

**LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,  
NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)  
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

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**COURSE HANDOUT**

**PROGRAM** : B. Tech., VIII-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Cloud Computing – S157  
**L-T-P STRUCTURE** : 4-1-0  
**COURSE CREDITS** : 4  
**COURSE INSTRUCTOR** : Mr. J NAGESWARA RAO  
**COURSE COORDINATOR** : Mr. J NAGESWARA RAO  
**PRE-REQUISITE:** Basic knowledge regarding computer, graphics and screen designs.

**COURSE OBJECTIVE:**

- Demonstrate an understanding of guidelines, principles, and theories influencing cloud computing.
- Recognize how a cloud computing operation to be performed.
- Use the information sources available, and be aware of the methodologies and technologies supporting advances in cloud computing.

**COURSE OUTCOMES (CO)**

CO1: Analyze various delivery and deployment models.

CO2: Analyze the virtual machine provisioning and virtualized storage strategies.

CO3: Explore the PAAS Services.

CO4: Explore the SAAS Services.

CO5: 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	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	-	-	-	-	3	-	-	-	-	-	-	-	-	-	1
CO2	-	-	2	-	1	-	-	-	-	-	-	-	-	3	-
CO3	-	-	2	-	1	-	-	-	-	-	-	-	-	3	-
CO4	-	-	-	2	-	-	-	3	-	-	-	-	-	2	-
CO5	-	-	2	-	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** “Cloud Computing: principles and Paradigms”, Raj Kumar Bunya, James Bromberg, Andrej Kosciusko, Wiley, New York, USA

**BOS APPROVED REFERENCE :**

**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.

## COURSE DELIVERY PLAN (LESSON PLAN): Section-A

### 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	14-12-17		TLM1	CO1	T1	
2.	Course Outcomes	1	15-12-17		TLM1	CO1	T1	
3.	Introduction to UNIT-I	1	18-12-17		TLM1	CO1	T1	
4.	<b>Foundation</b> : Importance of cloud computing	1	19-12-17		TLM1	CO1	T1	
5.	Introduction to cloud computing	1	20-12-17		TLM1	CO1	T1	
6.	Importance of migration		21-12-17		TLM1,TLM2	CO1	T1	
7.	Migration into a cloud	1	22-12-17		TLM1,TLM2	CO1	T1	
8.	Enriching Integration As a Service		26-12-17		TLM1,TLM2	CO1	T1	
9.	<b>Cloud computing services</b>	1	27-12-17		TLM1,TLM1	CO1	T1	
10.	Roots of cloud computing	1	28-12-17		TLM1,TLM2	CO1	T1	
11.	Challenges of Migration	1	29-12-17		TLM1,TLM2	CO1	T1	
12.	Paradigm for the cloud era	1	02-01-18		TLM1,TLM2	CO1	T1	
13.	Integration with public, homogeneous and heterogeneous	1	03-01-18		TLM1,TLM2	CO1	T1	
14.	Jitter bit in Integration and .NET service Bus,ISB	1	04-01-18		TLM1,TLM2	CO1	T1	
15.	Cloud computing for enterprise applications	1	05-01-18		TLM1,TLM2	CO1	T1	
16.	Adoption strategy and five stages of cloud	1	08-01-18		TLM1,TLM2	CO1	T1	
17.	<b>Tutorial-1</b>	1	09-01-18		TLM3	CO1	T1	
18.	<b>Assignment/Quiz-1</b>	1	10-01-18		TLM6	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	11-01-18		TLM1	CO2	T1	
20.	<b>Virtual Machines Provisioning</b>	1	16-01-18		TLM1	CO2	T1	

21.	Migration services	1	17-01-18		TLM1,TLM2	CO2	T1	
22.	On the management of Virtual Machines for cloud infrastructure	1	18-01-18		TLM1,TLM2	CO2	T1	
23.	On the management of Virtual Machines for cloud infrastructure	1	19-01-18		TLM1,TLM2	CO2	T1	
24.	Enhancing cloud computing environments using cluster as a service	1	22-01-18		TLM1,TLM2	CO2	T1	
25.	Secured distributed data storage in cloud computing		23-01-18		TLM1,TLM2	CO2	T1	
26.	Secured distributed data storage in cloud computing	1	24-01-18		TLM1,TLM2	CO2	T1	
27.	<b>Tutorial-2</b>	1	25-01-18		TLM3	CO2	T1	
28.	<b>Assignment/Quiz-2</b>	1	26-01-18		TLM6	CO2	T1	
No. of classes required to complete UNIT-II		10			No. of classes taken:			

### 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
29.	Introduction to UNIT-III	1	01-02-18		TLM1	CO3	T1	
30.	Aneka	1	02-02-18		TLM1,TLM2	CO3	T1	
31.	Integration of private and public clouds	1	05-02-18		TLM1,TLM2	CO3	T1	
32.	Comet cloud	1	06-02-18		TLM1,TLM2	CO3	T1	
33.	An autonomic cloud engine	1	07-02-18		TLM1,TLM2	CO3	T1	
34.	T-systems	1	08-02-18		TLM1,TLM2	CO3	T1	
35.	<b>Tutorial-3</b>	1	09-02-18		TLM3	CO3	T1	
36.	Cloud based solutions for business applications	1	12-02-18		TLM1,TLM2	CO3	T1	
37.	Work flow engines for clouds	1	13-02-18		TLM1,TLM2	CO3	T1	
38.	Understanding scientific applications	1	14-02-18		TLM1,TLM2	CO3	T1	
39.	Understanding scientific cloud environments	1	15-02-18		TLM1,TLM2	CO3	T1	
40.	The Map reduce programming Model	1	16-02-18		TLM1,TLM2	CO3	T1	
41.	Map reduce implementations	1	19-02-18		TLM1,TLM2	CO3	T1	
42.	<b>Tutorial-4</b>	1	20-02-18		TLM3	CO3	T1	
43.	<b>Assignment/Quiz-3</b>	1	21-02-18		TLM6	CO3	T1	
No. of classes required to complete UNIT-III		14			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
44.	Introduction to UNIT-IV	1	22-02-18		TLM1	CO4	T1	
45.	Monitoring and management	1	23-02-18		TLM1,TLM2	CO4	T1	
46.	An architecture for federated cloud computing	1	26-02-18		TLM1,TLM2	CO4	T1	
47.	An architecture for federated cloud computing	1	27-02-18		TLM1,TLM2	CO4	T1	
48.	SLA management in cloud computing	1	28-02-18		TLM1,TLM2	CO4	T1	
49.	<b>Tutorial-5</b>	1	01-03-18		TLM3	CO4	T1	
50.	A service providers perspective	1	02-03-18		TLM1,TLM2	CO4	T1	
51.	A service providers perspective	1	05-03-18		TLM1,TLM2	CO4	T1	
52.	Performance prediction	1	06-03-18		TLM1,TLM2	CO4	T1	
53.	HPC on clouds	1	07-03-18		TLM1,TLM2	CO4	T1	
54.	<b>Tutorial-6</b>	1	08-03-18		TLM3	CO4	T1	
55.	<b>Assignment/Quiz-4</b>	1	09-03-18		TLM6	CO4	T1	
No. of classes required to complete UNIT-IV		12			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
56.	Introduction to UNIT-V	1	12-03-18		TLM1	CO5	T1	
57.	Architecting applications for the Amazon Cloud	1	13-03-18		TLM1,TLM2	CO5	T1	
58.	Massively multiplayer Online Game hosting on Cloud resources	1	14-03-18		TLM1,TLM2	CO5	T1	
59.	Massively multiplayer Online Game hosting on Cloud resources	1	15-03-18		TLM1,TLM2	CO5	T1	
60.	<b>Tutorial-7</b>	1	16-03-18		TLM3	CO5	T1	
61.	<b>Tutorial-8</b>	1	19-03-18		TLM3	CO5	T1	
62.	Building Content delivery networks	1	20-03-18		TLM1,TLM2	CO5	T1	
63.	Building Content delivery networks	1	21-03-18		TLM1,TLM2	CO5	T1	
64.	Resources of Cloud	1	22-03-18		TLM1,TLM2	CO5	T1	
65.	Resource cloud mashups	1	23-03-18		TLM1,TLM2	CO5	T1	
66.	Resource cloud mashups	1	26-03-18		TLM1,TLM2	CO5	T1	
67.	<b>Tutorial-9</b>	1	27-03-18		TLM3	CO5	T1	
68.	<b>Assignment/Quiz-5</b>	1	28-03-18		TLM6	CO5	T1	
No. of classes required to complete		12			No. of classes taken:			

UNIT-V				
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### 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
69.	Computer Networks	1	11-12-17		TLM1			
70.	Data Mining	1	12-12-17		TLM1			
71.	Information Security and Privacy	1	13-12-17		TLM1			

### 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

### EVALUATION PROCESS:

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: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

### 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:**

- 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.

**Course Instructor**

**Course Coordinator**

**Module Coordinator**

**HOD**

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**COURSE HANDOUT**

**PROGRAM** : B.Tech.,VIII-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Operations Research - S 329  
**L-T-P STRUCTURE** : 4-1-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : Mr. K. Narayana  
**COURSE COORDINATOR** : Mr. B. Chaitanya

**PRE-REQUISITE:** Basic Management Principles, Engineering Mathematics

**COURSE OBJECTIVE** : The objective of this course is to introduce the concepts of formulating an engineering problem into a mathematical model to develop an optimal solution.

**COURSE OUTCOMES (CO)**

CO1:Apply linear programming approach for optimizing the objectives of industrial oriented problems.

CO2:Formulate and solve Transportation Models and assignment Models.

CO3:Implement the strategies in competitive situations and Identify the replacement period of the equipment.

CO4:Analyze the waiting situations in an organization.

CO5:Determine the optimum inventory level and resolve the complex problem into simple problems by dynamic programming approach and apply optimum strategies.

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

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
<b>CO1</b>	3	3	3	2	3				3			3		3	
<b>CO2</b>	3	3	1	2	1				3			3		3	
<b>CO3</b>	3	3	3	2	1				3			3		3	
<b>CO4</b>	3	2	3	2	3				1			3		3	
<b>CO5</b>	2	3	3	2	1				1			3		3	

**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, 14th Edition, 2008.



**T2** Hiller & Libermann, Introduction to O.R (TMH), 9TH EDITION, 2009

**BOS APPROVED REFERENCE BOOKS:**

**R1** Singiresu S Rao, Engineering Optimization: Theory and Practice, A WileyInterscience Publication, 4th edition, 2009.

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

**COURSE DELIVERY PLAN (LESSON PLAN): Section-A**

**UNIT-I: INTRODUCTION: Operations Research, LPP, Graphical solution, Simplex method.**

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.	Course Outcomes Introduction to Subject, UNIT-I	1	11/12/17		TLM1			
2.	Introduction to Operations Research, operations research models, applications	1	12/12/17		TLM1/ TLM2	CO1	T1/R2	
3.	<b>Linear Programming Problem (LPP):</b> Linear Programming Problem Formulation	1	13/12/17		TLM1/ TLM4	CO1	T1/R2	
4.	Numericals	1	14/12/17		TLM4	CO1	T1/R2	
5.	LPP: Graphical Method, Numericals	1	15/12/17		TLM1/ TLM4	CO1	T1/R2	
6.	Graphical solution for Special Cases of LPP	1	18/12/17		TLM4	CO1	T1/R2	
7.	<b>Tutorial I</b>	1	19/12/17		TLM3	CO1	T1/R2	
8.	Simplex Method, Numericals	1	20/12/17		TLM1/ TLM4	CO1	T1/R2	
9.	Numericals	1	21/12/17		TLM4	CO1	T1/R2	
10.	Big M Method (Artificial Variable Technique)	1	22/12/17		TLM1/ TLM4	CO1	T1/R2	
11.	Numericals	1	26/12/17		TLM4	CO1	T1/R2	
12.	<b>Tutorial II</b>	1	27/12/17		TLM3	CO1	T1/R2	
13.	Two Phase Simplex Method (Artificial Variable Technique)	1	28/12/17		TLM1/ TLM4	CO1	T1/R2	
14.	Numericals	1	29/12/17		TLM4	CO1	T1/R2	
15.	Duality Principle, Numericals	1	02/01/18		TLM1/ TLM4	CO1	T1/R2	
16.	<b>Tutorial III</b>	1	03/01/18		TLM3	CO1	T1/R2	
17.	Assignment/Quiz-1	1	04/01/18		TLM6	CO1	T1/R2	
No. of classes required to complete UNIT-I		17			No. of classes taken:			

**UNIT-II : TRANSPORTATION PROBLEM (TP)/ ASSIGNMENT PROBLEM (AP):**

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
18.	Introduction to TP, Terminology, Formulation	1	05/01/18		TLM1/ TLM2	CO2	T1	
19.	Standard form, Unbalanced T P, Numericals	1	08/01/18		TLM1/ TLM4	CO2	T1	
20.	Initial Basic Feasible Solution to TP: North West Corner Method, Least Cost Entry Method, Vogel's Approximation Method (VAM)	1	09/01/18		TLM1/ TLM4	CO2	T1	
21.	Numericals	1	10/01/18		TLM4	CO2	T1	
22.	<b>Tutorial IV</b>	1	11/01/18		TLM3	CO2	T1	
23.	Test for Optimality: Stepping Stone Method, Modified Distribution Method (MODI Method)	1	12/01/18		TLM1/ TLM4	CO2	T1	
24.	Numericals	1	16/01/18		TLM4	CO2	T1	
25.	Degeneracy in TP, Numericals	1	17/01/18		TLM1/ TLM4	CO2	T1	
26.	Introduction to AP, Terminology;	1	18/01/18		TLM1/ TLM4	CO2	T1	
27.	<b>Tutorial V</b>	1	19/01/18		TLM3	CO2	T1	
28.	Variants of Assignment Problem	1	22/01/18		TLM1/ TLM4	CO2	T1	
29.	Optimal Solution, Numericals	1	23/01/18		TLM1/ TLM4	CO2	T1	
30.	Travelling Salesmen Problem, Numericals	1	24/01/18		TLM1/ TLM4	CO2	T1	
31.	Assignment/Quiz-2	1	25/01/18		TLM6	CO2	T1	
No. of classes required to complete UNIT-II		14			No. of classes taken:			

**UNIT-III : GAMES THEORY/ THEORY OF REPLACEMENT**

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
32.	Introduction to Games Theory, Terminology	1	01/02/18		TLM1/ TLM2	CO3	T1	
33.	Minimax or Maxmini Criterion, Optimal Strategy	1	02/02/18		TLM1/ TLM4	CO3	T1/T2	
34.	Solution of games with saddle point	1	05/02/18		TLM1/ TLM4	CO3	T1/ T2	
35.	<b>Tutorial VI</b>	1	06/02/18		TLM3	CO3	T1/ T2	
36.	Rectangular games without saddle point, Numericals	1	07/02/18		TLM1/ TLM4	CO3	T1/ T2	
37.	mx2, 2xn, mxn games, Dominance Principle, Numericals	1	08/02/18		TLM1/ TLM4	CO3	T1/T2	
38.	Graphical approach, Numericals	1	09/02/18		TLM1/ TLM4	CO3	T1/ T2	
39.	<b>Tutorial VII</b>	1	12/02/18		TLM3	CO3	T1/ T2	

40.	Introduction, Replacement of Equipment that Deteriorates Gradually, Numericals	1	13/02/18		TLM1/ TLM4	CO3	T1/ T2	
41.	Replacement of Equipment that fails suddenly, Numericals	1	15/02/18		TLM1/ TLM4	CO3	T1/ T2	
42.	Group Replacement Policy, Numericals	1	16/02/18		TLM1/ TLM4	CO3	T1/ T2	
43.	<b>Tutorial VIII</b>	1	19/02/18		TLM3	CO3	T1/ T2	
44.	Assignment/Quiz-3	1	20/02/18		TLM6	CO3	T1/ T2	
No. of classes required to complete UNIT-III		13			No. of classes taken:			

#### UNIT-IV : WAITING LINES/ INVENTORY MODELS

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
45.	<b>Introduction to Queuing Theory</b>	1	21/02/18		TLM1/ TLM2	CO4	T1/R2	
46.	Single Channel – Poisson arrivals – exponential service times – with infinite population, Derivation, Numericals	1	22/02/18		TLM1/ TLM4	CO4	T1/R2	
47.	Numericals	1	23/02/18		TLM4	CO4	T1/R2	
48.	Single Channel – Poisson arrivals – exponential service times – with finite population, Numericals	1	26/02/18		TLM1/ TLM4	CO4	T1/R2	
49.	Numericals	1	27/02/18		TLM4	CO4	T1/R2	
50.	<b>Tutorial IX</b>		28/02/18		TLM3	CO4	T1/R2	
51.	Introduction to Inventory, Inventory control, Terminology, Economic Order Quantity (EOQ), Numericals	1	01/03/18		TLM1/ TLM4	CO4	T1/R2	
52.	Numericals	1	02/03/18		TLM4	CO4	T1/R2	
53.	Deterministic models — Instantaneous production, finite production, continuous demand, no set up cost, shortages are not allowed, Derivation, Numericals	1	05/03/18		TLM1/ TLM4	CO4	T1/R2	
54.	Numericals	1	06/03/18		TLM4	CO4	T1/R2	
55.	Purchase inventory models with one price break and multiple price breaks, Numericals	1	07/03/18		TLM1/ TLM4	CO4	T1/R2	
56.	Numericals , <b>Tutorial X</b>	1	08/03/18		TLM3	CO4	T1/R2	
57.	Assignment/Quiz-4	1	09/03/18		TLM6	CO4	T1/R2	
No. of classes required to complete UNIT-IV		13			No. of classes taken:			

**UNIT-V : DYNAMIC PROGRAMMING (DP)/ INTRODUCTION TO OPTIMIZATION**

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
58.	Introduction to DP	1	12/03/18		TLM1/ TLM2	CO5	T1	
59.	Bellman's Principle of Optimality, Applications of Dynamic Programming	1	13/03/18		TLM1/ TLM4	CO5	T1	
60.	<b>Tutorial XI</b>	1	14/03/18		TLM3	CO5	T1	
61.	Capital Budgeting Problem, Shortest Path Problem, Numericals	1	15/03/18		TLM1/ TLM4	CO5	T1	
62.	Linear Programming Problem, Numericals	1	16/03/18		TLM1/ TLM4	CO5	T1	
63.	<b>Tutorial XII</b>	1	19/03/18		TLM3	CO5	T1	
64.	Introduction: Engineering Applications of Optimization	1	20/03/18		TLM1/ TLM2	CO5	T1/R1	
65.	Problem Statement, Design Vector, Design Constraints, Constraints Surface, Objective Function, Objective Function Surfaces, Numericals	1	21/03/18		TLM1/ TLM4	CO5	T1/R1	
66.	<b>Tutorial XIII</b>	1	22/03/18		TLM3	CO5	T1/R1	
67.	Classification of Optimization Problems	1	23/03/18		TLM4	CO5	T1/R1	
68.	Optimization Techniques: Introduction, Single Variable Optimization	1	26/03/18		TLM1/ TLM4	CO5	T1/R1	
69.	Numericals		27/03/18		TLM4		T1/R1	
70.	Assignment/Quiz-5	1	28/03/18		TLM6	CO5	T1/R1	
No. of classes required to complete UNIT-V		13			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
71.	Duality	1	29/03/18		TLM1/ TLM4		T1	
72.	Sequencing	1	02/04/18		TLM1/ TLM4		T1	
73.	EOQ Shortages are allowed	1	03/04/18		TLM1/ TLM4		T1	
74.	Network models	1	04/04/18		TLM1/ TLM4		T1	

**Teaching Learning Methods**

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

**ACADEMIC CALENDAR:**

<b>Description</b>	<b>From</b>	<b>To</b>	<b>Weeks</b>
I Phase of Instructions-1	11-12-2017	12-01-2018	4W
Sankranthi Holidays	13-01-2018	16-01-2018	1/2W
I Phase of Instructions-II	17-01-2018	27-01-2018	2 1/2W
I Mid Examinations	29-01-2018	31-01-2018	1/2W
II Phase of Instructions	01-02-2018	04-04-2018	9W
II Mid Examinations	05-04-2018	07-04-2018	1/2W
Preparation and Practicals	09-04-2018	14-04-2018	1W
Semester End Examinations	16-04-2018	21-04-2018	1W

**EVALUATION PROCESS:**

<b>Evaluation Task</b>	<b>COs</b>	<b>Marks</b>
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: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

Course Instructor

Course Coordinator

Module Coordinator

HOD

**LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING  
DEPARTMENT OF MASTER OF COMPUTER SCIENCE AND  
ENGINEERING**

(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,  
NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)  
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

**COURSE HANDOUT**

**SECTION:A**

**PROGRAM** : **B.Tech** CSE VIII-Semester.  
**ACADEMIC YEAR** : 2017-18  
**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.**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	11-12-2017		TLM1	CO1	T1,R1	
2.	Creativity and Innovation concepts, Shifting	01	12-12-2017		TLM1	CO1	T1,R1	
3.	Composition of the economy	01	13-12-2017		TLM1	CO1	T1	
4.	Purposeful innovation and seven sources of innovative	01	14-12-2017		TLM1	CO1	T1	
5.	Purposeful innovation and seven sources of innovative	01	15-12-2017		TLM1	CO1	T1	
6.	Innovation Process	01	18-12-2017		TLM1	CO1	T1	
7.	Innovation Process	01	19-12-2017		TLM1	CO1	T1	
8.	Innovation Strategies	01	20-12-2017		TLM1	CO1	T1	
9.	Innovation Strategies	01	21-12-2017		TLM1	CO1	T1	
10.	Tutorial-1	01	22-12-2017		TLM1	CO1	T1	
11.	Strategies that aim at Introducing an innovation	01	26-12-2017		TLM1	CO1	T1	
12.	Strategies that aim at Introducing an innovation	01	27-12-2017		TLM1	CO1	T1	
13.	Innovation and Entrepreneurship: can they work together Planning	01	28-12-2017		TLM1	CO1	T1	
14.	Innovation and Entrepreneurship: can they work together Planning	01	29-12-2017		TLM1	CO1	T1	
15.	Incompatible with innovation and entrepreneurship	01	02-01-2018		TLM1	CO1	T1	
16.	Innovation and Entrepreneurship	01	03-01-2018		TLM1	CO1	T1	
17.	I st unit revision	01	04-01-2018		TLM1	CO1	T1	
No. of classes required to complete UNIT-I		17			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
18.	Introduction to Entrepreneurship, Definition of Entrepreneurship	01	05-01-2018		TLM1	CO2	T1	
19.	Entrepreneurial Traits	01	08-01-2018		TLM1	CO2	T1	
20.	Traditional Entrepreneurship vs. Modern Entrepreneurship	01	09-01-2018		TLM1	CO2	T1	
21.	Entrepreneur vs. Intrapreneur	01	10-01-2018		TLM1	CO2	T1	
22.	The Entrepreneurial decision process	01	11-01-2018		TLM1	CO2	T1	
23.	Role of Entrepreneurship in Economic development, Ethical	01	12-01-2018		TLM1	CO2	T1	
24.	Environmental challenges and Social responsibility of Entrepreneurs	01	17-01-2018		TLM1	CO2	T1	
25.	Environmental challenges and Social responsibility of Entrepreneurs	01	18-01-2018		TLM1	CO2	T1	
26.	Opportunities for Entrepreneurs in India and abroad	01	19-01-2018		TLM1	CO2	T1	
27.	Woman as Entrepreneur	01	23-01-2018		TLM1	CO2	T1	
28.	Tutorial II, II nd unit Revision	01	24-01-2018					
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
29.	Introduction to Creating and starting the venture, Sources of new ideas	01	25-01-2018		TLM1	CO3	T1	
30.	I Mid Exam	01	29-01-2018					
31.	I Mid Exam	01	30-01-2018					
32.	I Mid Exam	01	31-01-2018					
33.	Generation of new entry Opportunity	01	01-02-2018		TLM1	CO3	T1	
34.	Opportunity Analysis, Creating Problem Solving	01	02-02-2018		TLM1	CO3	T1	
35.	Product Planning and development process	01	05-02-2018		TLM1	CO3	T1	
36.	SWOT analysis	01	06-02-2018		TLM1	CO3	T1	
37.	First mover advantages and disadvantages	01	07-02-2018		TLM1	CO3	T1	
38.	First mover advantages and disadvantages	01	08-02-2018		TLM1	CO3	T1	
39.	Types of business organizations	01	09-02-2018		TLM1	CO3	T1	



40.	Types of business organizations	01	12-02-2018		TLM1	CO3	T1	
41.	Features and evaluation of joint ventures	01	13-02-2018		TLM1	CO3	T1	
42.	Features and evaluation of joint ventures	01	15-02-2018		TLM1	CO3	T1	
43.	Acquisitions	01	16-02-2018		TLM1	CO3	T1	
44.	Acquisitions	01	19-02-2018		TLM1	CO3	T1	
45.	Merges	01	20-02-2018		TLM1	CO3	T1	
46.	Merges	01	21-02-2018		TLM1	CO3	T1	
47.	Franchising	01	22-02-2018		TLM1	CO3	T1	
48.	Franchising	01	23-02-2018		TLM1	CO3	T1	
49.	Tutorial III, III rd unit Revision	01	26-02-2018					
No. of classes required to complete UNIT-III		21			No. of classes taken:			

#### 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
50.	Nature and Scope of Business Plan	01	27-02-2018		TLM1	CO4	T1	
51.	Writing Business Plan	01	28-02-2018		TLM1	CO4	T1	
52.	Evaluating Business plans	01	01-03-2018		TLM1	CO4	T1	
53.	Using and implementing business plans ,Marketing plan	01	02-03-2018		TLM1	CO4	T1	
54.	Introduction to financial plan and the organizational Launching formalities	01	05-03-2018		TLM1	CO4	T1	
55.	Survival and Success	01	06-03-2018		TLM1	CO4	T1	
56.	Sources of capital	01	07-03-2018		TLM1	CO4	T1	
57.	Record keeping , Recruitment	01	08-03-2018		TLM1	CO4	T1	
58.	Motivating and Leading teams	01	09-03-2018		TLM1	CO4	T1	
59.	Financial controls, Tutorial IV	01	12-03-2018		TLM1	CO4	T1	
60.	Marketing and sales Controls	01	13-03-2018		TLM1	CO4	T1	
61.	Ecommerce in Entrepreneurship, Internet advertising	01	14-03-2018		TLM1	CO4	T1	
62.	Unit-IV Revision	01	15-03-2018		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
63.	Thrust of production management	01	16-03-2018		TLM1	CO5	T1	

64.	Selection of production techniques	01	19-03-2018		TLM1	CO5	T1	
65.	Selection of production techniques	01	20-03-2018		TLM1	CO5	T1	
66.	Plant utilization and maintenance	01	21-03-2018		TLM1	CO5	T1	
67.	Requirements at work place	01	22-03-2018		TLM1	CO5	T1	
68.	Requirements at work place	01	23-03-2018		TLM1	CO5	T1	
69.	Materials management, Marketing Functions	01	27-03-2018		TLM1	CO5	T1	
70.	Market segmentation	01	28-03-2018		TLM1	CO5	T1	
71.	Market research and channels and channels of distribution	01	29-03-2018		TLM1	CO5	T1	
72.	Sales Promotion and Product pricing,	01	30-03-2018		TLM1	CO5	T1	
73.	Sales Promotion and Product pricing,	01	02-04-2018		TLM1	CO5	T1	
74.	Tutorial –V	01	03-04-2018					
75.	V th unit Revision	01	04-04-2018		TLM1	CO5	T1	
76.	II Mid exam		05-04-2018					
77.	II Mid exam		06-04-2018					
No.of classes required to complete Unit-V		12			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
78.	Red bus and Future group business strategy	01	03-04-2018		TLM2	CO5	T1	
79.	Reliance Jio business strategy	01	04-01-2018		TLM2	CO2	T1	

### Teaching Learning Methods

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

### ACADEMIC CALENDAR:

Description	From	To	Weeks
<b>Commencement of Next semesters Class Work 11-12-2017</b>			
I Phase of Instructions-1	11-12-2017	27-01-2018	7
I Mid Examinations	29-01-2018	31-01-2018	1
II Phase of Instructions	01-02-2018	04-04-2018	9
II Mid Examinations	05-04-2018	07-04-2018	½
Preparation and Practical's	09-04-2018	14-04-2018	1
Semester End Examinations	16-04-2018	21-04-2018	1

## EVALUATION PROCESS:

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

## 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**

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## COURSE HANDOUT

**PROGRAM** : B. Tech., VIII-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Cloud Computing – S157  
**L-T-P STRUCTURE** : 4-1-0  
**COURSE CREDITS** : 4  
**COURSE INSTRUCTOR** : Mr. LELLA KRANTHI KUMAR  
**COURSE COORDINATOR** : Mr. J NAGESWARA RAO  
**PRE-REQUISITE:** Basic knowledge regarding computer, graphics and screen designs.

### COURSE OBJECTIVE:

- Demonstrate an understanding of guidelines, principles, and theories influencing cloud computing.
- Recognize how a cloud computing operation to be performed.
- Use the information sources available, and be aware of the methodologies and technologies supporting advances in cloud computing.

### COURSE OUTCOMES (CO)

CO1: Analyze various delivery and deployment models.

CO2: Analyze the virtual machine provisioning and virtualized storage strategies.

CO3: Explore the PAAS Services.

CO4: Explore the SAAS Services.

CO5: 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	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	-	-	-	-	3	-	-	-	-	-	-	-	-	-	1
CO2	-	-	2	-	1	-	-	-	-	-	-	-	-	3	-
CO3	-	-	2	-	1	-	-	-	-	-	-	-	-	3	-
CO4	-	-	-	2	-	-	-	3	-	-	-	-	-	2	-
CO5	-	-	2	-	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** “Cloud Computing: principles and Paradigms”, Raj Kumar Bunya, James Bromberg, Andrej Kosciusko, Wiley, New York, USA

### BOS APPROVED REFERENCE :

**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.

## COURSE DELIVERY PLAN (LESSON PLAN): Section-B

### 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	14-12-17		TLM1	CO1	T1	
2.	Course Outcomes	1	15-12-17		TLM1	CO1	T1	
3.	Introduction to UNIT-I	1	18-12-17		TLM1	CO1	T1	
4.	<b>Foundation</b> : Importance of cloud computing	1	19-12-17		TLM1	CO1	T1	
5.	Introduction to cloud computing	1	20-12-17		TLM1	CO1	T1	
6.	Importance of migration		21-12-17		TLM1,TLM2	CO1	T1	
7.	Migration into a cloud	1	22-12-17		TLM1,TLM2	CO1	T1	
8.	Enriching Integration As a Service		26-12-17		TLM1,TLM2	CO1	T1	
9.	<b>Cloud computing services</b>	1	27-12-17		TLM1,TLM1	CO1	T1	
10.	Roots of cloud computing	1	28-12-17		TLM1,TLM2	CO1	T1	
11.	Challenges of Migration	1	29-12-17		TLM1,TLM2	CO1	T1	
12.	Paradigm for the cloud era	1	02-01-18		TLM1,TLM2	CO1	T1	
13.	Integration with public, homogeneous and heterogeneous	1	03-01-18		TLM1,TLM2	CO1	T1	
14.	Jitter bit in Integration and .NET service Bus,ISB	1	04-01-18		TLM1,TLM2	CO1	T1	
15.	Cloud computing for enterprise applications	1	05-01-18		TLM1,TLM2	CO1	T1	
16.	Adoption strategy and five stages of cloud	1	08-01-18		TLM1,TLM2	CO1	T1	
17.	<b>Tutorial-1</b>	1	09-01-18		TLM3	CO1	T1	
18.	<b>Assignment/Quiz-1</b>	1	10-01-18		TLM6	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	11-01-18		TLM1	CO2	T1	
20.	<b>Virtual Machines Provisioning</b>	1	16-01-18		TLM1	CO2	T1	

21.	Migration services	1	17-01-18		TLM1,TLM2	CO2	T1	
22.	On the management of Virtual Machines for cloud infrastructure	1	18-01-18		TLM1,TLM2	CO2	T1	
23.	On the management of Virtual Machines for cloud infrastructure	1	19-01-18		TLM1,TLM2	CO2	T1	
24.	Enhancing cloud computing environments using cluster as a service	1	22-01-18		TLM1,TLM2	CO2	T1	
25.	Secured distributed data storage in cloud computing		23-01-18		TLM1,TLM2	CO2	T1	
26.	Secured distributed data storage in cloud computing	1	24-01-18		TLM1,TLM2	CO2	T1	
27.	<b>Tutorial-2</b>	1	25-01-18		TLM3	CO2	T1	
28.	<b>Assignment/Quiz-2</b>	1	26-01-18		TLM6	CO2	T1	
No. of classes required to complete UNIT-II		10			No. of classes taken:			

### 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
29.	Introduction to UNIT-III	1	01-02-18		TLM1	CO3	T1	
30.	Aneka	1	02-02-18		TLM1,TLM2	CO3	T1	
31.	Integration of private and public clouds	1	05-02-18		TLM1,TLM2	CO3	T1	
32.	Comet cloud	1	06-02-18		TLM1,TLM2	CO3	T1	
33.	An autonomic cloud engine	1	07-02-18		TLM1,TLM2	CO3	T1	
34.	T-systems	1	08-02-18		TLM1,TLM2	CO3	T1	
35.	<b>Tutorial-3</b>	1	09-02-18		TLM3	CO3	T1	
36.	Cloud based solutions for business applications	1	12-02-18		TLM1,TLM2	CO3	T1	
37.	Work flow engines for clouds	1	13-02-18		TLM1,TLM2	CO3	T1	
38.	Understanding scientific applications	1	14-02-18		TLM1,TLM2	CO3	T1	
39.	Understanding scientific cloud environments	1	15-02-18		TLM1,TLM2	CO3	T1	
40.	The Map reduce programming Model	1	16-02-18		TLM1,TLM2	CO3	T1	
41.	Map reduce implementations	1	19-02-18		TLM1,TLM2	CO3	T1	
42.	<b>Tutorial-4</b>	1	20-02-18		TLM3	CO3	T1	
43.	<b>Assignment/Quiz-3</b>	1	21-02-18		TLM6	CO3	T1	
No. of classes required to complete UNIT-III		14			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
44.	Introduction to UNIT-IV	1	22-02-18		TLM1	CO4	T1	
45.	Monitoring and management	1	23-02-18		TLM1,TLM2	CO4	T1	
46.	An architecture for federated cloud computing	1	26-02-18		TLM1,TLM2	CO4	T1	
47.	An architecture for federated cloud computing	1	27-02-18		TLM1,TLM2	CO4	T1	
48.	SLA management in cloud computing	1	28-02-18		TLM1,TLM2	CO4	T1	
49.	<b>Tutorial-5</b>	1	01-03-18		TLM3	CO4	T1	
50.	A service providers perspective	1	02-03-18		TLM1,TLM2	CO4	T1	
51.	A service providers perspective	1	05-03-18		TLM1,TLM2	CO4	T1	
52.	Performance prediction	1	06-03-18		TLM1,TLM2	CO4	T1	
53.	HPC on clouds	1	07-03-18		TLM1,TLM2	CO4	T1	
54.	<b>Tutorial-6</b>	1	08-03-18		TLM3	CO4	T1	
55.	<b>Assignment/Quiz-4</b>	1	09-03-18		TLM6	CO4	T1	
No. of classes required to complete UNIT-IV		12			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
56.	Introduction to UNIT-V	1	12-03-18		TLM1	CO5	T1	
57.	Architecting applications for the Amazon Cloud	1	13-03-18		TLM1,TLM2	CO5	T1	
58.	Massively multiplayer Online Game hosting on Cloud resources	1	14-03-18		TLM1,TLM2	CO5	T1	
59.	Massively multiplayer Online Game hosting on Cloud resources	1	15-03-18		TLM1,TLM2	CO5	T1	
60.	<b>Tutorial-7</b>	1	16-03-18		TLM3	CO5	T1	
61.	<b>Tutorial-8</b>	1	19-03-18		TLM3	CO5	T1	
62.	Building Content delivery networks	1	20-03-18		TLM1,TLM2	CO5	T1	
63.	Building Content delivery networks	1	21-03-18		TLM1,TLM2	CO5	T1	
64.	Resources of Cloud	1	22-03-18		TLM1,TLM2	CO5	T1	
65.	Resource cloud mashups	1	23-03-18		TLM1,TLM2	CO5	T1	
66.	Resource cloud mashups	1	26-03-18		TLM1,TLM2	CO5	T1	
67.	<b>Tutorial-9</b>	1	27-03-18		TLM3	CO5	T1	
68.	<b>Assignment/Quiz-5</b>	1	28-03-18		TLM6	CO5	T1	
No. of classes required to complete		12			No. of classes taken:			



UNIT-V				
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### 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
69.	Computer Networks	1	11-12-17		TLM1			
70.	Data Mining	1	12-12-17		TLM1			
71.	Information Security and Privacy	1	13-12-17		TLM1			

### 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

### EVALUATION PROCESS:

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: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

### 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:**

- 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.

**Course Instructor**

**Course Coordinator**

**Module Coordinator**

**HOD**

## COURSE HANDOUT

**PROGRAM** : B.Tech.,VIII-Sem., CSE  
**ACADEMIC YEAR** : 2017-18  
**COURSE NAME & CODE** : Operations Research - S 329  
**L-T-P STRUCTURE** : 4-1-0  
**COURSE CREDITS** : 3  
**COURSE INSTRUCTOR** : T.Venkateswara Rao  
**COURSE COORDINATOR** : B. Chaitanya

**PRE-REQUISITE:** Basic Management Principles, Engineering Mathematics

**COURSE OBJECTIVE** : The objective of this course is to introduce the concepts of formulating an engineering problem into a mathematical model to develop an optimal solution.

### **COURSE OUTCOMES (CO)**

CO1:Apply linear programming approach for optimizing the objectives of industrial oriented problems.

CO2:Formulate and solve Transportation Models and assignment Models.

CO3:Implement the strategies in competitive situations and Identify the replacement period of the equipment.

CO4:Analyze the waiting situations in an organization.

CO5:Determine the optimum inventory level and resolve the complex problem into simple problems by dynamic programming approach and apply optimum strategies.

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

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
<b>CO1</b>	3	3	3	2	3				3			3		3	
<b>CO2</b>	3	3	1	2	1				3			3		3	
<b>CO3</b>	3	3	3	2	1				3			3		3	
<b>CO4</b>	3	2	3	2	3				1			3		3	
<b>CO5</b>	2	3	3	2	1				1			3		3	

**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, 14th Edition, 2008.

**T2** Hiller & Libermann, Introduction to O.R (TMH), 9TH EDITION, 2009

**BOS APPROVED REFERENCE BOOKS:**

**R1** Singiresu S Rao, Engineering Optimization: Theory and Practice, A WileyInterscience Publication, 4th edition, 2009.

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

**COURSE DELIVERY PLAN (LESSON PLAN): Section-A**

**UNIT-I: INTRODUCTION: Operations Research, LPP, Graphical solution, Simplex method.**

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.	Course Outcomes Introduction to Subject, UNIT-I	1	11/12/17		TLM1			
2.	Introduction to Operations Research, operations research models, applications	1	12/12/17		TLM1/ TLM2	CO1	T1/R2	
3.	<b>Linear Programming Problem (LPP):</b> Linear Programming Problem Formulation	1	13/12/17		TLM1/ TLM4	CO1	T1/R2	
4.	Numericals	1	14/12/17		TLM4	CO1	T1/R2	
5.	LPP: Graphical Method, Numericals	1	15/12/17		TLM1/ TLM4	CO1	T1/R2	
6.	Graphical solution for Special Cases of LPP	1	18/12/17		TLM4	CO1	T1/R2	
7.	<b>Tutorial I</b>	1	19/12/17		TLM3	CO1	T1/R2	
8.	Simplex Method, Numericals	1	20/12/17		TLM1/ TLM4	CO1	T1/R2	
9.	Numericals	1	21/12/17		TLM4	CO1	T1/R2	
10.	Big M Method (Artificial Variable Technique)	1	22/12/17		TLM1/ TLM4	CO1	T1/R2	
11.	Numericals	1	26/12/17		TLM4	CO1	T1/R2	
12.	<b>Tutorial II</b>	1	27/12/17		TLM3	CO1	T1/R2	
13.	Two Phase Simplex Method (Artificial Variable Technique)	1	28/12/17		TLM1/ TLM4	CO1	T1/R2	
14.	Numericals	1	29/12/17		TLM4	CO1	T1/R2	
15.	Duality Principle, Numericals	1	02/01/18		TLM1/ TLM4	CO1	T1/R2	
16.	<b>Tutorial III</b>	1	03/01/18		TLM3	CO1	T1/R2	
17.	Assignment/Quiz-1	1	04/01/18		TLM6	CO1	T1/R2	
No. of classes required to complete UNIT-I		17			No. of classes taken:			

**UNIT-II : TRANSPORTATION PROBLEM (TP)/ ASSIGNMENT PROBLEM (AP):**

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
18.	Introduction to TP, Terminology, Formulation	1	05/01/18		TLM1/ TLM2	CO2	T1	
19.	Standard form, Unbalanced T P, Numericals	1	08/01/18		TLM1/ TLM4	CO2	T1	
20.	Initial Basic Feasible Solution to TP: North West Corner Method, Least Cost Entry Method, Vogel's Approximation Method (VAM)	1	09/01/18		TLM1/ TLM4	CO2	T1	
21.	Numericals	1	10/01/18		TLM4	CO2	T1	
22.	<b>Tutorial IV</b>	1	11/01/18		TLM3	CO2	T1	
23.	Test for Optimality: Stepping Stone Method, Modified Distribution Method (MODI Method)	1	12/01/18		TLM1/ TLM4	CO2	T1	
24.	Numericals	1	16/01/18		TLM4	CO2	T1	
25.	Degeneracy in TP, Numericals	1	17/01/18		TLM1/ TLM4	CO2	T1	
26.	Introduction to AP, Terminology;	1	18/01/18		TLM1/ TLM4	CO2	T1	
27.	<b>Tutorial V</b>	1	19/01/18		TLM3	CO2	T1	
28.	Variants of Assignment Problem	1	22/01/18		TLM1/ TLM4	CO2	T1	
29.	Optimal Solution, Numericals	1	23/01/18		TLM1/ TLM4	CO2	T1	
30.	Travelling Salesmen Problem, Numericals	1	24/01/18		TLM1/ TLM4	CO2	T1	
31.	Assignment/Quiz-2	1	25/01/18		TLM6	CO2	T1	
No. of classes required to complete UNIT-II		14			No. of classes taken:			

**UNIT-III : GAMES THEORY/ THEORY OF REPLACEMENT**

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
32.	Introduction to Games Theory, Terminology	1	01/02/18		TLM1/ TLM2	CO3	T1	
33.	Minimax or Maxmini Criterion, Optimal Strategy	1	02/02/18		TLM1/ TLM4	CO3	T1/T2	
34.	Solution of games with saddle point	1	05/02/18		TLM1/ TLM4	CO3	T1/ T2	
35.	<b>Tutorial VI</b>	1	06/02/18		TLM3	CO3	T1/ T2	
36.	Rectangular games without saddle point, Numericals	1	07/02/18		TLM1/ TLM4	CO3	T1/ T2	
37.	mx2, 2xn, mxn games, Dominance Principle, Numericals	1	08/02/18		TLM1/ TLM4	CO3	T1/T2	
38.	Graphical approach, Numericals	1	09/02/18		TLM1/ TLM4	CO3	T1/ T2	
39.	<b>Tutorial VII</b>	1	12/02/18		TLM3	CO3	T1/ T2	

40.	Introduction, Replacement of Equipment that Deteriorates Gradually, Numericals	1	13/02/18		TLM1/ TLM4	CO3	T1/ T2	
41.	Replacement of Equipment that fails suddenly, Numericals	1	15/02/18		TLM1/ TLM4	CO3	T1/ T2	
42.	Group Replacement Policy, Numericals	1	16/02/18		TLM1/ TLM4	CO3	T1/ T2	
43.	<b>Tutorial VIII</b>	1	19/02/18		TLM3	CO3	T1/ T2	
44.	Assignment/Quiz-3	1	20/02/18		TLM6	CO3	T1/ T2	
No. of classes required to complete UNIT-III		13			No. of classes taken:			

#### UNIT-IV : WAITING LINES/ INVENTORY MODELS

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
45.	<b>Introduction to Queuing Theory</b>	1	21/02/18		TLM1/ TLM2	CO4	T1/R2	
46.	Single Channel – Poisson arrivals – exponential service times – with infinite population, Derivation, Numericals	1	22/02/18		TLM1/ TLM4	CO4	T1/R2	
47.	Numericals	1	23/02/18		TLM4	CO4	T1/R2	
48.	Single Channel – Poisson arrivals – exponential service times – with finite population, Numericals	1	26/02/18		TLM1/ TLM4	CO4	T1/R2	
49.	Numericals	1	27/02/18		TLM4	CO4	T1/R2	
50.	<b>Tutorial IX</b>		28/02/18		TLM3	CO4	T1/R2	
51.	Introduction to Inventory, Inventory control, Terminology, Economic Order Quantity (EOQ), Numericals	1	01/03/18		TLM1/ TLM4	CO4	T1/R2	
52.	Numericals	1	02/03/18		TLM4	CO4	T1/R2	
53.	Deterministic models — Instantaneous production, finite production, continuous demand, no set up cost, shortages are not allowed, Derivation, Numericals	1	05/03/18		TLM1/ TLM4	CO4	T1/R2	
54.	Numericals	1	06/03/18		TLM4	CO4	T1/R2	
55.	Purchase inventory models with one price break and multiple price breaks, Numericals	1	07/03/18		TLM1/ TLM4	CO4	T1/R2	
56.	Numericals , <b>Tutorial X</b>	1	08/03/18		TLM3	CO4	T1/R2	
57.	Assignment/Quiz-4	1	09/03/18		TLM6	CO4	T1/R2	
No. of classes required to complete UNIT-IV		13			No. of classes taken:			

**UNIT-V : DYNAMIC PROGRAMMING (DP)/ INTRODUCTION TO OPTIMIZATION**

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
58.	Introduction to DP	1	12/03/18		TLM1/ TLM2	CO5	T1	
59.	Bellman's Principle of Optimality, Applications of Dynamic Programming	1	13/03/18		TLM1/ TLM4	CO5	T1	
60.	<b>Tutorial XI</b>	1	14/03/18		TLM3	CO5	T1	
61.	Capital Budgeting Problem, Shortest Path Problem, Numericals	1	15/03/18		TLM1/ TLM4	CO5	T1	
62.	Linear Programming Problem, Numericals	1	16/03/18		TLM1/ TLM4	CO5	T1	
63.	<b>Tutorial XII</b>	1	19/03/18		TLM3	CO5	T1	
64.	Introduction: Engineering Applications of Optimization	1	20/03/18		TLM1/ TLM2	CO5	T1/R1	
65.	Problem Statement, Design Vector, Design Constraints, Constraints Surface, Objective Function, Objective Function Surfaces, Numericals	1	21/03/18		TLM1/ TLM4	CO5	T1/R1	
66.	<b>Tutorial XIII</b>	1	22/03/18		TLM3	CO5	T1/R1	
67.	Classification of Optimization Problems	1	23/03/18		TLM4	CO5	T1/R1	
68.	Optimization Techniques: Introduction, Single Variable Optimization	1	26/03/18		TLM1/ TLM4	CO5	T1/R1	
69.	Numericals		27/03/18		TLM4		T1/R1	
70.	Assignment/Quiz-5	1	28/03/18		TLM6	CO5	T1/R1	
No. of classes required to complete UNIT-V		13			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
71.	Duality	1	29/03/18		TLM1/ TLM4		T1	
72.	Sequencing	1	02/04/18		TLM1/ TLM4		T1	
73.	EOQ Shortages are allowed	1	03/04/18		TLM1/ TLM4		T1	
74.	Network models	1	04/04/18		TLM1/ TLM4		T1	

**Teaching Learning Methods**

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



## EVALUATION PROCESS:

<b>Evaluation Task</b>	<b>COs</b>	<b>Marks</b>
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: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	1,2,3,4,5	B=20
<b>Cumulative Internal Examination : A+B</b>	<b>1,2,3,4,5</b>	<b>A+B=25</b>
<b>Semester End Examinations</b>	<b>1,2,3,4,5</b>	<b>C=75</b>
<b>Total Marks: A+B+C</b>	<b>1,2,3,4,5</b>	<b>100</b>

## 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.

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

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**Engineering Graduates will be able to:**

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- 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.
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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):**

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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.

**Course Instructor**

**Course Coordinator**

**Module Coordinator**

**HOD**

**LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING  
DEPARTMENT OF MASTER OF COMPUTER SCIENCE AND  
ENGINEERING**

(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,  
NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)  
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

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**COURSE HANDOUT**

**SECTION: B**

**PROGRAM** : **B.Tech** CSE VIII-Semester.  
**ACADEMIC YEAR** : 2017-18  
**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.**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	11-12-2017		TLM1	CO1	T1,R1	
2.	Creativity and Innovation concepts, Shifting	01	12-12-2017		TLM1	CO1	T1,R1	
3.	Composition of the economy	01	13-12-2017		TLM1	CO1	T1	
4.	Purposeful innovation and seven sources of innovative	01	14-12-2017		TLM1	CO1	T1	
5.	Purposeful innovation and seven sources of innovative	01	15-12-2017		TLM1	CO1	T1	
6.	Innovation Process	01	18-12-2017		TLM1	CO1	T1	
7.	Innovation Process	01	19-12-2017		TLM1	CO1	T1	
8.	Innovation Strategies	01	20-12-2017		TLM1	CO1	T1	
9.	Innovation Strategies	01	21-12-2017		TLM1	CO1	T1	
10.	Tutorial-1	01	22-12-2017		TLM1	CO1	T1	
11.	Strategies that aim at Introducing an innovation	01	26-12-2017		TLM1	CO1	T1	
12.	Strategies that aim at Introducing an innovation	01	27-12-2017		TLM1	CO1	T1	
13.	Innovation and Entrepreneurship: can they work together Planning	01	28-12-2017		TLM1	CO1	T1	
14.	Innovation and Entrepreneurship: can they work together Planning	01	29-12-2017		TLM1	CO1	T1	
15.	Incompatible with innovation and entrepreneurship	01	02-01-2018		TLM1	CO1	T1	
16.	Innovation and Entrepreneurship	01	03-01-2018		TLM1	CO1	T1	
17.	I st unit revision	01	04-01-2018		TLM1	CO1	T1	
No. of classes required to complete UNIT-I		17			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
18.	Introduction to Entrepreneurship, Definition of Entrepreneurship	01	05-01-2018		TLM1	CO2	T1	
19.	Entrepreneurial Traits	01	08-01-2018		TLM1	CO2	T1	
20.	Traditional Entrepreneurship vs. Modern Entrepreneurship	01	09-01-2018		TLM1	CO2	T1	
21.	Entrepreneur vs. Intrapreneur	01	10-01-2018		TLM1	CO2	T1	
22.	The Entrepreneurial decision process	01	11-01-2018		TLM1	CO2	T1	
23.	Role of Entrepreneurship in Economic development, Ethical	01	12-01-2018		TLM1	CO2	T1	
24.	Environmental challenges and Social responsibility of Entrepreneurs	01	17-01-2018		TLM1	CO2	T1	
25.	Environmental challenges and Social responsibility of Entrepreneurs	01	18-01-2018		TLM1	CO2	T1	
26.	Opportunities for Entrepreneurs in India and abroad	01	19-01-2018		TLM1	CO2	T1	
27.	Woman as Entrepreneur	01	23-01-2018		TLM1	CO2	T1	
28.	Tutorial II, II nd unit Revision	01	24-01-2018					
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
29.	Introduction to Creating and starting the venture, Sources of new ideas	01	25-01-2018		TLM1	CO3	T1	
30.	I Mid Exam	01	29-01-2018					
31.	I Mid Exam	01	30-01-2018					
32.	I Mid Exam	01	31-01-2018					
33.	Generation of new entry Opportunity	01	01-02-2018		TLM1	CO3	T1	
34.	Opportunity Analysis, Creating Problem Solving	01	02-02-2018		TLM1	CO3	T1	
35.	Product Planning and development process	01	05-02-2018		TLM1	CO3	T1	
36.	SWOT analysis	01	06-02-2018		TLM1	CO3	T1	
37.	First mover advantages and disadvantages	01	07-02-2018		TLM1	CO3	T1	
38.	First mover advantages and disadvantages	01	08-02-2018		TLM1	CO3	T1	
39.	Types of business organizations	01	09-02-2018		TLM1	CO3	T1	

40.	Types of business organizations	01	12-02-2018		TLM1	CO3	T1	
41.	Features and evaluation of joint ventures	01	13-02-2018		TLM1	CO3	T1	
42.	Features and evaluation of joint ventures	01	15-02-2018		TLM1	CO3	T1	
43.	Acquisitions	01	16-02-2018		TLM1	CO3	T1	
44.	Acquisitions	01	19-02-2018		TLM1	CO3	T1	
45.	Merges	01	20-02-2018		TLM1	CO3	T1	
46.	Merges	01	21-02-2018		TLM1	CO3	T1	
47.	Franchising	01	22-02-2018		TLM1	CO3	T1	
48.	Franchising	01	23-02-2018		TLM1	CO3	T1	
49.	Tutorial III, III rd unit Revision	01	26-02-2018					
No. of classes required to complete UNIT-III		21			No. of classes taken:			

#### 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
50.	Nature and Scope of Business Plan	01	27-02-2018		TLM1	CO4	T1	
51.	Writing Business Plan	01	28-02-2018		TLM1	CO4	T1	
52.	Evaluating Business plans	01	01-03-2018		TLM1	CO4	T1	
53.	Using and implementing business plans ,Marketing plan	01	02-03-2018		TLM1	CO4	T1	
54.	Introduction to financial plan and the organizational Launching formalities	01	05-03-2018		TLM1	CO4	T1	
55.	Survival and Success	01	06-03-2018		TLM1	CO4	T1	
56.	Sources of capital	01	07-03-2018		TLM1	CO4	T1	
57.	Record keeping , Recruitment	01	08-03-2018		TLM1	CO4	T1	
58.	Motivating and Leading teams	01	09-03-2018		TLM1	CO4	T1	
59.	Financial controls, Tutorial IV	01	12-03-2018		TLM1	CO4	T1	
60.	Marketing and sales Controls	01	13-03-2018		TLM1	CO4	T1	
61.	Ecommerce in Entrepreneurship, Internet advertising	01	14-03-2018		TLM1	CO4	T1	
62.	Unit-IV Revision	01	15-03-2018		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
63.	Thrust of production management	01	16-03-2018		TLM1	CO5	T1	

64.	Selection of production techniques	01	19-03-2018		TLM1	CO5	T1	
65.	Selection of production techniques	01	20-03-2018		TLM1	CO5	T1	
66.	Plant utilization and maintenance	01	21-03-2018		TLM1	CO5	T1	
67.	Requirements at work place	01	22-03-2018		TLM1	CO5	T1	
68.	Requirements at work place	01	23-03-2018		TLM1	CO5	T1	
69.	Materials management, Marketing Functions	01	27-03-2018		TLM1	CO5	T1	
70.	Market segmentation	01	28-03-2018		TLM1	CO5	T1	
71.	Market research and channels and channels of distribution	01	29-03-2018		TLM1	CO5	T1	
72.	Sales Promotion and Product pricing,	01	30-03-2018		TLM1	CO5	T1	
73.	Sales Promotion and Product pricing,	01	02-04-2018		TLM1	CO5	T1	
74.	Tutorial –V	01	03-04-2018					
75.	V th unit Revision	01	04-04-2018		TLM1	CO5	T1	
76.	II Mid exam		05-04-2018					
77.	II Mid exam		06-04-2018					
No.of classes required to complete Unit-V		12			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
78.	Red bus and Future group business strategy	01	03-04-2018		TLM2	CO5	T1	
79.	Reliance Jio business strategy	01	04-01-2018		TLM2	CO2	T1	

### Teaching Learning Methods

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<b>TLM3</b>	Tutorial	<b>TLM6</b>	Assignment or Quiz	<b>TLM9</b>	Case Study

### ACADEMIC CALENDAR:

Description	From	To	Weeks
<b>Commencement of Next semesters Class Work 11-12-2017</b>			
I Phase of Instructions-1	11-12-2017	27-01-2018	7
I Mid Examinations	29-01-2018	31-01-2018	1
II Phase of Instructions	01-02-2018	04-04-2018	9
II Mid Examinations	05-04-2018	07-04-2018	½
Preparation and Practical's	09-04-2018	14-04-2018	1
Semester End Examinations	16-04-2018	21-04-2018	1



## EVALUATION PROCESS:

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

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(K.Ravi Kiran Yasaswi) (K.Ravi Kiran Yasaswi) (Dr.V.V.Narsi reddy) (Dr.A.Adishesha Reddy)

**Course Instructor      Course Coordinator      Module Coordinator      HOD**