02.20		TLM1	CO3	T1	
48.	Tutorial III, Assignment-III	01	12.02.20					
No. of classes required to complete UNIT-III		21			No. of classes taken:			

I MID EXAMINATION

20-01-2020 TO 22-01-2020

UNIT-IV : The Business plan, Financing and Managing

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
49.	Nature and Scope of Business Plan	01	13.02.20		TLM1	CO4	T1	
50.	Writing Business Plan	01	14.02.20		TLM1	CO4	T1	
51.	Evaluating Business plans	01	17.02.20		TLM1	CO4	T1	
52.	Using and implementing business plans ,Marketing plan	01	18.02.20		TLM1	CO4	T1	
53.	Introduction to financial plan and the organizational Launching formalities	01	19.02.20		TLM1	CO4	T1	
54.	Survival and Success	01	20.02.20		TLM1	CO4	T1	
55.	Sources of capital	01	21.02.20		TLM1	CO4	T1	
56.	Record keeping , Recruitment	01	24.02.20		TLM1	CO4	T1	
57.	Motivating and Leading teams	01	25.02.20		TLM1	CO4	T1	
58.	Financial controls, Tutorial IV	01	26.02.20		TLM1	CO4	T1	
59.	Marketing and sales Controls	01	27.02.20		TLM1	CO4	T1	
60.	Ecommerce in Entrepreneurship, Internet advertising	01	28.02.20		TLM1	CO4	T1	
61.	Unit-IV Revision	01	02.03.20		TLM1	CO4	T1	
No. of classes required to complete UNIT IV		13			No. of classes taken:			

UNIT-V : Production and Marketing Management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
62.	Thrust of production management	01	03.03.20		TLM1	CO5	T1	
63.	Selection of production techniques	01	04.03.20		TLM1	CO5	T1	
64.	Selection of production techniques	01	05.03.20		TLM1	CO5	T1	
65.	Plant utilization and maintenance	01	06.03.20		TLM1	CO5	T1	
66.	Requirements at work place	01	09.03.20		TLM1	CO5	T1	
67.	Requirements at work place	01	10.03.20		TLM1	CO5	T1	
68.	Materials management, Marketing Functions	01	11.03.20		TLM1	CO5	T1	
69.	Market segmentation	01	12.03.20		TLM1	CO5	T1	
70.	Market research and channels and channels of distribution	01	13.03.20		TLM1	CO5	T1	
71.	Sales Promotion and Product pricing,	01	16.03.20		TLM1	CO5	T1	
72.	Sales Promotion and Product pricing,	01	17.03.20		TLM1	CO5	T1	
73.	Tutorial –V	01	18.03.20		TLM3	CO5	T1	
74.	V th unit Revision	01	19.03.20		TLM1	CO5	T1	
75.	Assignment-V	01	20.03.20		TLM5	CO5	T1	
76.	V th unit Revision	01	23.03.20		TLM1	CO5	T1	
No.of classes required to complete Unit-V		15			No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
77.	Red bus and Future group business strategy	01	24.03.20		TLM2	CO5	T1	
78.	Reliance Jio business strategy	01	25.03.20		TLM2	CO2	T1	

II MID EXAMINATION	26-03-2020 TO 28-03-2020
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Teaching Learning Methods

TLM1	Chalk and Talk	TLM4	Problem Solving	TLM7	Seminars or GD
TLM2	PPT	TLM5	Programming	TLM8	Lab Demo
TLM3	Tutorial	TLM6	Assignment or Quiz	TLM9	Case Study

ACADEMIC CALENDAR:

Description	From	To	Weeks
Commencement of Next semesters Class Work 25-11-2019			
I Phase of Instructions-1	25-11-2019	11-01-2020	7W
Pongal Holidays	13-01-2020	18-01-2020	1W
I Mid Examinations	20-01-2020	22-01-2020	1/2W
II Phase of Instructions	23-01-2020	25-03-2020	9W
II Mid Examinations	26-03-2020	28-03-2020	½ W
Preparation and Practical's	30-03-2020	04-04-2020	1 W
Semester End Examinations	06-04-2020	11-04-2020	1 W

PART-C**EVALUATION PROCESS:**

Evaluation Task	COs	Marks
I-Mid Examination (Descriptive) = A	1,2	A=20
II-Mid Examination (Descriptive) = B	3,4,5	B=20
Evaluation of Mid Marks: A+B =75% of Max(A,B)+25% of Min(A,B)	1,2,3,4,5	A+B=20
Evaluation of assignments /quiz = C	1,2,3,4,5	C=5
Cumulative Internal Examination : A+B+C	1,2,3,4,5	A+B+C=25
Semester End Examinations =D	1,2,3,4,5	D=75
Total Marks: A+B+C+D	1,2,3,4,5	100

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

1. Programming Paradigms:

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

2. Data Engineering:

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

3. Software Engineering:

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

(K.Ravi Kiran Yasaswi)	(K.Ravi Kiran Yasaswi)	(Dr. V.V.Narsi reddy)	(Dr.A.Adishesha Reddy)
Course Instructor	Course Coordinator	Module Coordinator	HOD



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)

Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada

L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : B.Udaya Lakshmi
 Course Name & Code : Operations Research & S329
 L-T-P Structure : 4-1-0 Credits : 3
 Program/Sem/Sec : B.Tech., CSE., VIII-Sem., Section- B A.Y : 2019-20

PRE-REQUISITE: Knowledge of linear programming.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of this course is to:

CEO1: Underline the applications of operations research techniques in Industries.

CEO2: Discuss the difference between deterministic and stochastic models.

CEO3: Familiarize the concepts of simulation and dynamic programming.

CEO4: Describe the concept of feasible region, optimal solution.

CEO5: Illustrate the applications of Transportation and Assignment models.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Develop mathematical models for real engineering problems.
CO 2	Demonstrate the familiarity in identifying the key parameters influencing the production cost.
CO 3	Exhibit knowledge in solving inventory control problems.
CO 4	Choose optimal strategy using OR techniques.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	2	-	-	-	1	-	-
CO2	-	-	-	2	-	-	1	-	-	-	-	-	-	2	-
CO3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
CO4	-	-	2	-	-	-	-	1	-	-	-	-	2	-	-
CO5	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 – Moderate (Medium), 3 - Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Kantiswarup. P.K.Gupta, Man Mohan, "Operations Research", Sultan Chand & Sons, Educational Publications, New Delhi 2008, 14th Edition.

T2 Hiller & Libermann, "Introduction to Operations Research" TMH 2009, 9TH EDITION

BOS APPROVED REFERENCE BOOKS:

R1 Singiresu S Rao, "Engineering Optimization: Theory and Practice", A WileyInterscience Publication 2009, 4th edition. 3. Taha, "Introduction to O.R .PHI", 9th edition, 2010.

R2 A.M.Natarajan, P.Balasubramani, A. Tamilarasi, "Operations Research", Pearson Education 2014, 2nd edition.

R3 Taha, "Introduction to O.R .PHI", 9th edition, 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to CEOs,COs & Operations Research	1	25.11.19		TLM1	
2.	Operations research models, applications.	1	26.11.19		TLM1	
3.	Linear Programming Problem Formulation for Maximization	1	27.11.19		TLM1	
4.	Linear Programming Problem Formulation for Minimization	1	28.11.19		TLM1	
5.	Tutorial - I	1	29.11.19		TLM3	
6.	Graphical solution for Maximization	1	02.12.19		TLM1	
7.	Graphical solution for Minimization	1	03.12.19		TLM1	
8.	Graphical solution for Special cases	1	04.12.19		TLM1	
9.	Simplex method	1	05.12.19		TLM1	
10.	Tutorial - II	1	06.12.19		TLM3	
11.	Two-phase simplex method	1	09.12.19		TLM1	
12.	Problems	1	10.12.19		TLM1	
13.	Big-M method	1	11.12.19		TLM1	
14.	Problems	1	12.12.19		TLM1	
15.	Tutorial - III	1	13.12.19		TLM3	
16.	Artificial variables techniques	1	16.12.19		TLM1	
No. of classes required to complete UNIT-I: 16				No. of classes taken:		

UNIT-II: TRANSPORTATION & ASSIGNMENT PROBLEMS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	17.12.19		TLM1	
2.	Transportation Problem Formulation	1	18.12.19		TLM1	
3.	Transportation Problem Optimal solution	1	19.12.19		TLM1	
4.	unbalanced transportation problem	1	20.12.19		TLM1	
5.	Tutorial - IV	1	23.12.19		TLM3	
6.	Degeneracy in transportation problem	1	24.12.19		TLM1	
7.	Assignment problem (Model -I)	1	26.12.19		TLM1	
8.	Assignment problem (Model-II)	1	27.12.19		TLM1	
9.	Assignment problem optimal solution	1	30.12.19		TLM1	
10.	Tutorial - V	1	31.12.19		TLM3	
11.	Variants of Assignment Problem	1	02.01.20		TLM1	
12.	unbalanced transportation problem - I	1	03.01.20		TLM1	
13.	unbalanced transportation problem - II	1	06.01.20		TLM1	
14.	Traveling Salesman problem	1	07.01.20		TLM1	
15.	Problems	1	08.01.20		TLM1	
16.	Tutorial - VI	1	09.01.20		TLM3	
No. of classes required to complete UNIT-II: 16				No. of classes taken:		

UNIT-III: THEORY OF GAMES & INVENTORY CONTROL

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	10.01.20		TLM1	
2.	Minimax (maximin) Criterion	1	23.01.20		TLM1	
3.	optimal strategy	1	24.01.20		TLM1	
4.	Tutorial-VII	1	27.01.20		TLM3	
5.	Solution of games with saddle points	1	28.01.20		TLM1	
6.	Rectangular games without saddle points	1	29.01.20		TLM1	
7.	2 X 2 games – dominance principle	1	30.01.20		TLM1	
8.	Tutorial-VIII	1	31.01.20		TLM3	
9.	m X 2 & 2 X n games	1	03.02.20		TLM1	
10.	Graphical method	1	04.02.20		TLM1	
11.	Inventory control: Introduction, EOQ model	1	05.02.20		TLM1	
12.	Shortages not allowed	1	06.02.20		TLM1	
13.	Tutorial-IX	1	07.02.20		TLM3	
14.	Deterministic models	1	10.02.20		TLM1	
15.	Probabilistic models, Price breaks	1	11.02.20		TLM1	
16.	Problems	1	12.02.20		TLM1	
No. of classes required to complete UNIT-III: 16				No. of classes taken:		

UNIT-IV : THEORY OF REPLACEMENT & WAITING LINES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	13.02.20		TLM1	
2.	Replacement of equipment that Deteriorates Gradually	1	14.02.20		TLM1	
3.	Replacement of Equipment that fails suddenly	1	17.02.20		TLM1	
4.	Group Replacement	1	18.02.20		TLM1	
5.	Waiting Lines: Introduction	1	19.02.20		TLM1	
6.	Single Channel Poisson arrivals	1	20.02.20		TLM1	
7.	Tutorial – X	1	21.02.20		TLM3	
8.	exponential service times	1	24.02.20		TLM1	
9.	Exponential service times with infinite population	1	25.02.20		TLM1	
10.	Exponential service times with finite population	1	26.02.20		TLM1	
11.	Poisson arrivals	1	27.02.20		TLM1	
12.	Tutorial-XI	1	28.02.20		TLM3	
13.	Single channel Poisson arrivals	1	02.03.20		TLM1	
14.	Problems	1	03.03.20		TLM1	
15.	Multichannel Poisson arrivals	1	04.03.20		TLM1	
No. of classes required to complete UNIT-IV: 15				No. of classes taken:		

UNIT-V : DYNAMIC PROGRAMMING & INTRODUCTION TO OPTIMIZATION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Dynamic Programming: Introduction	1	05.03.20		TLM1	
2.	Bellman's Principle of optimality	1	06.03.20		TLM1	
3.	Applications of dynamic programming	1	09.03.20		TLM1	
4.	capital budgeting problem	1	10.03.20		TLM1	
5.	Shortest path problem, linear programming problem.	1	11.03.20		TLM1	
6.	Engineering Applications of Optimization	1	12.03.20		TLM1	
7.	Tutorial-XII	1	13.03.20		TLM3	
8.	Problem Statement	1	16.03.20		TLM1	
9.	Design Vector, Design Constraints	1	17.03.20		TLM1	
10.	Objective function, Objective function Surfaces	1	18.03.20		TLM1	
11.	Classification of optimization problems	1	19.03.20		TLM1	
12.	Optimization Techniques – Introduction	1	20.03.20		TLM1	
13.	Tutorial – XIII	1	23.03.20		TLM3	
14.	Revision	1	24.03.20		TLM1	
15.	Contents beyond syllabus	1	25.03.20		TLM1	
No. of classes required to complete UNIT-V: 15				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)
TLM2	PPT	TLM5	ICT (NPTEL/Swayam Prabha/MOOCs)
TLM3	Tutorial	TLM6	Group Discussion/Project

PART-C

EVALUATION PROCESS (R14 Regulations):

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\%$ of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	1,2,3,4,5	A+B=25
Semester End Examinations	1,2,3,4,5	C=75
Total Marks: A+B+C	1,2,3,4,5	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

Graduate of the Computer Science & Engineering will have the ability to

PSO 1	ProgrammingParadigms: To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.
PSO 2	Data Engineering: To inculcate an ability to Analyse, Design and implement data driven applications into the students.
PSO 3	Software Engineering: Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

Course Instructor
Mrs B.Udaya
Lakshmi

Course Coordinator
Mr.B.Chaitanya

Module Coordinator
Mr.J.Subba Reddy

HOD
Dr.S.Pichi Reddy



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)

Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada

L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : V.Sankararao
Course Name & Code : Operations Research & S329
L-T-P Structure : 4-1-0 Credits : 3
Program/Sem/Sec : B.Tech., CSE., VIII-Sem., Section- B A.Y : 2019-20

PRE-REQUISITE: Knowledge of linear programming.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of this course is to:

CEO1: Underline the applications of operations research techniques in Industries.

CEO2: Discuss the difference between deterministic and stochastic models.

CEO3: Familiarize the concepts of simulation and dynamic programming.

CEO4: Describe the concept of feasible region, optimal solution.

CEO5: Illustrate the applications of Transportation and Assignment models.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Develop mathematical models for real engineering problems.
CO 2	Demonstrate the familiarity in identifying the key parameters influencing the production cost.
CO 3	Exhibit knowledge in solving inventory control problems.
CO 4	Choose optimal strategy using OR techniques.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	-	-	-	-	-	-	-	2	-	-	-	1	-	-
CO2	-	-	-	2	-	-	1	-	-	-	-	-	-	2	-
CO3	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
CO4	-	-	2	-	-	-	-	1	-	-	-	-	2	-	-
CO5	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 – Moderate (Medium), 3 - Substantial (High).

BOS APPROVED TEXT BOOKS:

T1 Kantiswarup. P.K.Gupta, Man Mohan, "Operations Research", Sultan Chand & Sons, Educational Publications, New Delhi 2008, 14th Edition.

T2 Hiller & Libermann, "Introduction to Operations Research" TMH 2009, 9TH EDITION

BOS APPROVED REFERENCE BOOKS:

R1 Singiresu S Rao, "Engineering Optimization: Theory and Practice", A WileyInterscience Publication 2009, 4th edition. 3. Taha, "Introduction to O.R .PHI", 9th edition, 2010.

R2 A.M.Natarajan, P.Balasubramani, A. Tamilarasi, "Operations Research", Pearson Education 2014, 2nd edition.

R3 Taha, "Introduction to O.R .PHI", 9th edition, 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to CEOs,COs & Operations Research	1	25.11.19		TLM1	
2.	Operations research models, applications.	1	26.11.19		TLM1	
3.	Linear Programming Problem Formulation for Maximization	1	27.11.19		TLM1	
4.	Linear Programming Problem Formulation for Minimization	1	28.11.19		TLM1	
5.	Tutorial - I	1	29.11.19		TLM3	
6.	Graphical solution for Maximization	1	02.12.19		TLM1	
7.	Graphical solution for Minimization	1	03.12.19		TLM1	
8.	Graphical solution for Special cases	1	04.12.19		TLM1	
9.	Simplex method	1	05.12.19		TLM1	
10.	Tutorial - II	1	06.12.19		TLM3	
11.	Two-phase simplex method	1	09.12.19		TLM1	
12.	Problems	1	10.12.19		TLM1	
13.	Big-M method	1	11.12.19		TLM1	
14.	Problems	1	12.12.19		TLM1	
15.	Tutorial - III	1	13.12.19		TLM3	
16.	Artificial variables techniques	1	16.12.19		TLM1	
No. of classes required to complete UNIT-I: 16				No. of classes taken:		

UNIT-II: TRANSPORTATION & ASSIGNMENT PROBLEMS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	17.12.19		TLM1	
2.	Transportation Problem Formulation	1	18.12.19		TLM1	
3.	Transportation Problem Optimal solution	1	19.12.19		TLM1	
4.	unbalanced transportation problem	1	20.12.19		TLM1	
5.	Tutorial - IV	1	23.12.19		TLM3	
6.	Degeneracy in transportation problem	1	24.12.19		TLM1	
7.	Assignment problem (Model -I)	1	26.12.19		TLM1	
8.	Assignment problem (Model-II)	1	27.12.19		TLM1	
9.	Assignment problem optimal solution	1	30.12.19		TLM1	
10.	Tutorial - V	1	31.12.19		TLM3	
11.	Variants of Assignment Problem	1	02.01.20		TLM1	
12.	unbalanced transportation problem - I	1	03.01.20		TLM1	
13.	unbalanced transportation problem - II	1	06.01.20		TLM1	
14.	Traveling Salesman problem	1	07.01.20		TLM1	
15.	Problems	1	08.01.20		TLM1	
16.	Tutorial - VI	1	09.01.20		TLM3	
No. of classes required to complete UNIT-II: 16				No. of classes taken:		

UNIT-III: THEORY OF GAMES & INVENTORY CONTROL

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	10.01.20		TLM1	
2.	Minimax (maximin) Criterion	1	23.01.20		TLM1	
3.	optimal strategy	1	24.01.20		TLM1	
4.	Tutorial-VII	1	27.01.20		TLM3	
5.	Solution of games with saddle points	1	28.01.20		TLM1	
6.	Rectangular games without saddle points	1	29.01.20		TLM1	
7.	2 X 2 games – dominance principle	1	30.01.20		TLM1	
8.	Tutorial-VIII	1	31.01.20		TLM3	
9.	m X 2 & 2 X n games	1	03.02.20		TLM1	
10.	Graphical method	1	04.02.20		TLM1	
11.	Inventory control: Introduction, EOQ model	1	05.02.20		TLM1	
12.	Shortages not allowed	1	06.02.20		TLM1	
13.	Tutorial-IX	1	07.02.20		TLM3	
14.	Deterministic models	1	10.02.20		TLM1	
15.	Probabilistic models, Price breaks	1	11.02.20		TLM1	
16.	Problems	1	12.02.20		TLM1	
No. of classes required to complete UNIT-III: 16				No. of classes taken:		

UNIT-IV : THEORY OF REPLACEMENT & WAITING LINES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	13.02.20		TLM1	
2.	Replacement of equipment that Deteriorates Gradually	1	14.02.20		TLM1	
3.	Replacement of Equipment that fails suddenly	1	17.02.20		TLM1	
4.	Group Replacement	1	18.02.20		TLM1	
5.	Waiting Lines: Introduction	1	19.02.20		TLM1	
6.	Single Channel Poisson arrivals	1	20.02.20		TLM1	
7.	Tutorial – X	1	21.02.20		TLM3	
8.	exponential service times	1	24.02.20		TLM1	
9.	Exponential service times with infinite population	1	25.02.20		TLM1	
10.	Exponential service times with finite population	1	26.02.20		TLM1	
11.	Poisson arrivals	1	27.02.20		TLM1	
12.	Tutorial-XI	1	28.02.20		TLM3	
13.	Single channel Poisson arrivals	1	02.03.20		TLM1	
14.	Problems	1	03.03.20		TLM1	
15.	Multichannel Poisson arrivals	1	04.03.20		TLM1	
No. of classes required to complete UNIT-IV: 15				No. of classes taken:		

UNIT-V : DYNAMIC PROGRAMMING & INTRODUCTION TO OPTIMIZATION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Dynamic Programming: Introduction	1	05.03.20		TLM1	
2.	Bellman's Principle of optimality	1	06.03.20		TLM1	
3.	Applications of dynamic programming	1	09.03.20		TLM1	
4.	capital budgeting problem	1	10.03.20		TLM1	
5.	Shortest path problem, linear programming problem.	1	11.03.20		TLM1	
6.	Engineering Applications of Optimization	1	12.03.20		TLM1	
7.	Tutorial-XII	1	13.03.20		TLM3	
8.	Problem Statement	1	16.03.20		TLM1	
9.	Design Vector, Design Constraints	1	17.03.20		TLM1	
10.	Objective function, Objective function Surfaces	1	18.03.20		TLM1	
11.	Classification of optimization problems	1	19.03.20		TLM1	
12.	Optimization Techniques – Introduction	1	20.03.20		TLM1	
13.	Tutorial – XIII	1	23.03.20		TLM3	
14.	Revision	1	24.03.20		TLM1	
15.	Contents beyond syllabus	1	25.03.20		TLM1	
No. of classes required to complete UNIT-V: 15				No. of classes taken:		

Teaching Learning Methods			
TLM1	Chalk and Talk	TLM4	Demonstration (Lab/Field Visit)
TLM2	PPT	TLM5	ICT (NPTEL/Swayam Prabha/MOOCs)
TLM3	Tutorial	TLM6	Group Discussion/Project

PART-C

EVALUATION PROCESS (R14 Regulations):

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: $A=(A1+A2+A3+A4+A5)/5$	1,2,3,4,5	A=5
Evaluation of Mid Marks: $B=75\%$ of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	1,2,3,4,5	A+B=25
Semester End Examinations	1,2,3,4,5	C=75
Total Marks: A+B+C	1,2,3,4,5	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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PROGRAMME SPECIFIC OUTCOMES (PSOs):

Graduate of the Computer Science & Engineering will have the ability to

PSO 1	ProgrammingParadigms: To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.
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PSO 3	Software Engineering: Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

Course Instructor
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HOD
Dr.S.Pichi Reddy



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING COURSE HANDOUT

PART-A

SECTION:A

PROGRAM : B.Tech CSE VIII-Semester.

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE :

MANAGING INNOVATION AND ENTREPRENEURSHIP (S296)

L-T-P STRUCTURE : 4-0-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : K.RAVI KIRAN YASASWI

COURSE COORDINATOR : K.RAVI KIRAN YASASWI

PRE-REQUISITE : Nil

COURSE OBJECTIVES:

1. To understand the nature of entrepreneurship.
2. To motivate the Entrepreneurial instincts.
3. To give a clear picture about the process and involved in setting up an small scale industrial settings and bigger settings.
4. To make the potential entrepreneurs know about the possible risks and failures of the product make them learn how to overcome these problems

COURSE OUTCOMES (CO's):

At the end of the course, the student will be able to:

CO1: Would be in a position to convert and innovative thought into a commercial opportunity, which can boost up the economy.

CO2: Can understand the role of Entrepreneur in present changing Environment

CO3: Will be able to generate ideas for New entries, startups and handling the own enterprise.

CO4: Will be able to develop team building, planning skills and above all broad vision about the Financing and Managing.

CO5: Acquired the skills to handle the major Functional areas like Production management and Marketing management.

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2												
CO2					2				3						
CO3				1	2					3					
CO4					1					2	3				
CO5	2										3	2			

Note: Enter Correlation Levels **1** or **2** or **3**. If there is no correlation, put '-'

1- Slight(Low), **2** - Moderate(Medium), **3** - Substantial (High).

BOS APPROVED TEXT BOOKS:**T1:** Hisrich: Entrepreneurship, TMH, New Delhi, 2009.**T2:** "Managing innovation and entrepreneurship in technology based firm", by Martin M.J. 1994, John Wiley.**BOS APPROVED REFERENCE BOOKS:****R1:** Vasanth Desai Entrepreneurship, TMH, New Delhi, 2009**R2:** Rajeev Roy: Entrepreneurship, Oxford University Press, New Delhi, 2010.**R3:** V. Gangadhar, Narsimha Chary: Entrepreneurship Development, Kalyani Publishers, New Delhi, 2007**R4:** P. Narayana Reddy: Entrepreneurship, Cengage Learning, New Delhi, 2010.**PART-B****COURSE DELIVERY PLAN (LESSON PLAN): Section-A****UNIT-I: Introduction: Creativity and Innovation**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
1.	Introduction to the topic	01	25.11.19		TLM1	CO1	T1,R1	
2.	Creativity and Innovation concepts, Shifting	01	26.11.19		TLM1	CO1	T1,R1	
3.	Composition of the economy	01	27.11.19		TLM1	CO1	T1	
4.	Purposeful innovation and seven sources of innovative	01	28.11.19		TLM1	CO1	T1	
5.	Purposeful innovation and seven sources of innovative	01	29.11.19		TLM1	CO1	T1	
6.	Innovation Process	01	02.12.19		TLM1	CO1	T1	
7.	Innovation Process	01	03.12.19		TLM1	CO1	T1	
8.	Innovation Strategies	01	04.12.19		TLM1	CO1	T1	
9.	Innovation Strategies	01	05.12.19		TLM1	CO1	T1	
10.	Tutorial-1, Assignment-I	01	06.12.19		TLM1	CO1	T1	
11.	Strategies that aim at Introducing an innovation	01	09.12.19		TLM1	CO1	T1	
12.	Strategies that aim at Introducing an innovation	01	10.12.19		TLM1	CO1	T1	
13.	Innovation and Entrepreneurship: can they work together Planning	01	11.12.19		TLM1	CO1	T1	
14.	Innovation and Entrepreneurship: can they work together Planning	01	12.12.19		TLM1	CO1	T1	
15.	Incompatible with innovation and entrepreneurship	01	13.12.19		TLM1	CO1	T1	
16.	Innovation and Entrepreneurship	01	16.12.19		TLM1	CO1	T1	
No. of classes required to complete UNIT-I		16			No. of classes taken:			

UNIT-II : Introduction to Entrepreneurship

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
17.	Introduction to Entrepreneurship, Definition of Entrepreneurship	01	17.12.19		TLM1	CO2	T1	
18.	Entrepreneurial Traits	01	18.12.19		TLM1	CO2	T1	
19.	Traditional Entrepreneurship vs. Modern Entrepreneurship	01	19.12.19		TLM1	CO2	T1	
20.	Entrepreneur vs. Intrapreneur	01	20.12.19		TLM1	CO2	T1	
21.	The Entrepreneurial decision process	01	23.12.19		TLM1	CO2	T1	
22.	Role of Entrepreneurship in Economic development, Ethical	01	24.12.19		TLM1	CO2	T1	
23.	Environmental challenges and Social responsibility of Entrepreneurs	01	26.12.19		TLM1	CO2	T1	
24.	Environmental challenges and Social responsibility of Entrepreneurs	01	27.12.19		TLM1	CO2	T1	
25.	Opportunities for Entrepreneurs in India and abroad	01	30.12.19		TLM1	CO2	T1	
26.	Woman as Entrepreneur	01	31.12.19		TLM1	CO2	T1	
27.	Tutorial II, Assignment -II	01	02.01.20					
No. of classes required to complete UNIT II		11			No. of classes taken:			

UNIT-III : Creating and Starting the Venture

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
28.	Introduction to Creating and starting the venture, Sources of new ideas	01	03.01.20		TLM1	CO3	T1	
29.	Introduction to Creating and starting the venture, Sources of new ideas	01	06.01.20		TLM1	CO3	T1	
30.	Generation of new entry Opportunity	01	07.01.20		TLM1	CO3	T1	
31.	New entry opportunity analysis	01	08.01.20		TLM1	CO3	T1	
32.	Generation of new entry Opportunity	01	09.01.20		TLM1	CO3	T1	
33.	Opportunity Analysis, Creating Problem Solving	01	10.01.20		TLM1	CO3	T1	
34.	Product Planning and development process	01	23.01.20		TLM1	CO3	T1	
35.	SWOT analysis	01	24.01.20		TLM1	CO3	T1	
36.	First mover advantages and disadvantages	01	27.01.20		TLM1	CO3	T1	
37.	First mover advantages and disadvantages	01	28.01.20		TLM1	CO3	T1	
38.	Types of business organizations	01	29.01.20		TLM1	CO3	T1	

39.	Types of business organizations	01	30.01.20		TLM1	CO3	T1	
40.	Features and evaluation of joint ventures	01	31.01.20		TLM1	CO3	T1	
41.	Features and evaluation of joint ventures	01	03.02.20		TLM1	CO3	T1	
42.	Acquisitions	01	04.02.20		TLM1	CO3	T1	
43.	Acquisitions	01	05.02.20		TLM1	CO3	T1	
44.	Merges	01	06.02.20		TLM1	CO3	T1	
45.	Merges	01	07.02.20		TLM1	CO3	T1	
46.	Franchising	01	10.02.20		TLM1	CO3	T1	
47.	Franchising	01	11.02.20		TLM1	CO3	T1	
48.	Tutorial III, Assignment-III	01	12.02.20					
No. of classes required to complete UNIT-III		21			No. of classes taken:			

I MID EXAMINATION

20-01-2020 TO 22-01-2020

UNIT-IV : The Business plan, Financing and Managing

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
49.	Nature and Scope of Business Plan	01	13.02.20		TLM1	CO4	T1	
50.	Writing Business Plan	01	14.02.20		TLM1	CO4	T1	
51.	Evaluating Business plans	01	17.02.20		TLM1	CO4	T1	
52.	Using and implementing business plans ,Marketing plan	01	18.02.20		TLM1	CO4	T1	
53.	Introduction to financial plan and the organizational Launching formalities	01	19.02.20		TLM1	CO4	T1	
54.	Survival and Success	01	20.02.20		TLM1	CO4	T1	
55.	Sources of capital	01	21.02.20		TLM1	CO4	T1	
56.	Record keeping , Recruitment	01	24.02.20		TLM1	CO4	T1	
57.	Motivating and Leading teams	01	25.02.20		TLM1	CO4	T1	
58.	Financial controls, Tutorial IV	01	26.02.20		TLM1	CO4	T1	
59.	Marketing and sales Controls	01	27.02.20		TLM1	CO4	T1	
60.	Ecommerce in Entrepreneurship, Internet advertising	01	28.02.20		TLM1	CO4	T1	
61.	Unit-IV Revision	01	02.03.20		TLM1	CO4	T1	
No. of classes required to complete UNIT IV		13			No. of classes taken:			

UNIT-V : Production and Marketing Management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
62.	Thrust of production management	01	03.03.20		TLM1	CO5	T1	
63.	Selection of production techniques	01	04.03.20		TLM1	CO5	T1	
64.	Selection of production techniques	01	05.03.20		TLM1	CO5	T1	
65.	Plant utilization and maintenance	01	06.03.20		TLM1	CO5	T1	
66.	Requirements at work place	01	09.03.20		TLM1	CO5	T1	
67.	Requirements at work place	01	10.03.20		TLM1	CO5	T1	
68.	Materials management, Marketing Functions	01	11.03.20		TLM1	CO5	T1	
69.	Market segmentation	01	12.03.20		TLM1	CO5	T1	
70.	Market research and channels and channels of distribution	01	13.03.20		TLM1	CO5	T1	
71.	Sales Promotion and Product pricing,	01	16.03.20		TLM1	CO5	T1	
72.	Sales Promotion and Product pricing,	01	17.03.20		TLM1	CO5	T1	
73.	Tutorial –V	01	18.03.20		TLM3	CO5	T1	
74.	V th unit Revision	01	19.03.20		TLM1	CO5	T1	
75.	Assignment-V	01	20.03.20		TLM5	CO5	T1	
76.	V th unit Revision	01	23.03.20		TLM1	CO5	T1	
No.of classes required to complete Unit-V		15			No. of classes taken:			

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
77.	Red bus and Future group business strategy	01	24.03.20		TLM2	CO5	T1	
78.	Reliance Jio business strategy	01	25.03.20		TLM2	CO2	T1	

II MID EXAMINATION	26-03-2020 TO 28-03-2020
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Teaching Learning Methods

TLM1	Chalk and Talk	TLM4	Problem Solving	TLM7	Seminars or GD
TLM2	PPT	TLM5	Programming	TLM8	Lab Demo
TLM3	Tutorial	TLM6	Assignment or Quiz	TLM9	Case Study

ACADEMIC CALENDAR:

Description	From	To	Weeks
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I Mid Examinations	20-01-2020	22-01-2020	1/2W
II Phase of Instructions	23-01-2020	25-03-2020	9W
II Mid Examinations	26-03-2020	28-03-2020	½ W
Preparation and Practical's	30-03-2020	04-04-2020	1 W
Semester End Examinations	06-04-2020	11-04-2020	1 W

PART-C**EVALUATION PROCESS:**

Evaluation Task	COs	Marks
I-Mid Examination (Descriptive) = A	1,2	A=20
II-Mid Examination (Descriptive) = B	3,4,5	B=20
Evaluation of Mid Marks: A+B =75% of Max(A,B)+25% of Min(A,B)	1,2,3,4,5	A+B=20
Evaluation of assignments /quiz = C	1,2,3,4,5	C=5
Cumulative Internal Examination : A+B+C	1,2,3,4,5	A+B+C=25
Semester End Examinations =D	1,2,3,4,5	D=75
Total Marks: A+B+C+D	1,2,3,4,5	100

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

1. Programming Paradigms:

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

2. Data Engineering:

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

3. Software Engineering:

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

(K.Ravi Kiran Yasaswi)	(K.Ravi Kiran Yasaswi)	(Dr.V.V.Narsi reddy)	(Dr.A.Adishesha Reddy)
Course Instructor	Course Coordinator	Module Coordinator	HOD



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

SECTION:B

PROGRAM : B.Tech CSE VIII-Semester.

ACADEMIC YEAR : 2019-20

COURSE NAME & CODE :

MANAGING INNOVATION AND ENTREPRENEURSHIP (S296)

L-T-P STRUCTURE : 4-0-0

COURSE CREDITS : 3

COURSE INSTRUCTOR : K.RAVI KIRAN YASASWI

COURSE COORDINATOR : K.RAVI KIRAN YASASWI

PRE-REQUISITE : Nil

COURSE OBJECTIVES:

1. To understand the nature of entrepreneurship.
2. To motivate the Entrepreneurial instincts.
3. To give a clear picture about the process and involved in setting up an small scale industrial settings and bigger settings.
4. To make the potential entrepreneurs know about the possible risks and failures of the product make them learn how to overcome these problems

COURSE OUTCOMES (CO's):

At the end of the course, the student will be able to:

CO1: Would be in a position to convert and innovative thought into a commercial opportunity, which can boost up the economy.

CO2: Can understand the role of Entrepreneur in present changing Environment

CO3: Will be able to generate ideas for New entries, startups and handling the own enterprise.

CO4: Will be able to develop team building, planning skills and above all broad vision about the Financing and Managing.

CO5: Acquired the skills to handle the major Functional areas like Production management and Marketing management.

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COURSE ARTICULATION MATRIX (Correlation between COs&POs,PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2												
CO2					2				3						
CO3				1	2					3					
CO4					1					2	3				
CO5	2										3	2			

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight(Low), 2 - Moderate(Medium), 3 - Substantial (High).

BOS APPROVED TEXT BOOKS:**T1:** Hisrich: Entrepreneurship, TMH, New Delhi, 2009.**T2:** "Managing innovation and entrepreneurship in technology based firm", by Martin M.J. 1994, John Wiley.**BOS APPROVED REFERENCE BOOKS:****R1:** Vasanth Desai Entrepreneurship, TMH, New Delhi, 2009**R2:** Rajeev Roy: Entrepreneurship, Oxford University Press, New Delhi, 2010.**R3:** V. Gangadhar, Narsimha Chary: Entrepreneurship Development, Kalyani Publishers, New Delhi, 2007**R4:** P. Narayana Reddy: Entrepreneurship, Cengage Learning, New Delhi, 2010.**PART-B****COURSE DELIVERY PLAN (LESSON PLAN): Section-A****UNIT-I: Introduction: Creativity and Innovation**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
1.	Introduction to the topic	01	25.11.19		TLM1	CO1	T1,R1	
2.	Creativity and Innovation concepts, Shifting	01	26.11.19		TLM1	CO1	T1,R1	
3.	Composition of the economy	01	27.11.19		TLM1	CO1	T1	
4.	Purposeful innovation and seven sources of innovative	01	28.11.19		TLM1	CO1	T1	
5.	Purposeful innovation and seven sources of innovative	01	29.11.19		TLM1	CO1	T1	
6.	Innovation Process	01	02.12.19		TLM1	CO1	T1	
7.	Innovation Process	01	03.12.19		TLM1	CO1	T1	
8.	Innovation Strategies	01	04.12.19		TLM1	CO1	T1	
9.	Innovation Strategies	01	05.12.19		TLM1	CO1	T1	
10.	Tutorial-1, Assignment-I	01	06.12.19		TLM1	CO1	T1	
11.	Strategies that aim at Introducing an innovation	01	09.12.19		TLM1	CO1	T1	
12.	Strategies that aim at Introducing an innovation	01	10.12.19		TLM1	CO1	T1	
13.	Innovation and Entrepreneurship: can they work together Planning	01	11.12.19		TLM1	CO1	T1	
14.	Innovation and Entrepreneurship: can they work together Planning	01	12.12.19		TLM1	CO1	T1	
15.	Incompatible with innovation and entrepreneurship	01	13.12.19		TLM1	CO1	T1	
16.	Innovation and Entrepreneurship	01	16.12.19		TLM1	CO1	T1	
No. of classes required to complete UNIT-I		16			No. of classes taken:			

UNIT-II : Introduction to Entrepreneurship

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
17.	Introduction to Entrepreneurship, Definition of Entrepreneurship	01	17.12.19		TLM1	CO2	T1	
18.	Entrepreneurial Traits	01	18.12.19		TLM1	CO2	T1	
19.	Traditional Entrepreneurship vs. Modern Entrepreneurship	01	19.12.19		TLM1	CO2	T1	
20.	Entrepreneur vs. Intrapreneur	01	20.12.19		TLM1	CO2	T1	
21.	The Entrepreneurial decision process	01	23.12.19		TLM1	CO2	T1	
22.	Role of Entrepreneurship in Economic development, Ethical	01	24.12.19		TLM1	CO2	T1	
23.	Environmental challenges and Social responsibility of Entrepreneurs	01	26.12.19		TLM1	CO2	T1	
24.	Environmental challenges and Social responsibility of Entrepreneurs	01	27.12.19		TLM1	CO2	T1	
25.	Opportunities for Entrepreneurs in India and abroad	01	30.12.19		TLM1	CO2	T1	
26.	Woman as Entrepreneur	01	31.12.19		TLM1	CO2	T1	
27.	Tutorial II, Assignment -II	01	02.01.20					
No. of classes required to complete UNIT II		11			No. of classes taken:			

UNIT-III : Creating and Starting the Venture

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
28.	Introduction to Creating and starting the venture, Sources of new ideas	01	03.01.20		TLM1	CO3	T1	
29.	Introduction to Creating and starting the venture, Sources of new ideas	01	06.01.20		TLM1	CO3	T1	
30.	Generation of new entry Opportunity	01	07.01.20		TLM1	CO3	T1	
31.	New entry opportunity analysis	01	08.01.20		TLM1	CO3	T1	
32.	Generation of new entry Opportunity	01	09.01.20		TLM1	CO3	T1	
33.	Opportunity Analysis, Creating Problem Solving	01	10.01.20		TLM1	CO3	T1	
34.	Product Planning and development process	01	23.01.20		TLM1	CO3	T1	
35.	SWOT analysis	01	24.01.20		TLM1	CO3	T1	
36.	First mover advantages and disadvantages	01	27.01.20		TLM1	CO3	T1	
37.	First mover advantages and disadvantages	01	28.01.20		TLM1	CO3	T1	
38.	Types of business organizations	01	29.01.20		TLM1	CO3	T1	

39.	Types of business organizations	01	30.01.20		TLM1	CO3	T1	
40.	Features and evaluation of joint ventures	01	31.01.20		TLM1	CO3	T1	
41.	Features and evaluation of joint ventures	01	03.02.20		TLM1	CO3	T1	
42.	Acquisitions	01	04.02.20		TLM1	CO3	T1	
43.	Acquisitions	01	05.02.20		TLM1	CO3	T1	
44.	Merges	01	06.02.20		TLM1	CO3	T1	
45.	Merges	01	07.02.20		TLM1	CO3	T1	
46.	Franchising	01	10.02.20		TLM1	CO3	T1	
47.	Franchising	01	11.02.20		TLM1	CO3	T1	
48.	Tutorial III, Assignment-III	01	12.02.20					
No. of classes required to complete UNIT-III		21			No. of classes taken:			

I MID EXAMINATION

20-01-2020 TO 22-01-2020

UNIT-IV : The Business plan, Financing and Managing

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
49.	Nature and Scope of Business Plan	01	13.02.20		TLM1	CO4	T1	
50.	Writing Business Plan	01	14.02.20		TLM1	CO4	T1	
51.	Evaluating Business plans	01	17.02.20		TLM1	CO4	T1	
52.	Using and implementing business plans ,Marketing plan	01	18.02.20		TLM1	CO4	T1	
53.	Introduction to financial plan and the organizational Launching formalities	01	19.02.20		TLM1	CO4	T1	
54.	Survival and Success	01	20.02.20		TLM1	CO4	T1	
55.	Sources of capital	01	21.02.20		TLM1	CO4	T1	
56.	Record keeping , Recruitment	01	24.02.20		TLM1	CO4	T1	
57.	Motivating and Leading teams	01	25.02.20		TLM1	CO4	T1	
58.	Financial controls, Tutorial IV	01	26.02.20		TLM1	CO4	T1	
59.	Marketing and sales Controls	01	27.02.20		TLM1	CO4	T1	
60.	Ecommerce in Entrepreneurship, Internet advertising	01	28.02.20		TLM1	CO4	T1	
61.	Unit-IV Revision	01	02.03.20		TLM1	CO4	T1	
No. of classes required to complete UNIT IV		13			No. of classes taken:			

UNIT-V : Production and Marketing Management

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
62.	Thrust of production management	01	03.03.20		TLM1	CO5	T1	
63.	Selection of production techniques	01	04.03.20		TLM1	CO5	T1	
64.	Selection of production techniques	01	05.03.20		TLM1	CO5	T1	
65.	Plant utilization and maintenance	01	06.03.20		TLM1	CO5	T1	
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70.	Market research and channels and channels of distribution	01	13.03.20		TLM1	CO5	T1	
71.	Sales Promotion and Product pricing,	01	16.03.20		TLM1	CO5	T1	
72.	Sales Promotion and Product pricing,	01	17.03.20		TLM1	CO5	T1	
73.	Tutorial –V	01	18.03.20		TLM3	CO5	T1	
74.	V th unit Revision	01	19.03.20		TLM1	CO5	T1	
75.	Assignment-V	01	20.03.20		TLM5	CO5	T1	
76.	V th unit Revision	01	23.03.20		TLM1	CO5	T1	
No.of classes required to complete Unit-V		15			No. of classes taken:			

Contents beyond the Syllabus

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II MID EXAMINATION	26-03-2020 TO 28-03-2020
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Teaching Learning Methods

TLM1	Chalk and Talk	TLM4	Problem Solving	TLM7	Seminars or GD
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Evaluation of assignments /quiz = C	1,2,3,4,5	C=5
Cumulative Internal Examination : A+B+C	1,2,3,4,5	A+B+C=25
Semester End Examinations =D	1,2,3,4,5	D=75
Total Marks: A+B+C+D	1,2,3,4,5	100

PART-D

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
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8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
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12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

1. Programming Paradigms:

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

2. Data Engineering:

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

3. Software Engineering:

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

(K.Ravi Kiran Yasaswi)	(K.Ravi Kiran Yasaswi)	(Dr.V.V.Narsi reddy)	(Dr.A.Adishesha Reddy)
Course Instructor	Course Coordinator	Module Coordinator	HOD