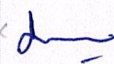
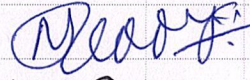


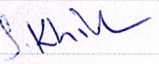




**BOARD OF STUDIES MEETING – 2018-19**  
**K.S.R.M COLLEGE OF ENGINEERING**  
**AUTONOMOUS**

**Minutes of the Meeting**

<b>Date</b>	<b>08.06.2018</b>	<b>Day</b>	<b>Friday</b>
<b>Time</b>	<b>11:30AM</b>	<b>Venue</b>	<b>Web Technologies Lab (MB210)</b>
<b>Dept./SS</b>	<b>CSE</b>	<b>Convener</b>	<b>Dr. M. Sreenivasulu</b>

<b>Members Present:10</b>				<b>Members Absent: 03</b>		
<b>S.No</b>	<b>Name</b>	<b>Designation</b>	<b>Signature</b>	<b>S.No</b>	<b>Name</b>	<b>Designation</b>
1	Dr. M. Sreenivasulu	Prof., & HOD CSE, KSRMCE		1	Dr. D. Janakiram	Prof., Dept. of CSE, IITM, Chennai
2	Dr. P. Chenna Reddy	Prof., in CSE, JNTUA				
3	Dr. C. Shoba Bindhu	Prof., in CSE, JNTUA				
4	Dr. G. Varaprasad	Alumni, Prof., BMS College of Engg., Bangalore				
5	Dr. V. Lokeswara Reddy	Prof., KSRMCE				
6	Dr. K. Srinivasa Rao	Associate Prof., KSRMCE				
7	Smt. B. Manorama Devi	Associate Prof., KSRMCE				
8	Sri. G. Nagendra Babu	Assistant Prof., KSRMCE				
9	Sri. S. Khaja Khizar	Assistant Prof., KSRMCE				
10	Sri. S. Aditya	MTS, Net Apps Ltd.,				


Dr. M. Sreenivasulu, welcomed all the members to the meeting and presented the agenda of the meeting.



The resolutions are:

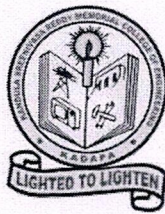
	Todo item	Discussion	Resolution	Coordinator/in-charge
1	To finalize the curriculum and syllabus for VII & VIII Sem B.Tech (CSE) under R15UG Regulations.	The Head of the Department has presented the curriculum and the syllabus designed by the faculty after taking the feedback from all stakeholders and comparing with premier institute syllabus.	The committee has approved curriculum and syllabus for VII & VIII Sem B.Tech CSE under R-15UG Regulations which also includes New Courses and Choice Based Credit Courses/Professional Electives. The suggestions provided by the expert team are considered and modifications will be done respectively.	Dr. M. Sreenivasulu
2	To finalize the curriculum and syllabus for I & II Sem B.Tech (CSE) under R18UG Regulations.	The Head of the Department has presented the curriculum and the syllabus designed by the faculty after taking the feedback from all stakeholders and comparing with premier institute syllabus.	The committee has approved curriculum and syllabus for I & II Sem B.Tech CSE under R-18UG Regulations which also includes New Courses. The suggestions provided by the expert team are considered and modifications will be done respectively.	Dr. M. Sreenivasulu
3	To finalize and approve the syllabus for Certificate Courses/Skill Courses/Employability Courses/Entrepreneurship.	The Head of the Department has presented the syllabus for certification courses and skill courses, designed by the faculty after taking the feedback from all stakeholders.	The committee appreciated the certification courses to be offered by the department and approved the content for offering Certificate Courses/Skill Courses/Employability Courses/Entrepreneurship.	Dr. V. Lokeswara Reddy
4	Feedback/suggestions from stake holders and action taken report.	The Head of the Department presented Feedback and suggestions from stakeholders and also action taken report by the department.	The committee approved action taken report on suggestions and feedback collected from the stakeholders.	Dr. K. Srinivasa Rao

The Head of the Department have proposed the Vote of thanks and concluded the meeting.

  
 Dr. M. Sreenivasulu,  
 Convener  
 M. E., Ph.D.  
 Professor & HOD CSE  
 K. J. Somaiya College of Engineering



**Regulations for UG Programs in Engineering (R15UG)**  
**(Effective from 2015-16)**  
**&**  
**Curriculum and Syllabus for I-VIII Semesters**



**Kandula Srinivasa Reddy Memorial College of Engineering**  
**(Autonomous)**

**Kadapa 516003 AP**

**(Approved by AICTE, Affiliated to JNTUA, Anantapur, Accredited By NBA & NAAC)(An ISO 9001-2008 Certified Institution)**




Annexure-1 Curriculum  
For B. Tech (Computer Science and Engineering)

First Semester

Subject Code	Subject Category	Subject Title	L	T	P	IM	E M	C R
1521101	BS	Mathematics-1	3	1	0	30	70	3
1521102	BS	Mathematics-2	3	1	0	30	70	3
1503103	ED	Engineering Graphics	1	0	3	30	70	3
1524104	HS	English-1	4	0	0	30	70	3
1505105	ED	Programming in C	3	1	0	30	70	3
1501106	HS	Environmental Studies	4	0	0	30	70	3
1505107	ED	Programming in C Lab	0	0	3	50	50	2
1599108	ED	Engineering Workshop	0	0	3	50	50	2
		Total	18	3	9	280	520	22

Second Semester

Subject Code	Subject Category	Subject Title	L	T	P	IM	E M	C R
1522201	BS	Engineering Physics	3	1	0	30	70	3
1521202	BS	Mathematics-3	3	1	0	30	70	3
1523203	BS	Engineering Chemistry	3	1	0	30	70	3
1524204	HS	English-2	4	0	0	30	70	3
1505205	PJ	Introduction to Data Structures	3	1	3	30	70	3
1525206	HS	Human Values and Professional Ethics	4	0	0	30	70	3
1524207	HS	English Language and Communication Skills Lab	0	0	3	50	50	2
1599208	BS	Physics and Chemistry Lab	0	0	3	50	50	2
		Total	18	3	9	280	520	22

  
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### III SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	1599301	Electrical & Electronics Engineering	PN	3	1	0	30	70	3
2.	1505302	Advanced Data Structures	PJ	3	1	0	30	70	3
3.	1505303	Digital Logic Design	PJ	3	1	0	30	70	3
4.	1505304	Discrete Mathematics	PJ	3	1	0	30	70	3
5.	1525305	Managerial Economics & Financial Analysis	PN	3	1	0	30	70	3
6.	1505306	Object Oriented Programming through C++	PJ	3	1	0	30	70	3
7.	1505307	Object Oriented Programming & Data Structures Lab	PJ	0	0	3	50	50	2
8.	1599308	Electrical & Electronics Engineering Lab	PN	0	0	3	50	50	2
		Total:		18	6	6	280	520	22

### IV SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	1521401	Probability & Statistics	HS	3	1	0	30	70	3
2.	1505402	Operating Systems	HS	4	0	0	30	70	3
3.	1505403	Database Management Systems	PJ	3	1	0	30	70	3
4.	1505404	Formal Languages & Automata Theory	PJ	3	1	0	30	70	3
5.	1505405	Java Programming	PJ	3	1	0	30	70	3
6.	1505406	Computer Organization	PJ	4	0	0	30	70	3
7.	1525407	Database Management Systems Lab	PJ	0	0	3	50	50	2
8.	1505408	Java Programming Lab	PJ	0	0	3	50	50	2
		Total:		20	4	6	280	520	22



Dr. M. Sreenivasulu,

(M. E., Ph. D.)

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### V SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	1505501	Web Technologies	PJ	3	1	0	30	70	3
2.	1505502	Computer Networks	PJ	3	1	0	30	70	3
3.	1505503	Software Engineering	PJ	4	0	0	30	70	3
4.	1505504	Compiler Design	PJ	3	1	0	30	70	3
5.		<b>CBCC-I</b>	PJ	3	1	0	30	70	3
	1505505	Advanced Computer Architecture							
	1505506	Multimedia Systems							
	1505507	Principles of Programming Languages							
6.	1504508	Microprocessors	PN	4	0	0	30	70	3
7.	1505509	Web Technologies Lab	PN	0	0	3	50	50	2
8.	1524510	Advanced English & Communication Skills Lab	PN	0	0	3	50	50	2
		Total:		20	4	6	280	520	22

### VI SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	1505601	Object Oriented Analysis & Design	PJ	4	0	0	30	70	3
2.	1505602	Design & Analysis of Algorithms	PJ	4	0	0	30	70	3
3.	1505603	Cryptography & Network Security	PJ	4	0	0	30	70	3
4.	1505604	Data Mining	PJ	3	1	0	30	70	3
5.	1505605	Mobile Application Development	PJ	3	1	0	30	70	3
6.		<b>CBCC-II</b>	PJ	4	0	0	30	70	3
	1505606	Machine Learning							
	1505607	Distributed Systems							
	1505608	Unix & Shell Programming							
7.	1505609	UML & Data Mining Lab	PN	0	0	3	50	50	2
8.	1505610	Mobile Application Development Lab	PN	0	0	3	50	50	2
		Total:		22	2	6	280	520	22

  
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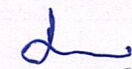


### VII SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	1505701	Big Data Technologies	PJ	3	1	0	30	70	3
2.	1505702	Cloud Computing	PJ	4	0	0	30	70	3
3.	1505703	Artificial Intelligence	PJ	4	0	0	30	70	3
4.	1505704	Software Testing	PJ	4	0	0	30	70	3
5.	1505705 1505706 1505707	CBCC-III i. Computer Graphics ii. Mobile Computing iii. Natural Language Processing	PJ	3	1	0	30	70	3
6.	1505708	Internet of Things	PJ	4	0	0	30	70	3
7.	1505709	Software Testing Lab	PJ	0	0	3	50	50	2
8.	1505710	Internet of Things Lab	PJ	0	0	3	50	50	2
		Total:		22	2	6	280	520	22

### VIII SEM

S.No.	Subject Code	SUBJECT	SC	L	T	P	IM	EM	CR
1.	1505801	Software Project Management	PJ	4	0	0	30	70	3
2.	1505802	Ethical Hacking	PJ	4	0	0	30	70	3
3.	1525803	Management Science	PN	3	1	0	30	70	3
4.	1505804 1505805 1505806	CBCC-IV i. Digital Image Processing ii. Social Network Mining and Analysis iii. Soft Computing	PJ	4	0	0	30	70	3
5.	1505807	Technical Seminar	PJ	0	0	0	100	-	4
6.	1505808	Project Work	PJ	4	0	0	50	50	10
		Total:		19	1	0	270	330	26



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Course Title	BIG DATA TECHNOLOGIES					B. Tech. VII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505701	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	1	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• To introduce big data concepts.</li><li>• Understanding Hadoop.</li><li>• Understanding Big data Applications (HBASE, HIVE).</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Demonstrate knowledge in Big Data Characteristics & Hadoop Distributed File System.							
CO 2	Analyze large data sets by using Hadoop, Map Reduce, Hive.							
CO 3	Design and develop Map Reduce models for data sets.							
CO 4	Select Hive and Hive services techniques for effective database models.							
CO 5	Contribute towards societal issues and responsibilities in designing, modeling and developing Big Data systems							

### UNIT - I

Introduction to Big Data, Why is Big Data, Why Big Data is important, Meet Hadoop, Data, Data Storage and Analysis, Comparison with other systems, Grid Computing, A brief history of Hadoop, Apache Hadoop and the Hadoop Ecosystem, Linux refresher; VMWare Installation of Hadoop.

### UNIT - II

The Design of HDFS, HDFS Concepts, Command Line interface to HDFS Hadoop File Systems, Interfaces, Java Interface to Hadoop, Anatomy of a file read, Anatomy of a file write, Replica placement and Coherency Model, Parallel copying with distcp, Keeping an HDFS cluster balanced.



### **UNIT - III**

Introduction, Analyzing data with unix tools, Analyzing data with Hadoop, Java MapReduce classes(new API), Data flow, combiner functions, Running a distributed MapReduce job, Configuration API, Setting up the developing environment, Managing configuration, Writing a unit test with MRUnit, Running a job in local job runner, Running on a cluster, Launching a job, The MapReduce WebUI.

### **UNIT - IV**

Class MapReduce, Job submission, Job initialization, Task Assignment, Task execution, Progress and status updates, Job Completion, Shuffle and sort on Map and Reducer side, Configuration tuning, Map Reduce types, Input formats, Sorting, Map side and Reduce side joins.

### **UNIT - V**


The Hive Shell, Hive services, Hive clients, The meta store, comparison with traditional databases, Hive QI, Hbasics, Concepts, implementation, Java and Map reduce clients, Loading Data, Web queries.

### **Text Books:**

1. Tom White, Hadoop, "The Definitive Guide", 3rd Edition, O'Reilly Publications, 2012.
2. Dirk deRoos, Chris Eaton, George Lapis, Paul Zikopoulos, Tom Deutsch, "Understanding Big Data Analytics for Enterprise class Hadoop and StreamingData", 1st Edition, TMH, 2012.
3. Bart Baesens, Analytics in a Big Data World: The Essential Guide to DataScience and its Applications, Wiley Publications, 2014.
4. Big Data Technologies and Applications, Borko Furht, Flavio Villanustre, Springer.

### **Reference Books:**

1. Hand Book of Big Data Technologies, Albert Y. Zomaya, Sherif Sakr, Springer.
2. Big Data Analytics: Tools and Technology for Effective Planning, Arun K. Somani, Ganesh Chandra Deka, CRC Press.
3. Big Data, Big Analytics, Michael Minelli, Michele Chambers, Ambiga Dhiraj, John Wiley and Sons.

  
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Course Title	CLOUD COMPUTING					B. Tech. VII Sem CSE (R15)		
Course Code	Category	Hours/Week		Credits	Maximum Marks			
1505702	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		4	0	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>To explain the cloud paradigms.</li><li>To introduce the various levels of services that can be achieved by cloud.</li><li>To know about service providers of cloud.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Understand the evolution of cloud computing paradigm and its architecture.							
CO 2	Explain and characterize different cloud deployment models and service models.							
CO 3	Explain the use of virtualization and provisioning of resources in cloud.							
CO 4	Illustrate the thread, task and map reduce programming models using Aneka tool.							
CO 5	Identify the Data Center Environment in cloud computing.							

## UNIT I

### **Computing Paradigms:**

High-Performance Computing, Parallel Computing, Distributed Computing, Cluster Computing, Grid Computing, Cloud Computing, Biocomputing, Mobile Computing, Quantum Computing, Optical Computing, Nano computing, Network Computing.

### **Cloud Computing Fundamentals:**

Motivation for Cloud Computing: The Need for Cloud Computing. Defining Cloud Computing: NIST Definition of Cloud Computing, Computing Is a Service, Cloud Computing Is a Platform. Principles of Cloud computing: Five Essential Characteristics, Four Cloud Deployment Models, Three Service Offering Models, Cloud Ecosystem, Requirements for Cloud Services, Cloud Application, Benefits and Drawbacks.

## UNIT II

**Cloud Computing Architecture and Management :** Cloud Architecture, Anatomy of the Cloud, Network Connectivity in Cloud Computing, Applications on the Cloud, Managing the Cloud, Migrating Application to Cloud.



### **UNIT III**

**Cloud Deployment Models** : Private Cloud, Public Cloud, Community Cloud, Hybrid Cloud

**Cloud Service Models** : Infrastructure as a Service, Platform as a Service, Software as a Service, Other Cloud Service Models

### **UNIT IV**

**Programming Models in Cloud** : Cloud Application Development Platforms: Windows Azure, Google App Engine, Force.com, Manjrasoft Aneka

**Cloud Computing APIs**: Rackspace, IBM, Intel

**Software Development in Cloud** : Introduction, Different perspectives on SaaS development, New challenges, Cloud aware software development using PaaS technology.

### **UNIT V**

**Networking for Cloud Computing** : Introduction, Overview of Data Center Environment, Networking Issues in Data Centers.

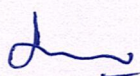
**Cloud Service Providers** : Introduction, EMC, Google, Amazon Web Services, Microsoft, IBM, Salesforce, Rackspace.

### **Text Books:**

1. K. Chandrasekaran, Essentials of Cloud Computing, CRC Press, 2015.
2. Barrie Sosinsky, Cloud Computing Bible, Wiley-India, 2010.
3. RajkumarBuyya, James Broberg, Andrzej M. Goscinski, Cloud Computing: Principles and Paradigms, Wiley, 2011.
4. Nikos Antonopoulos, Lee Gillam, Cloud Computing: Principles, Systems and Applications, Springer, 2012.

### **Reference Books:**

1. Cloud Computing: A Practical Approach, Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, Tata McGraw Hill.
2. Cloud Computing Theory and Practice: Dan C. Marinescu, Elsevier.
3. Cloud Computing Bible, Barrie Sosinsky, Wiley Publishing.
4. Cloud Computing and Virtualization, Dac-Nhuong Le, Raghavendra Kumar, Gia Nhu Nguyen, Jyir Moy Chatterjee, Wiley.



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Course Title		ARTIFICIAL INTELLIGENCE				B. Tech. VII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505703	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		4	0	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• To understand how a computer making intelligent decisions.</li><li>• To understand the searching techniques</li><li>• To know the knowledge representation and learning</li><li>• To enable the students to apply these techniques in application which involve perception, reasoning and learning</li><li>• To know the features of expert systems.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Posses the ability to select a search algorithm for a problem and characterize its time and space complexities.							
CO 2	Posses the skill for representing knowledge using appropriate technique							
CO 3	Understand the conceptual and computational trade-offs between the expressiveness of different formal representations.							
CO 4	Posses the ability in apply AI techniques to solve problems of Game playing, Expert Systems, Machine Learning and Natural Language Processing.							

### UNIT I

Introduction to Artificial Intelligence; Problem, Problem Spaces and Search; Heuristic Search Techniques.

### UNIT II

Knowledge Representation Issues, Predicate Logic, Representing Knowledge using Rules.

### UNIT III

Symbolic Reasoning under Uncertainty, Statistical Reasoning.

### UNIT IV

Weak Slot-and-Filler Structures, Strong Slot-and-Filler Structures, Knowledge Representation Summary.



## **UNIT V**


Game Playing, Natural Language Processing, Expert Systems.

### **Text Books:**

1. Rich, Knight, Nair: Artificial intelligence, Tata McGraw Hill, Third Edition 2009.
2. SarojKaushik. Artificial Intelligence. Cengage Learning, 2011.
3. Russell, Norvig: Artificial intelligence, A Modern Approach, Pearson Education, Second Edition. 2004.
4. Artificial Intelligence, George F Luger, 6<sup>th</sup> Edition, Pearson.

### **Reference Books:**

1. Introduction Artificial Intelligence and Experts Systems, Dan W. Patterson, Pearson.
2. Artificial Intelligence, ELA Kumar, Wiley.
3. Artificial Intelligence: A Guide to Intelligent Systems, Michael Negnevitsky, Pearson.

  
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Course Title	SOFTWARE TESTING					B. Tech. VII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505704	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		4	0	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• Basic software debugging methods.</li><li>• Various testing methodologies.</li><li>• The procedure for designing test cases.</li><li>• The significance of software testing.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Understand various testing methodologies.							
CO 2	Explain White box testing and Black box testing techniques.							
CO 3	Understand various testing and maintenance measures							
CO 4	Know how automated tools run tests significantly faster than human users and build a suite of tests that covers every feature in an application.							

### UNIT I

**Introduction:** Purpose of testing, Dichotomies, Model for testing, Consequences of bugs, Taxonomy of bugs.

**Flow graphs and Path testing:** Path testing basics, Predicates, Path Predicates and Achievable paths, Path Sensitizing, Path Instrumentation, and Application of path testing.

### UNIT II

**Paths, Path products and Regular expressions:** Path products & Path expression, Reduction Procedure, Regular Expressions & Flow Anomaly Detection.

**Dataflow testing:** Basics of dataflow testing, Strategies in dataflow testing, Application of dataflow testing.

### UNIT III

**Domain Testing:** Domains and Paths, Nice & Ugly Domains, Domain Testing, Domains and Interfaces Testing, Domains and Testability.

**Logic Based Testing:** Overview, Decision Tables, and Path Expressions.

### UNIT IV

**State, State Graphs and Transition Testing:** State Graphs, Good & Bad State Graphs, State Testing.

**Transaction Flow Testing:** Transaction Flows, Transaction Flow Testing Techniques.



## **UNIT V**


**Graph Matrices and Application:** Matrix of Graph, Power of a Matrix, Node Reduction Algorithm, Win runner Testing Tool.(Student should have exposure to the win runner testing tool).

### **Text Books:**

1. Software Testing techniques, Boris Beizer, Dreamtech, Second Edition.
2. The craft of software testing - Brian Marick, Pearson Education.
3. Software Testing, Third Edition, P.C.Jorgensen, Aurbach Publications (Dist.by SPD).
4. Software Testing, N.Chauhan, Oxford University Press.

### **Reference Books:**

1. Software Testing Tools, Dr.K.V.K.K.Prasad, Dreamtech.
2. Introduction to Software Testing, P.Ammann and J.Offutt, Cambridge Univ. Press.
3. Effective methods of Software Testing, Perry, John Wiley, Second Edition, 1999.
4. Software Testing Concepts and Tools, P.Nageswara Rao, Dreamtech Press.
5. Software Testing, M.G.Limaye, TMH.
6. Software Testing, Desikan, G.Ramesh, Pearson.
7. Foundations of Software Testing, D.Graham and Others, Cengage Learning.
8. Foundations of Software Testing, A.P.Mathur, Pearson.

  
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Course Title	COMPUTER GRAPHICS					B. Tech. VII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505705	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	1	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• To apply the rules and algorithms in generating graphical outputs.</li><li>• To develop multi-dimensional objects using suitable transformations.</li><li>• To Develop real-time rendering graphics.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Classify CRT, Color CRT, DVST, Flat Panel display devices and Graphical Input Devices.							
CO 2	Understand DDA, Bresenhams line drawing algorithms and Midpoint circle generating algorithms, clipping of polygons							
CO 3	Exemplify 2D & 3Dtranslation, rotation, reflection, scaling and shearing.							
CO 4	Compare RGB, CMY,YIQ, CMYK Color models.							
CO 5	Summarize types of animation, Animation sequence and morphing technique							

## UNIT I

**Introduction:** Usage of Graphics and their applications, Presentation Graphics- Computer Aided.

Design- Computer Art- Entertainment- Education and Training- Visualization- Image Processing Graphical User Interfaces.

**Overview of Graphics systems:** Video Display Devices- Raster Scan systems-random scan systems Graphics monitors and workstations-Input devices-hard copy devices- Graphics software.

## UNIT II

**Scan Converting Lines** – Basic Incremental algorithm, Midpoint algorithm and additional issues; Scan converting Circles, Scan Converting Ellipses, Solid Filling, Pattern Filling, Thick Primitives, Cohen – Sutherland line clipping algorithm, Parametric line clipping algorithms, Sutherland – Hodgeman polygon clipping algorithm, Generating characters.



### **UNIT III**

**Geometrical transformations** – 2D transformations, Homogeneous coordinates, Matrix representation of 2D transformations, Composition of 2D transformations, Window to view-port transformation, Matrix representation of 3D transformations, Composition of 3D transformations.

**Representing Curves and Surfaces** – Polygon meshes, Parametric cubic curves, Parametric bicubic surfaces and Quadratic surfaces.

### **UNIT IV**

**Viewing in 3D** – Projections, Specifying an arbitrary 3D view.

**Solid Modeling** – Representing Solids, Regularized Boolean set operations, Primitive instancing, Sweep Representation, Boundary Representations, Spatial-Partitioning Representations.

**Achromatic and Colored Light** – Achromatic light, Chromatic color, Color models for raster graphics, Reproducing color, Using color in computer graphics.

### **UNIT V**

**Illumination Models** – Ambient light, Diffuse reflection, Atmospheric attenuation.

**Shading Models** – Constant shading, Interpolated shading, Polygon mesh shading, Gouraud shading, Phong shading.

**Animation** – Conventional and Computer-Assisted animation, Animation languages, Methods of controlling animation, Basic rules of animation, Problems peculiar to animation.

### **Text Books:**

1. Foley, Van Dam, Feiner and Hughes, Computer Graphics – Principles and Practice, 2nd Edition in C, Pearson Education, 2004
2. Donald Hearn and M. Pauline Baker, Computer graphics, C version, Prentice – Hall, 1997.
3. William M. Newman, Robert F. Sproull, Principles of interactive computer graphics, 12th Edition, McGraw – Hill, 1986.
4. David F. Rogers, Rae A. Earnshaw, Computer Graphics Techniques: Theory and Practice, Springer-Verlag, 1990.



**Reference Books:**

1. Alexey Boreskov & Evgeniy Shikin, Computer Graphics: From Pixels to Programmable Graphics Hardware, CRC Press.
2. Computer Graphics using Open GL by Francis S Hill Jr Pearson Education, 2004.
3. David Salomon, Curves and Surfaces for Computer Graphics, Springer.



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Course Title	MOBILE COMPUTING					B. Tech. VII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505706	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	1	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>To make the student understand the concept of mobile computing paradigm, Its novel applications and limitations.</li><li>To understand the issues and solutions of various layers of mobile networks, namely MAC layer, Network Layer &amp; Transport Layer.</li><li>Understand the infrastructure of WSN.</li><li>Learn the architecture of WSN.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Students will be introduced to some existing applications of wireless sensor networks and GSM.							
CO 2	To have a good understanding of Mobile Computing and MAC.							
CO 3	Use protocols of Wireless Technologies for security implementation in mobile computing.							
CO 4	Follow standards in the usage of mobile communications.							
CO 5	Analyze the issues related to database design and data retrieval in mobile applications.							

### UNIT I:

**Wireless transmission:** Frequencies for radio transmission, Signals, Antennas, Signal propagation, Multiplexing, Modulation, Spread spectrum, Cellular systems.

### UNIT II:

**Medium access control:** Motivation for a Specialized MAC, SDMA, FDMA, TDMA, CDMA, Comparison of S/T/F/CDMA.

### UNIT III:

**Telecommunications System:** GSM, DECT, TETRA.

### UNIT IV:

**Wireless LAN:** Infrared Vs Radio Transmission, Infra Red and ad-hoc network, IEEE 802.11.



## **UNIT V:**

**Mobile Network Layer:** Mobile IP, Dynamic host Configuration protocol. Mobile Transport Layer: Traditional TCP, Classical TCP improvements.

### **Text Books:**

1. Jochen Schiller [2008], [Second Edition], Mobile Communications, Low price edition Pearson Education.
2. Gordon L. Stuber, Principles of Mobile Communication, Springer.
3. Jack M. Holtzman, David J. Goodman, Wireless & Mobile Communications, Springer.
4. Juha Korhonen, Introduction to 3G Mobile Communications, 2<sup>nd</sup> Edition, Artech House Boston, London.

### **Reference books:**

1. Talukder [2008], Mobile Computing: Technology, Applications & service creation, TMH.
2. Frank Adelstein, Sandeep K.S. Gupta, Golden G. Richard III and Loren Schwiebert, Fundamentals of Mobile and Pervasive Computing, Tata McGraw-Hill.
3. Nishith D. Tripathi & Jeffrey H. Reed, Cellular Communications: a comprehensive and Practical Guide, Wiley.



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Course Title	NATURAL LANGUAGE PROCESSING					B. Tech. VII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505707	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	1	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• Understand approaches to syntax and semantics in NLP.</li><li>• Understand current methods for statistical approaches to machine translation.</li><li>• Understand language modeling.</li><li>• Understand machine learning techniques used in NLP.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Understand the fundamentals required for Computational Linguistics							
CO 2	Understand the concepts of Language design, Text Transformer and their Products							
CO 3	Have the clear idea of language specifications using context and free grammars							
CO 4	Understand machine learning techniques used in NLP							

### UNIT I

Introduction to Natural Language Understanding, Syntactic Processing: Grammars and Parsing.

### UNIT II

Features and Augmented Grammars, Toward Efficient Parsing, Ambiguity Resolution.

### UNIT III

Statistical Methods: Probabilistic Context-Free Grammars, Best-First Parsing.

### UNIT IV

Semantic Interpretation: Linking Syntax and Semantics, Ambiguity Resolution, other Strategies for Semantic Interpretation.

### UNIT V

Context and World Knowledge: Using World Knowledge, Discourse Structure, Defining a Conversational Agent.



**Text Book:**

1. Natural Language Understanding – James Allen, Second Edition, Pearson Education.
2. Speech and Language Processing – Daniel Jurafsky, James H. Martin.
3. Foundations of Statistical Natural Language Processing – Christopher Manning, Hinrich Schutze, MIT Press.
4. Charniak, Eugene, Statistical Language Learning, MIT Press, 1993.

**Reference Books:**

1. Jurafsky, Dan and Martin, James, Speech and Language Processing, 2nd Edition, Prentice Hall, 2013-2014
2. Manning, Christopher and Henrich, Schutze, Foundations of Statistical Natural Language Processing, MIT Press, 1999.
3. Introduction to Natural Language Processing, Jacob Eisenstein, MIT Press.
4. Natural Language Processing In Action, Hobson Lane, Cole Howard & Hannes Max Hapke, Manning Publications.



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Course Title	INTERNET OF THINGS					B. Tech. VII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505708	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		4	0	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
Course Objectives: <ul style="list-style-type: none"><li>This course provides an overview on basic principles of IOT, various IOT platforms and application development.</li></ul>								
Course Outcomes: On successful completion of this course, the students will be able to								
CO 1	Understand the basic principles of IoT.							
CO 2	Differentiate the features of various IoT platforms.							
CO 3	Understand Python programming.							
CO 4	Understand IoT physical devices.							

## UNIT I

### **INTRODUCTION TO IoT:**

Definition and Characteristics of IoT, Physical Design of IoT, Logical Design of IoT, IoT Enabling Technologies, IoT Levels and Development Templates.

## UNIT II

### **DOMAIN SPECIFIC IoTS:**

Introduction, Home Automation, Cities, Environment, Energy, Retail, Logistics, Agriculture, Industry, Health & Lifestyle.

## UNIT III

### **IOT and M2M:**

Introduction, M2M, Difference between IoT and M2M, SDN and NFV for IoT

### **IoT Platform Design Methodology:**

Introduction, IoT Design Methodology, Case Study on IoT System for Weather Monitoring



#### **UNIT IV**

##### **Logical Design using Python:**

Introduction, Installing Python, Python Data types and Data Structures, Control Flow, Functions, Modules, Packages, File Handling, Data/Time Operations, classes, Python packages of Internet for IoT.

#### **UNIT V**

##### **IOT Physical Devices:**

What is an IOT device, basic building blocks of an IOT device, Exemplary device: Raspberry Pi, about the board, linux on raspberry Pi, raspberry Pi interfaces.

##### **Text books:**

1. ArshdeepBahga, Vijay Madisetti “ Internet of Things( A hands on approach)” 1ST edition, VPI publications,2014.
2. Getting Started with Arduino, 3<sup>rd</sup> Edition, Massimo Banzi and Michael Shiloh.
3. Getting Started with Raspberry pi, Matt Richardson & Shawn Wallace, O'Reilly – 2014

##### **Reference Book:**

1. Raj Kamal, “Internet of Things”, McGraw Hill, 1<sup>st</sup> Edition, 2016.
2. ArshdeepBahga, Vijay Madisetti “Internet of Things (A hands on approach)” IST edition, VPI publications, 2014.



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Course Title	SOFTWARE TESTING LAB					B. Tech. VII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505709	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		0	0	3	2	50	50	100
					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>This course helps the students to understand the procedure of testing. Student can come to know how to write the Test Cases in order to test the application. This course helps the students to know how to write the Testing Document. The course helps the student to learn the working of the Win runner Testing Tool.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	The students understand the process to be followed in the software development life cycle.							
CO 2	Automate the testing process by using several testing tools.							
CO 3	Design and implement projects using OO concepts.							
CO 4	Use the UML analysis and design diagrams.							

### List of Experiments

- Write programs in 'C' Language to demonstrate the working of the following constructs:
  - do...while
  - while
  - if...else
  - switch
  - for
- A program written in 'C' language for Matrix Multiplication fails! Introspect the causes for its failure and write down the possible reasons for its failure.
- Take any system (e.g. ATM system) and study its system specifications and report the various bugs.
- Write the test cases for any known application (e.g. Banking application)
- Create a test plan document for any application (e.g. Library Management System)
- Study of Win runner and its implementation. How Win Runner identifies GUI (Graphical User Interface) objects in an application and describes the two modes for organizing GUI map files.




7. How to record a test script and explains the basics of Test Script Language (TSL) using Win runner Testing Tool.
8. How to create a test that checks GUI objects and compare the behavior of GUI objects in different versions of the sample application using Win runner testing tool.
9. How to create and run a test that checks bitmaps in a application and run the test on different versions of the sample application using Win runner testing tool.
10. How to Create Data-Driven Tests which supports to run a single test on several sets of data from a data table using Win runner testing tool.
11. How to create a batch test that automatically runs the tests using Win runner testing tool.
12. How to synchronize a test when the application responds slowly using Win runner testing tool .

**Text Books:**

1. "Effective software Testing Methodologies" by William .E. Perry 3<sup>rd</sup> Edition.
2. Software Testing techniques, Boris Beizer, Dreamtech, Second Edition.
3. The craft of software testing - Brian Marick, Pearson Education.
4. "Software Testing Tools", Dr.K.V.K.K.Prasad, Dreamtech.

**Reference Books:**

1. Software Testing Tools, Dr.K.V.K.K.Prasad, Dreamtech.
2. Introduction to Software Testing, P.Ammann and J.Offutt, Cambridge Univ. Press.
3. Effective methods of Software Testing, Perry, John Wiley, Second Edition, 1999.
4. Software Testing Concepts and Tools, P.Nageswara Rao, Dreamtech Press.
5. Software Testing, M.G.Limaye, TMH.
6. Software Testing, Desikan, G.Ramesh, Pearson.
7. Foundations of Software Testing, D.Graham and Others, Cengage Learning.
8. Foundations of Software Testing, A.P.Mathur, Pearson.

  
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Course Title	INTERNET OF THINGS LAB					B. Tech. VII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505710	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		0	0	3	2	50	50	100
					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• Student should get the knowledge of Python and Eclipse background.</li><li>• Student should get the knowledge of Control statements in python.</li><li>• Student should get the knowledge of Arduino IDE and different types of Arduino Board.</li><li>• Student should get the knowledge of Raspberry Pi.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Student will be aware of Python and Eclipse background.							
CO 2	Student will develop basic programs in python.							
CO 3	Student will be get knowledge of Arduino IDE & Arduino Boards.							
CO 4	Student will get knowledge on Raspberry Pi.							

#### List of Experiments

1. Study and Install Python in Eclipse and data types in python.
2. Write a Program for arithmetic operation in Python.
3. Write a Program for looping statement in Python.
4. Study and Install IDE of Arduino and different types of Arduino
5. Digital Output (Blinking of LED)
6. Digital Input (Push Button)
7. Analog Output (Fading)
8. Communication between Computer and Arduino
9. Displaying messages on LCD
10. Servo Motor Control
11. Study and Configure Raspberry Pi
12. Write a Program for LED blink using Raspberry Pi




**Text books:**

1. Getting Started with Arduino, 3<sup>rd</sup> Edition, Massimo Banzi and Michael Shiloh.
2. Getting Started with Raspberry pi, Matt Richardson & Shawn Wallace, O'Reilly – 2014.
3. ArshdeepBahga, Vijay Madisetti "Internet of Things (A hands on approach)" 1ST edition, VPI publications, 2014.

**Reference Book:**

1. Raj Kamal, "Internet of Things", McGraw Hill, 1<sup>st</sup> Edition, 2016.
2. Arshdeep Bahga, Vijay Madisetti "Internet of Things (A hands on approach)" IST edition, VPI publications, 2014

  
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Course Title		SOFTWARE PROJECT MANAGEMENT				B. Tech. VIII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505801	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		4	0	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• Understanding the specific roles within a software organization as related to project and process management.</li><li>• Describe the principles, techniques, methods &amp; tools for model-based management of software projects, assurance of product quality and process adherence (quality assurance), as well as experience-based creation &amp; improvement of models (process management).</li><li>• Understanding the basic infrastructure competences (e.g., process modeling and measurement).</li><li>• Understanding the basic steps of project planning, project management, quality assurance.</li><li>• Process management and their relationships.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Understands how different management and development practices affect software and process quality.							
CO 2	Describe and determine the purpose and importance of project management from the perspectives of planning tracking and completion of project.							
CO 3	Compare and differentiate organization structures and project structures.							
CO 4	Able to analyze the Case Study: CCPDS-R(The command Center Processing and Display System-Replacement.							
CO 5	Understand Process management and their relationships.							

### UNIT I

Conventional Software Management: The waterfall model, conventional software Management performance.

Evolution of Software Economics: Software Economics, pragmatic software cost estimation.

Improving Software Economics: Reducing Software product size, improving software processes, improving team effectiveness, improving automation, Achieving required quality, peer inspections.



## **UNIT II**

The old way and the new: The principles of conventional software Engineering, principles of modern software management, transitioning to an iterative process.

Life cycle phases: Engineering and production stages, Inception, Elaboration, Construction, Transition phases.

Artifacts of the process: The artifact sets, Management artifacts, Engineering artifacts, pragmatic artifacts.

Model based software architectures: A Management perspective and technical perspective.

## **UNIT III**

Work Flows of the process: Software process workflows, Iteration workflows.

Checkpoints of the process: Major mile stones, Minor Milestones, Periodic status assessments.

Iterative Process Planning: Work breakdown structures, planning guidelines, cost and schedule estimating, Iteration planning process, Pragmatic planning.

## **UNIT IV**

Project Organizations and Responsibilities: Line-of-Business Organizations, Project Organizations, evolution of Organizations.

Process Automation: Automation Building blocks, The Project Environment.

Project Control and Process instrumentation: The seven core Metrics, Management indicators, quality indicators, life cycle expectations, pragmatic Software Metrics, Metrics automation.

## **UNIT V**

Tailoring the Process: Process discriminates.

Future Software Project Management: Modern Project Profiles, Next generation Software economics, modern process transitions.

Case Study: The command Center Processing and Display system- Replacement (CCPDS-R).  
Process Improvement and Mapping to the CMM.



**Text Books:**

1. Software Project Management, Walker Royce: Pearson Education, 2005.
2. Software Project Management, Bob Hughes and Mike Cotterell, Tata McGraw-Hill Edition.
3. Software Project Management, Joel Henry, Pearson Education.
4. Software Project Management in practice, Pankaj Jalote, Pearson Education.2005.

**Reference Books :**

1. Software Project Management, Shere K.D, 1998, PHI.
2. Introduction to Software Project Management, Adolfo Villafiorita, CRC Press.
3. Software Project Management: A Process Driven Approach, Ashfaque Ahmed, CRC Press.



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Course Title	ETHICAL HACKING					B. Tech. VIII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505802	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		4	0	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>To learn about the importance of information security</li><li>To learn different scanning and enumeration methodologies and tools</li><li>To understand various hacking techniques and attacks</li><li>To be exposed to programming languages for security professionals</li><li>To get familiarized with the different phases in penetration testing</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Defend hacking attacks and protect data assets							
CO 2	Defend a computer against a variety of security attacks using various tools							
CO 3	Practice and use safe techniques on the World Wide Web							
CO 4	Get familiarized with the different phases in penetration testing							

### UNIT I

**INTRODUCTION TO HACKING** Introduction to Hacking – Importance of Security – Elements of Security – Phases of an Attack – Types of Hacker Attacks – Hacktivism – Vulnerability Research – Introduction to Footprinting – Information Gathering Methodology – Footprinting Tools – WHOIS Tools – DNS Information Tools – Locating the Network Range – Meta Search Engines.

### UNIT II

**SCANNING AND ENUMERATION** Introduction to Scanning – Objectives – Scanning Methodology – Tools – Introduction to Enumeration – Enumeration Techniques – Enumeration Procedure – Tools.

### UNIT III

**SYSTEM HACKING** Introduction – Cracking Passwords – Password Cracking Websites – Password Guessing – Password Cracking Tools – Password Cracking Counter measures – Escalating Privileges – Executing Applications – Keyloggers and Spyware.



## **UNIT IV**

### **PROGRAMMING FOR SECURITY PROFESSIONALS**

Programming Fundamentals – C language – HTML – Perl – Windows OS Vulnerabilities – Tools for Identifying Vulnerabilities – Countermeasures – Linux OS Vulnerabilities – Tools for Identifying Vulnerabilities – Countermeasures.

## **UNIT V**

### **PENETRATION TESTING**

Introduction – Security Assessments – Types of Penetration Testing- Phases of Penetration Testing –Tools – Choosing Different Types of Pen-Test Tools – Penetration Testing Tools

#### **Text Books:**

1. Ec-Council, “Ethical Hacking and Countermeasures: Attack Phases”, Delmar Cengage Learning, 2009.
2. Michael T. Simpson, Kent Backman, James E. Corley, “Hands-On Ethical Hacking and Network Defense”, Cengage Learning, 2012.
3. Patrick Engebretson, “The Basics of Hacking and Penetration Testing – Ethical Hacking and Penetration Testing Made Easy”, Syngress Media, Second Revised Edition, 2013.
4. Jon Erickson, “Hacking: The Art of Exploitation”, No Starch Press, Second Edition, 2008.

#### **Reference Books:**

1. An Unofficial Guide to Ethical Hacking, Ankit Fadia, Macmillan.
2. Ethical Hacking and Penetration Testing Guide, Rafay Baloch, CRC Press.
3. Lean Ethical Hacking from Scratch, Zaid Sabih, Packet.



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Course Title	MANAGEEMNT SCIENCE					B. Tech. VIII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1525803	HSC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	1	0	3	30	70	100
Mid Exam Duration: 90 Min.					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• Provide a basic understanding of management science including analytical problem solving and communications skills.</li><li>• Prepare for practice in a field that sees rapid changes in tools, problems and opportunities.</li><li>• Prepare for graduate study and self-development over an entire career.</li><li>• Provide ability to use the techniques, skills and modern engineering tools necessary for engineering practices.</li><li>• The broad education necessary to understand the impact of engineering solutions in a global and societal context.</li><li>• Background necessary for admission to top professional graduate engineering or business programs.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Know the principles and functions of management							
CO 2	Understand the various concepts, approaches and theories of management in the real situation.							
CO 3	Compare and contrast organization structure designs and charts diligently with theoretical learning concepts							
CO 4	To be aware of the role, functions and functioning of human resource department of the organizations.							
CO 5	Identify the elements of Operations management and develop PERT/CPM Charts for projects of an enterprise and estimate time & cost of project.							
CO 6	Analyze the concept of strategic planning and implementation and apply on the decisions in strategic management.							

## UNIT I

### **INTRODUCTION TO MANGEMENT:**

Concept of Management-Administration, Organization-Function of Management, Evolution of Management Thought-Organization: Principles of Organisation-Types-Organisation charts-managerial objectives and Social responsibilities of Management.



## **UNIT II**

### **STRATEGIC MANAGEMENT:**

Corporate Planning-mission, objectives and programmes-SWOT Analysis-Strategy Formulation and Implementation.-Plant location and Plant Layout concepts-Production control.

## **UNIT III**

### **HRM AND INVENTORY MANAGEMENT:**

Human Resource Management –Manpower Planning-Personnel Management-Basic functions of Personnel Management, Job Evaluation and Merit Rating-Incentive plans.

**Inventory Management:** Need for Inventory Control; EOQ,ABC Analysis, Purchase Procedure, Maintaining Store Records.

## **UNIT IV**

### **OPERATIONS MANAGEMENT:**

Productivity- Job, Batch and Mass Production-Work Study-Basic procedure involved in Method Study and Work Measurement. Statistical Quality Control-c chart, p chart, R chart, Acceptance sampling Deming's contribution to Quality.


## **UNIT V**

### **PROJECT MANAGEMENT:**

Network Analysis to project management- PERT/CPM- Application of network techniques to engineering problems-Cost Analysis-Project Crashing.

### **Text Books:**


1. Aryasri: Management Science,TMH,2008.
2. Koontz& Weihrich: Essentials of Management,6/e,TMH,2005
3. Kanishka Bedi: Production and Operations Management, Oxford University Press,2004
4. Parnell: Strategic Management, Biztantra, 2003.
5. LS Srinath: PERT/CPM,Affiliated East-West Press,2005.

  
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**Reference Books:**

1. Industrial Engineering management science :Banga T Rshama SC Agarwal N K,  
Cambridge.
2. Management science: Kumthekar MM hukeri Nand Kumar ,EP
3. Practical management science:Winston Wayne Lchristian Albrought SBroadie  
mark,Cengage
4. Management Science, Logistics ,and operation research; John wang(montaclair state  
university, USA),IGI

  
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Course Title	DIGITAL IMAGE PROCESSING					B. Tech. VIII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505804	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		4	0	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• Develop an overview of the field of image processing.</li><li>• Understand the Image segmentation, enhancement, compression etc., approaches and how to implement them.</li><li>• Prepare to read the current image processing research literature.</li><li>• Gain experience in applying image processing algorithms to real problems.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Examine various types of images, intensity transformations and spatial filtering.							
CO 2	Develop Fourier transforms for image processing in frequency domain.							
CO 3	Understand Color transformations and Morphological algorithms							
CO 4	Evaluate the methodologies for image segmentation, restoration, topology, etc.							
CO 5	Analyze Image data compression techniques.							

### UNIT I

**Introduction, Digital Image and its properties** – Basic concepts, Image Digitization, Digital Image properties Data structures for Image analysis-Levels of image data representation, Traditional image data structures, Hierarchical structures.

### UNIT II

**Image Preprocessing** – Pixel brightness transformations, Geometric transformation.

**Image Restoration** -- A Model of Restoration Process, Noise Models, Restoration in the presence of Noise only-Spatial Filtering – Mean Filters: Arithmetic Mean filter, Geometric Mean Filter, Order Statistic Filters – Median Filter, Max and Min filters; Periodic Noise Reduction by Frequency Domain Filtering – Bandpass Filters; Minimum Mean-square Error Restoration.



### **UNIT III**

**Color Image Processing** -- Color Fundamentals, Color Models, Converting Colors to different models, Color Transformation, Smoothing and Sharpening, Color Segmentation

**Morphological Image Processing** -- Introduction, Logic Operations involving Binary Images, Dilation and Erosion, Opening and Closing, Morphological Algorithms – Boundary Extraction, Region Filling, Extraction of Connected Components, Convex Hull, Thinning, Thickening

### **UNIT IV**

**Segmentation** - Introduction, Region Extraction, Pixel-Based Approach, Multi-level Thresholding, Local Thresholding, Region-based Approach, Edge and Line Detection: Edge Detection, Edge Operators, Pattern Fitting Approach, Edge Linking and Edge Following, Edge Elements Extraction by Thresholding, Edge Detector Performance, Line Detection, Corner Detection.

### **UNIT V**

**Linear discrete image transforms** – basic theory, fourier transform, Hadamard transform, Discrete cosine transform, Wavelets, Applications of discrete image transforms.

**Image data compression** – Image data properties, Discrete image transform in image data compression, predictive compression methods, Vector quantization, hierarchical and progressive compression methods, Comparison of compression methods, JPEG and MPEG image compression.



### **Text Books:**

1. Milan Sonka, Vaclav Hlavac and Roger Boyle, Image processing, Analysis and Machine Vision, Second Edition, Thomson, Vikas Publishing House.
2. Digital Image Processing 2<sup>nd</sup> Edition, Rafael C. Gonzalevez and Richard E. Woods. Published by: Pearson Education.
3. Digital Image Processing and Computer Vision, R.J. Schalkoff. Published by: John Wiley and Sons, NY.
4. Fundamentals of Digital Image Processing, A.K. Jain. Published by Prentice Hall, Upper Saddle River, NJ

### **Reference Books:**

1. Digital Image Processing Using MAT Lab, Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins, Pearson.
2. Digital Image Processing: An Algorithmic Approach with MAT Lab, Uvais Qidwai, C.H.Chen, CRC Press.
3. Digital Image Processing, S. Jayaraman, S. Esakkirajan, T. Veera Kumr, Tata McGraw-Hill.



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K A D : C



Course Title	SOCIAL NETWORK MINING AND ANALYSIS					B. Tech. VIII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505805	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		4	0	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
Course Objectives:								
<ul style="list-style-type: none"><li>To gain knowledge about the current web development and emergence of social web</li><li>To study about the modeling, aggregating and knowledge representation of semantic web</li><li>To appreciate the use of machine learning approaches for web content mining</li><li>To learn about the extraction and mining tools for social networks</li><li>To gain knowledge on web personalization and web visualization of social networks</li></ul>								
Course Outcomes: On successful completion of this course, the students will be able to								
CO 1	Apply knowledge for current Web development in the era of social Web							
CO 2	Model, aggregate and represent knowledge for Semantic Web							
CO 3	Use machine learning approaches for Web Content Mining							
CO 4	Design extraction and mining tools for Social networks							
CO 5	Develop personalized web sites and visualization for Social networks							

## UNIT I

### INTRODUCTION TO SOCIAL NETWORK ANALYSIS AND KNOWLEDGE REPRESENTATION

Introduction to Web - Limitations of current Web – Development of Semantic Web – Emergence of the Social Web - Network analysis - Development of Social Network Analysis - Key concepts and measures in network analysis- Knowledge Representation on the Semantic Web – Ontology languages for the Semantic Web – RDF and OWL - Modeling and aggregating social network data.

## UNIT II

### SOCIAL MEDIA MINING

Data Mining Essential –Data Mining Algorithm - Web Content Mining – Supervised Learning – Decision tree- Naïve Bayesian Text Classification - Support Vector Machines - Ensemble of Classifiers. Unsupervised Learning - K-means Clustering - Hierarchical Clustering –Partially Supervised Learning – Markov Models - Probability-Based Clustering - Classification and



Clustering – Vector Space Model – Latent semantic Indexing – Automatic Topic Extraction -  
Opinion Mining and Sentiment Analysis – Document Sentiment Classification.

### **UNIT III**

#### **EXTRACTION AND MINING COMMUNITITES IN WEB SOCIAL NETWROKS**

Extracting evolution of Web Community from a Series of Web Archive - Detecting Communities in Social Networks - Definition of Community - Evaluating Communities - Methods for Community Detection & Mining - Applications of Community Mining Algorithms - Tools for Detecting Communities Social Network Infrastructures and Communities - Decentralized Online Social Networks- Multi- Relational Characterization of Dynamic Social Network Communities.

### **UNIT IV**

#### **HUMAN BEHAVIOR ANALYSIS AND PRIVACY ISSUES**

Understanding and Predicting Human Behavior for Social Communities - User Data Management, Inference and Distribution - Enabling New Human Experiences - Reality Mining - Context-Awareness - Privacy in Online Social Networks - Trust in Online Environment - Trust Models Based on Subjective Logic - Trust Network Analysis - Trust Transitivity Analysis - Combining Trust and Reputation – Trust Derivation Based on Trust Comparisons - Attack Spectrum and Countermeasures

### **UNIT V**

#### **VISUALIZATION AND APPLICATIONS OF SOCIAL NETWORKS**

Graph Theory- Centrality- Clustering - Node-Edge Diagrams, Matrix representation, Visualizing Online Social Networks, Visualizing Social Networks with Matrix-Based Representations- Matrix +Node-Link Diagrams, Hybrid Representations - Applications - Covert Networks - Community Welfare –Collaboration Networks - Co-Citation Networks- Recommendation in Social Media: Challenges-Classical Recommendation Algorithms-Recommendation Using Social Context- Evaluating Recommendations.



### **Text Books:**

1. Peter Mika, "Social networks and the Semantic Web", Springer, 2007.
2. Borko Furht, "Handbook of Social Network Technologies and Applications", Springer, 2010.
3. Bing Liu, "Web Data Mining: Exploring Hyperlinks, Contents, and Usage Data (Data- Centric Systems and Applications)", Springer; Second Edition, 2011.
4. Reza Zafarani, Mohammad Ali Abbasi, Huan Liu, "Social Media Mining", Cambridge University Press, 2014.

### **Reference Books:**

1. Guandong Xu, Yanchun Zhang and Lin Li, "Web Mining and Social Networking Techniques and applications", Springer, 2011.
2. Dion Goh and Schubert Foo, "Social information retrieval systems: emerging technologies and Applications for searching the Web effectively", Idea Group, 2007.
3. Max Chevalier, Christine Julien and Chantal Soulé-Dupuy, "Collaborative and social Information retrieval and access: Techniques for Improved User Modelling", Information Science Reference, 2009.
4. John G. Breslin, Alexandre Passant and Stefan Decker, "The Social Semantic Web", Springer, 2010.



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Course Title	SOFT COMPUTING					B. Tech. VIII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505806	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		4	0	0	3	30	70	100
Mid Exam Duration: 90 Min					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• To learn the key aspects of Soft computing and Neural networks</li><li>• To study the fuzzy logic components</li><li>• To gain insight onto neuro fuzzy modeling and control</li><li>• To know about the components and building block hypothesis of genetic algorithm</li><li>• To gain knowledge in machine learning through Support Vector Machines</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Discuss on machine learning through neural networks							
CO 2	Apply knowledge in developing a Fuzzy expert system							
CO 3	Model Neuro Fuzzy system for clustering and classification							
CO 4	Discover knowledge to develop Genetic Algorithm and Support vector machine based machine learning system							

## UNIT I

### INTRODUCTION TO SOFT COMPUTING

Evolution of Computing - Soft Computing Constituents – From Conventional AI to Computational Intelligence - Machine Learning Basics.

## UNIT II

### GENETIC ALGORITHMS

Introduction to Genetic Algorithms (GA) – Applications of GA - Building block hypothesis- Representation– Fitness Measures – Genetic Operators-. GA based Machine Learning.

## UNIT III

### NEURAL NETWORKS

Machine Learning using Neural Network, Adaptive Networks – Feed Forward Networks – Supervised Learning Neural Networks – Radial Basis Function Networks - Reinforcement Learning – Unsupervised Learning Neural Networks – Adaptive Resonance Architectures – Advances in Neural Networks.



#### **UNIT IV**

##### **FUZZY LOGIC**

Fuzzy Sets – Operations on Fuzzy Sets – Fuzzy Relations – Membership Functions-Fuzzy Rules and Fuzzy Reasoning – Fuzzy Inference Systems – Fuzzy Expert Systems – Fuzzy Decision Making.

#### **UNIT V**

##### **NEURO-FUZZY MODELING**


Adaptive Neuro-Fuzzy Inference Systems – Coactive Neuro-Fuzzy Modeling – Classification and Regression Trees – Data Clustering Algorithms – Rule base Structure Identification – Neuro-Fuzzy Control – Case Studies.

##### **Text Books:**

1. Jyh-Shing Roger Jang, Chuen-Tsai Sun, Eiji Mizutani, “Neuro-Fuzzy and Soft Computing”, Prentice-Hall of India, 2002.
2. Kwang H.Lee, “First course on Fuzzy Theory and Applications”, Springer, 2005.
3. George J. Klir and Bo Yuan, “Fuzzy Sets and Fuzzy Logic-Theory and Applications”, Prentice Hall, 1996.
4. James A. Freeman and David M. Skapura, “Neural Networks Algorithms, Applications, and Programming Techniques”, Addison Wesley, 2003.

##### **Reference Books:**

1. David E.Goldberg, “Genetic Algorithms in Search, Optimization and Machine Learning”, Addison Wesley, 1989.
2. Mitchell Melanie, “An Introduction to Genetic Algorithm”, MIT Press, 1996.
3. S.N.Sivanandam, S.N.Deepa, “Introduction to Genetic Algorithms”, Springer, 2008 edition.

  
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Course Title	TECHNICAL SEMINAR					B.Tech VIII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505807	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		0	0	0	4	100	--	100
Internal Assessment								
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>Identify and compare technical and practical issues related to the area of course specialization.</li><li>Outline annotated bibliography of research demonstrating scholarly skills.</li><li>Prepare a well-organized report employing elements of technical writing and critical thinking.</li><li>Demonstrate the ability to describe, interpret and analyze technical issues and develop competence in presenting</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Establish motivation for any topic of interest and develop a thought process for technical presentation.							
CO 2	Organize a detailed literature survey and build a document with respect to technical publications.							
CO 3	Analysis and comprehension of proof-of-concept and related data.							
CO 4	Effective presentation and improve soft skills.							
CO 5	Make use of new and recent technology for creating technical reports.							

#### GUIDELINES FOR TECHNICAL SEMINAR

Seminar is an important component of learning in an Engineering College, where the student gets acquainted with preparing a report & presentation on a topic.

#### PARAMETERS OF EVALUATION:

1. The seminar shall have topic approved by the faculty.
2. The seminar is evaluated for 100 marks for internal.
3. The students shall be required to submit the rough drafts of the seminar.
4. Faculty shall make suggestions for modification in the rough draft. The final draft shall be presented by the student.



5. Presentation schedules will be prepared by Department in line with the academic calendar.

**The Seminars shall be evaluated as follows:**

**Rough Draft:**

In this stage, the student should collect the information from various sources on the topic and collate them in a systematic manner. He/ She may take the help of the concerned faculty.

The report should be typed in "MS-Word" file with "Times New Roman" font, with font size of 16 for main heading, 14 for sub-headings and 12 for the body text. The seminar report contains relevant diagrams, pictures and illustrations. It should normally contain 10 to 15 pages.

1.	Topic, name of the student & faculty	1 Page
2.	List of contents	1 Page
3.	Introduction	1 Page
4.	Descriptions of the topic (point-wise)	5 – 10 Pages
5.	Conclusion	1 Page
6.	References/Bibliography	1 Page

The soft copy of the rough draft of the seminar presentation in MS Power Point format along with the draft report should be submitted to the concerned faculty, within stipulated time.

The evaluation of the technical seminar report shall generally be based upon the following: Within one week of the submission of the rough draft, the students are to submit the final draft incorporating the suggestions made by the faculty.



**Presentation:**

After finalization of the final draft, the students shall be allotted dates for presentation (in the designated seminar classes) and they shall then present it in presence of students, Faculty & Technical Seminar In- charge.


The student shall submit 3 copies of the Report neatly bound. The students shall also distribute the title and abstract of the seminar in hard copy to the Technical Seminar In-charge. The final presentation has to be delivered with 18-25 slides. The time duration for presentation is 15 to 20 minutes.

The evaluation of the Presentation shall generally be based upon the following.

1.	Punctuality in submission of Seminar Report	20 Marks
2.	Reports and Contents of Presentation	20 Marks
3.	Depth of the students' knowledge in the subject	20 Marks
4.	Relevance and interest the topic creates	15 Marks
5.	Ability to involve the spectators	15 Marks
6.	Question answer session	10 Marks
	<b>Total</b>	<b>100 Marks</b>

**WHO WILL EVALUATE?**

The presentation of the seminar topics shall be made before an internal evaluation committee comprising the Head of the Department or his/her nominee, seminar in-charge and a senior faculty of the department.

  
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Course Title	PROJECT WORK					B.Tech VIII Sem CSE (R15)		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1505808	PJ	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		4	0	0	10	50	50	100
Internal Assessment					External Assessment			
Course Objectives:								
<ul style="list-style-type: none"><li>Acquire and apply new knowledge as needed, using appropriate learning strategies.</li></ul>								
Course Outcomes: On successful completion of this course, the students will be able to								
CO 1	Demonstrate a technical knowledge of their selected project topic.							
CO 2	Understand problem identification, formulation and solution.							
CO 3	Design engineering solutions to complex problems utilizing a systems approach.							
CO 4	Communicate with engineers and the community at large in written an oral form.							
CO 5	Demonstrate the knowledge, skills and attitudes of a professional engineer.							


### **GUIDELINES FOR PROJECT**

The prime objective of the project work is to imbibe students with technical, analytical and innovative ideas. The students will be able to learn theoretical and practical approaches pertaining to software applications development. A team of 4-5 students formed as a group and work under the supervision of a departmental faculty. Associating the students to solve real world problems identified within the department. The project work normally includes:

1. Literature survey on existing problem/ topic from viable sources.
2. Eliciting the problem-solving approach/methodologies and making the feasibility study.
3. The team should perform an extensive software requirements analysis.
4. Preparing an abstract on the selected topic and present before Departmental Review Committee. (DRC).



5. Preparing a roadmap to design, analyze, implement, evaluate/test considering functional, non-functional aspects and finally, deploy the application/product/software service.
6. Detailed Analysis/Design /Simulation as needed.
7. Final development of product/process conducting testing and specifying the results, conclusions and future scope.
8. Preparing a project report in the standard format for being evaluated by the Department Review Committee (DRC).
9. Final Project presentation / execution before Departmental Review Committee (DRC)



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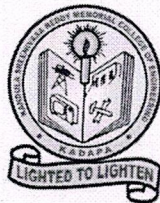
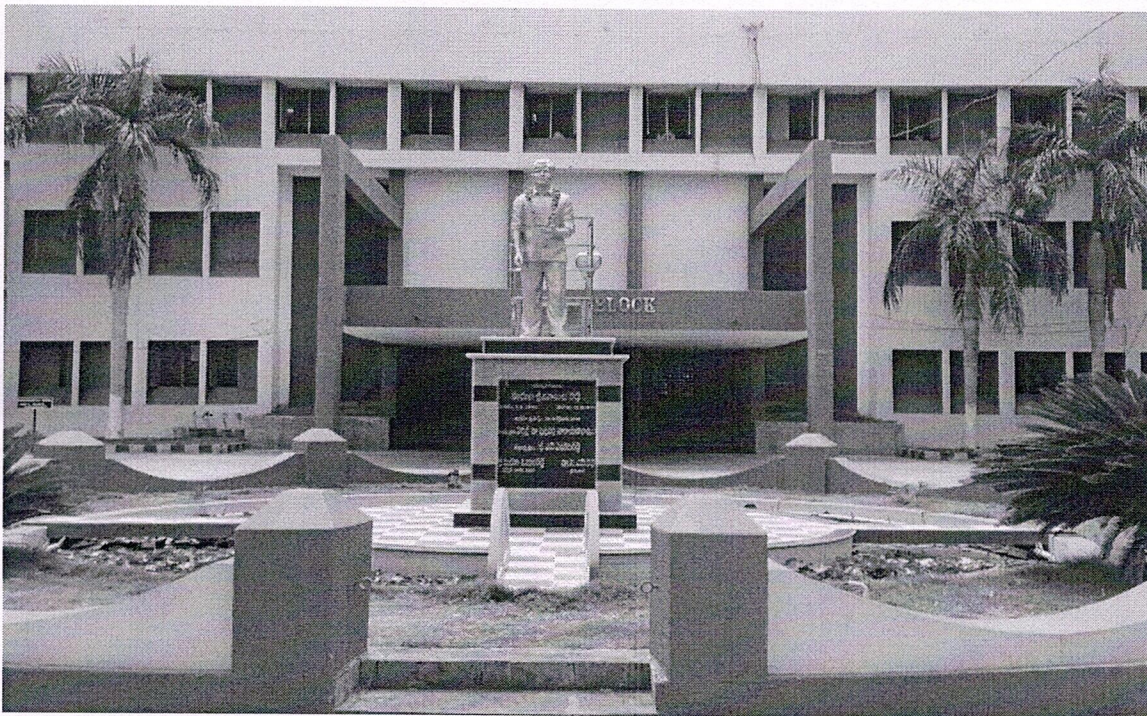
**DEPARTMENT OF  
COMPUTER SCIENCE AND ENGINEERING**

**COURSE STRUCTURE AND SYLLABUS**

**FOR**

**B.Tech CSE (I Sem - VIII Sem) (R18 Regulations)**

**(Effective from 2018-19 for Regular students and from 2019-20 for Later  
Entry students)**



**KANDULA SREENIVASA REDDY MEMORIAL COLLEGE OF  
ENGINEERING(AUTONOMOUS)**

**KADAPA - 516005, AP**

**(Approved by AICTE, Affiliated to JNTUA, Ananthapuramu, Accredited by NAAC)  
(An ISO 9001-2008 Certified Institution)**



## COMPUTER SCIENCE AND ENGINEERING

### I Semester

Subject Code	Subject Category	Course Name	L	T	P	IM	EM	CR
1821101	BSC	Mathematics – I	3	1	0	30	70	4
1822104	BSC	Engineering Physics	3	1	0	30	70	4
1802103	ESC	Basic Electrical Engineering	3	1	0	30	70	4
1803107	ESC	Engineering Graphics & Design	1	0	4	50	50	3
1822108	BSC	Engineering Physics Lab	0	0	3	50	50	1.5
1802109	ESC	Basic Electrical Engineering Lab	0	0	2	50	50	1
1803110	ESC	Workshop and Manufacturing Practices	1	0	4	50	50	3
<b>TOTAL</b>			<b>11</b>	<b>3</b>	<b>13</b>	<b>290</b>	<b>410</b>	<b>20.5</b>

### II Semester

Subject Code	Subject Category	Course Name	L	T	P	IM	EM	CR
1821201	BSC	Mathematics – II	3	1	0	30	70	4
1823202	BSC	Engineering Chemistry	3	1	0	30	70	4
1824203	HSMC	English	2	0	0	30	70	2
1805204	ESC	Programming for Problem Solving	3	0	0	30	70	3
1823207	BSC	Chemistry Lab	0	0	3	50	50	1.5
1805208	ESC	Programming for Problem Solving Lab	0	0	4	50	50	2
1824209	HSMC	English Lab	0	0	2	50	50	1
<b>TOTAL</b>			<b>11</b>	<b>2</b>	<b>9</b>	<b>270</b>	<b>430</b>	<b>17.5</b>

### III Semester

Subject Code	Subject Category	Course Name	L	T	P	IM	EM	CR
18993M1	MC	Environmental Science (Mandatory Course-1)	2	0	0	30	--	0
1804302	PN	Basics of Electronics Engineering	3	0	0	30	70	3
1805303	PCC	Data Structures	3	0	0	30	70	3
1805304	PCC	Discrete Mathematics	3	0	0	30	70	3
1805305	PCC	Digital Logic Design	3	0	0	30	70	3
1805306	PCC	Python Programming	3	0	0	30	70	3
1825307	HSMC	Managerial Economics and Financial Accounting	3	0	0	30	70	3
1814311	PN	Basics of Electronics Engineering Lab	0	0	2	50	50	1
1805309	PCC	Data Structures Lab	0	0	3	50	50	1.5
1805310	PCC	Python Programming Lab	0	0	3	50	50	1.5
<b>TOTAL</b>			<b>20</b>	<b>0</b>	<b>8</b>	<b>360</b>	<b>570</b>	<b>22</b>

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**IV SEMESTER**

Subject Code	Subject Category	Course Name	L	T	P	IM	EM	CR
1823401	BSC	Biology for Engineers	2	0	0	30	70	2
1821402	BSC	Probability & Statistics	3	0	0	30	70	3
1805403	PCC	Computer Organization	3	0	0	30	70	3
1805404	PCC	Operating Systems	3	0	0	30	70	3
1805405	PCC	Design and Analysis of Algorithms	3	0	0	30	70	3
1805406	PCC	Java Programming	3	0	0	30	70	3
1805407	PCC	Formal Languages and Automata Theory	3	0	0	30	70	3
1805408	PCC	Java Programming lab	0	0	2	50	50	1
1805410	PCC	Operating Systems Lab	0	0	2	50	50	1
<b>TOTAL</b>			<b>20</b>	<b>0</b>	<b>4</b>	<b>310</b>	<b>590</b>	<b>22</b>

**V SEMESTER**

Subject Code	Subject Category	Course Name	L	T	P	IM	EM	CR
1805501	PCC	Web Technologies	2	0	0	30	70	2
1805502	PCC	Data Base Management Systems	3	0	0	30	70	3
1805503	PCC	Computer Networks	3	0	0	30	70	3
1805504	PCC	Software Engineering	3	0	0	30	70	3
1805505 1805506 1805507	PEC	<b>Professional Elective-1</b> 1. Human Computer Interaction 2. Multimedia Systems 3. Distributed Systems	3	0	0	30	70	3
1805508	PCC	Compiler Design	3	0	0	30	70	3
1825509	PCC	Constitution of India	2	-	-	30	--	0
1805510	PCC	Databases Lab	0	0	2	50	50	1
1805511	PCC	Web Technologies Lab	0	0	2	50	50	1
1824512	HSC	Advanced English and Communications Skills lab	0	0	2	50	50	1
1805513	Project	Socially Relevant Project	0	0	4	100	--	2
<b>TOTAL</b>			<b>19</b>	<b>0</b>	<b>10</b>	<b>460</b>	<b>570</b>	<b>22</b>



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### VI SEMESTER

Subject Code	Subject Category	Course Name	L	T	P	IM	EM	CR
1805601	PCC	Internet of Things	3	0	0	30	70	3
1805602	PCC	Data Mining	3	0	0	30	70	3
1805603 1805604 1805605	PEC	<b>Professional Elective-2</b> 1. Artificial Intelligence 2. Software Testing 3. Mobile Adhoc Networks	3	0	0	30	70	3
18OE501 18OE502	OEC	<b>Open Elective-1</b> 1. Data Structures 2. Database Management Systems	3	0	0	30	70	3
1825609	HSC	Management Science	3	0	0	30	70	3
1805608	PCC	Mobile Application Development	3	0	0	30	70	3
1805609	PCC	Internet of Things Lab	0	0	2	50	50	1
1805610	PCC	Mobile Application Development Lab	0	0	2	50	50	1
1805611	Project	Internship	--	--	--	100	--	2
<b>TOTAL</b>			<b>18</b>	<b>0</b>	<b>04</b>	<b>380</b>	<b>520</b>	<b>22</b>

### VII SEMESTER

Subject Code	Subject Category	Course Name	L	T	P	IM	EM	CR
1805701	PCC	Machine Learning	3	0	0	30	70	3
1805702	PCC	Big Data Technologies	3	0	0	30	70	3
1805703 1805704 1805705	PEC	<b>Professional Elective-3</b> 1. Computer Graphics 2. Design Patterns 3. Cloud Computing	3	0	0	30	70	3
18OE503 18OE504	OEC	<b>Open Elective-2</b> 1. Python Programming 2. Computer Networks	3	0	0	30	70	3
18OE505 18OE506	OEC	<b>Open Elective-3</b> 1. Web Technologies 2. Operating Systems	3	0	0	30	70	3
1805710	PCC	Big Data Technologies Lab	0	0	2	50	50	1
1805711	PCC	Machine Learning Lab	0	0	2	50	50	1
1805712	Project	Technical Seminar	0	0	2	100	--	1
1805713	Project	Project-I	0	0	8	100	--	4
<b>TOTAL</b>			<b>15</b>	<b>0</b>	<b>14</b>	<b>450</b>	<b>450</b>	<b>22</b>



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# VIII SEMESTER

Subject Code	Subject Category	Subject Title	L	T	P	IM	EM	CR
1805801 1805802 1805803	PEC	<b>Professional Elective-4</b> 1. Cyber Security 2. Object Oriented Analysis & Design 3. Deep Learning	3	0	0	30	70	3
18OE507 18OE508	OEC	<b>Open Elective-4</b> 1. Software Engineering 2. Cloud Computing	3	0	0	30	70	3
1805806	Project	Project-II	0	0	12	50	50	6
		<b>TOTAL</b>	<b>6</b>	<b>0</b>	<b>12</b>	<b>110</b>	<b>190</b>	<b>12</b>



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Course Title	MATHEMATICS – I					B. Tech I Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1821101	BSC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	1	--	4	30	70	100
Mid Exam Duration: 2Hrs					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• The essential tool of matrices in a comprehensive manner.</li><li>• The convergence of series.</li><li>• Maxima and minima of a function and the radius of curvature</li><li>• The Jacobians and extreme values of a function.</li><li>• Evaluate the definite integrals, Beta and Gamma functions. Apply Fourier series in engineering problems.</li></ul>								
<b>Course Outcomes :On successful completion of this course, the students will be able to</b>								
CO 1	Apply the essential tool of matrices in a comprehensive manner.							
CO 2	Describe the convergence of series.							
CO 3	Classify the functions of several variables which is useful in optimization techniques.							
CO 4	Define Beta and gamma functions and solve definite integrals.							
CO 5	Determine the Fourier series of the functions.							

### UNIT - I

#### **Matrices: (14 Hours)**

Basic definitions of Symmetric, skew-symmetric and orthogonal matrices – Elementary transformations – Rank – Echelon form, Normal form– System of linear equations –Eigen values and Eigen vectors for real matrices – Cayley-Hamilton theorem – Diagonalization of matrix by orthogonal transformation.

### UNIT - II

#### **Sequences and series: (8 Hours)**

Convergence of sequences and series – Comparison test – p test – D'Alemberts ratio test – auchy's root test. Power series – Series for exponential, trigonometric and logarithm functions.

### UNIT - III

#### **Differential Calculus: (10 Hours)**

Taylor's and Maclaurin's series – Maxima and minima of single variable – Curvature: Curvature of a curve – Curvature of a circle – Radius of a curvature – Centre of Curvature – Equation to the circle of curvature.



## **UNIT - IV**

### **Multivariable Calculus: (10 Hours)**

Functions of two or more variables – Partial derivatives, Total derivative – Jacobians – Maxima and minima of functions of two variables – Lagrange's method of undetermined multipliers.

## **UNIT - V**

### **Integral Calculus: (12 Hours)**


Evaluation of definite integrals – Beta and Gamma functions and their properties. Fourier series: Half range Fourier sine and cosine expansions – Parseval's theorem.

### **Text Books:**

1. Higher Engineering Mathematics, Dr. B.S. Grewal, Khanna Publishers-43 edition 2014.
2. Advanced Engineering Mathematics, Erwin Kreyszig, Wiley Publications, 9<sup>th</sup> edition- 2013.
3. Calculus and Analytic geometry, G.B. Thomas and R.L. Finney, Pearson, 9<sup>th</sup> Edition, Reprint, 2002.
4. Introductory Linear Algebra with applications, Kolman, Bernard Hill, David R

### **Reference Books:**

1. Higher Engineering Mathematics, B.V. Ramana, Mc. Graw Hill Education (India) Pvt. Ltd, New Delhi, 11<sup>th</sup> Edition, Reprint 2010.
2. Linear Algebra: A Modern Introduction, D Poole, 2<sup>nd</sup> Edition, Brooks/Cole, 2005.
3. A Text Book of Engineering Mathematics, N.P. Bali and Manish Goyal, Lakshmi Publications, Reprint 2008.
4. Advanced Engineering Mathematics, Greenberg Michael D, Cengage Publishers

  
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Course Title	ENGINEERING PHYSICS					B. Tech I Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1822104	BSC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	1	0	4	30	70	100
Mid Exam Duration: 2Hrs					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>Analyze and understand the concepts of waves and optics to prepare the students for advancedlevel courses.</li><li>Expose students to theoretical and mathematical aspects of Interference, Diffraction techniquesand Lasers for testing of materials.</li><li>Develop knowledge and understanding the fundamental concepts of electronic materials.</li><li>Develop knowledge and understanding the fundamental concepts of semiconductors andnano materials.</li><li>Adaptability to new developments in science and technology.</li></ul>								
<b>Course Outcomes :On successful completion of this course, the students will be able to</b>								
CO 1	Apply the knowledge of Sciences to solve engineering problems by using Interference and Diffraction techniques							
CO 2	Identify and formulate the working elements of different lasers and estimate laser operation parameters.							
CO 3	Understand the idea of Electronic materials & its applications in Engineering.							
CO 4	Recognize and Explain the role of semiconductors in different realms of physics and their applications in both science and technology.							
CO 5	Identify, formulate and solve Problems.							

## UNIT - I

### Light & Optics

Huygens' Principle, superposition of waves, Young's double slit experiment, expression for fringe width, Interference in thin film by reflection, Newton's rings experiment, Diffraction, Fraunhofer diffraction due to single slit, and Diffraction grating (N-slit).

## UNIT - II

### Lasers

Introduction to lasers, characteristics of laser, interaction of radiation with matter-spontaneous and stimulated emission, Einstein's coefficients; population inversion, excitation mechanisms, types of lasers: Solid-state lasers – Nd-YAG laser, Gas lasers - He-Ne Laser, Semiconductor p-n junction diode laser, Applications of lasers.



### **UNIT - III**

#### **Electronic materials**

Free electron theory, Origin of energy bands, Kronig-Penny model (to introduce origin of band gap), E-k diagram, Energy bands in solids, Direct and indirect band gaps, Types of electronic materials: metals, semiconductors, and insulators, Density of states, Fermi level, Effective mass, Phonons.

### **UNIT - IV**

#### **Semiconductors**

Intrinsic and extrinsic semiconductors, Dependence of Fermi level on carrier-concentration and temperature (equilibrium carrier statistics), Carrier generation and recombination, Carrier transport: diffusion and drift, p-n junction, Metal-semiconductor junction (Ohmic and Schottky), Semiconductor materials of interest for optoelectronic devices.

### **UNIT - V**

#### **Engineered Nanomaterials**

Introduction, significance of Nano scale and types of nanomaterials, Properties of nanomaterials: physical, optical, thermal, mechanical and magnetic properties. Synthesis of nanomaterials: Ball-milling, Chemical Vapour Deposition and Sol-Gel methods. Applications of nanomaterials.

#### **Text Books:**

1. Engineering Physics by **K. Thygarajan**, Mac Graw – Hill Publishing Co. New Delhi.
2. Optics- AjoyGhatak, McGraw Hill Publishers, 6<sup>th</sup> edition,
3. Fundamental of Physics- Halliday, Resnick and Walker, Wiley publications.
4. Solid State Physics, Hall H E, paramount Publications.

#### **Reference Books:**

1. Engineering Physics – Dr. M.N. Avadhanulu & Dr. P.G. Krishnasagar, S. Chand and Company.
2. S. M. Sze, Semiconductor Devices: Physics and Technology, Wiley (2008).
3. Lasers & Non-linear Optics Nelson M parker P, Arnold Heinemann Publications.
4. Semiconductor physics and devices- Basic principle – Donald A, Neamen, McGraw Hill.

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Course Title	BASIC ELECTRICAL ENGINEERING					B. Tech I Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1802103	ESC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	1	--	4	30	70	100
Mid Exam Duration: 2Hrs					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>The objective of the course is to learn the concepts of circuit analysis which includes DC excitations and AC excitations, different types of DC generators, motors which are widely used in industry, Construction and working principle of 1-F Transformers &amp; 3-F Induction Motors, Components of low tension switchgear.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Understand basic electric circuits and network solving techniques							
CO 2	Analyze RL, RC and RLC circuits for AC excitations							
CO 3	Understand working principle, operation and construction of DC machines, 3-Ø induction motors and 1-Ø transformers							
CO 4	Understand the components of low voltage electrical installations							
CO 5	Solve the problems on EMF,Current ,Torque ,Regulation and Efficiency of DC machines ,3-Ø induction motor and 1-Ø transformer							

### UNIT - I

**DC Circuits:** Electrical circuit elements (R, L and C), voltage and current sources – source transformation, Series & Parallel networks - Star-Delta transformation, Kirchoff's current and voltage laws, Mesh and Nodal analysis of simple circuits with DC -Problems.

### UNIT – II

**AC Circuits:** Representation of sinusoidal waveforms, average, peak and rms values, Form factor Peak factor for sinusoidal waveform - problems, phasor-phasor representation, impedance, admittance, reactance, susceptance, real power, reactive power, apparent power, power factor. Analysis of 1Φ ac circuits for series & parallel combinations - simple problems.

### UNIT – III

**DC machines:** DC Generators: Construction– working principle – EMF equation – types of DC generators- applications - simple problems.

Working Principle of DC motor, types, Torque Equation, Concept of Back EMF- applications - simple Problems.



## UNIT – IV

**Transformers & Induction Machines:** Single phase transformer - principle of operation, constructional details, emf equation, losses in transformer, regulation and efficiency, equivalent circuit - simple problems.

Three phase Induction Motor: Construction and working principle, slip, rotor frequency, rotor current, and rotor power factor –simple Problems.

## UNIT – V

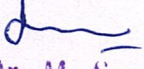
**Electrical Installations:** Components of LT switchgear: Switch Fuse Unit (SFU), Miniature Circuit Breaker (MCB), Wires and Cables, Earthing, Batteries, Introduction to power converters

### Text Books:

1. E. Hughes, “Electrical and Electronics Technology”, Pearson, 2010.
2. D. C. Kulshreshtha, “Basic Electrical Engineering”, McGraw Hill, 2009.
3. L. S. Bobrow, “Fundamentals of Electrical Engineering”, Oxford University Press, 2011.
4. D. P. Kothari and I. J. Nagrath, “Basic Electrical Engineering”, Tata McGraw Hill, 2010.

### Reference Books:

1. V. D. Toro, “Electrical Engineering Fundamentals”, Prentice Hall India, 1989.
2. A. Chakrabarti “Circuit Theory”, Dhanapath Roy & Co.
3. Electrical Circuits – N. Sreenivasulu – Reem Publications.

  
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Course Title	ENGINEERING GRAPHICS & DESIGN					B. Tech I Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1803107	ESC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		1	0	4	3	50	50	100
					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• To Increase ability to communicate with people</li><li>• To Learn to sketch and take field dimensions.</li><li>• To Learn to take data and transform it into graphic drawings.</li><li>• To Learn basic Auto Cad skills.</li><li>• To Learn basic engineering drawing formats</li><li>• To Prepare the student for future Engineering positions</li></ul>								
<b>Course Outcomes :on successful completion of this course, the students will be able to</b>								
CO 1	Use CAD drafting and editing tools along with page templates ,title block & print settings							
CO 2	Describe the geometric details of Engineering objects & Become familiar with Auto Cad 2D3D drawings.							
CO 3	Understand Engineering drawing basic theory of projections related to points lines, planes and solids in different orientations and drafting them in cad software							
CO 4	Analyze various sectional views related to Engineering Drawings and Create isometric drawings with 3d tools along with basic theory& procedures in engineering drawing							

## UNIT- I

### **Overview of CAD:**

Listing the computer technologies that impact on graphical communication, Demonstrating knowledge of the theory of CAD software [such as: The Menu System, Toolbars (Standard, Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Crosshairs, Coordinate System), Dialog boxes and windows, Shortcut menus (Button Bars), Status Bar, Different methods of zoom as used in CAD, Select and erase objects, copy, move, scaling objects, mirror, rotate, offset, polar array, rectangular Array.

## UNIT - II

### **Customization & CAD Drawing**

Consisting of set up of the drawing page and the printer, including scale settings, Setting up of units and drawing limits; ISO and ANSI standards for coordinate dimensioning; Orthographic, constraints, Snap to objects manually and automatically; Producing drawings by using various coordinate input entry methods , Applying various ways of drawing circles; Annotations, layering & other functions, Diagrams for practice covering drafting and editing commands.



### **UNIT - III**

#### **Introduction to Engineering drawing**

Principles of Engineering Graphics and their significance, Conic sections including the Rectangular Hyperbola (General method only); Cycloid, Epi cycloid, Hypocycloid and In volute.

### **UNIT - IV**

#### **Projection of Points, lines, Planes & solids:**

Principles of Orthographic Projections-Conventions - Projections of Points and lines inclined to both planes; Projections of planes inclined Planes.

#### **Projections of Regular Solids**

Projections of solids inclined to both planes.

Floor plans that include: windows, doors, and fixtures such as WC, bath, sink, shower, etc.

### **UNIT - V**

#### **Sections and Sectional Views of Right Angular solids**

Sections of Prism, Cylinder, Pyramid and Cone and representation of hatching for various sectional views in cad Development of surfaces of Right Regular Prism, Pyramid, Cylinder and Cone.

#### **Isometric & ortho Graphic Projections**

Principles of Isometric projection – Isometric Scale, Isometric Views, Orthographic projection and isometric projection techniques with 3d commands, Boolean operations(Union, Region, subtract etc....,)Representation of orthographic projections with viewports, Ucs orientation for representing dimensions for isometric diagrams, scaling.

#### **Text Books:**

1. Bhatt N.D., Panchal V.M. & Ingle P.R., (2014), Engineering Drawing, Charotar Publishing House.
2. Agrawal B. & Agrawal C. M. (2012), Engineering Graphics, TMH Publication.
3. Engineering Drawing with an Introduction to CAD by Dhananjay Jolhe, Mc Graw hill.
4. Engineering Drawing + AutoCAD Paperback by K. Venugopal, New age publishers, 3<sup>rd</sup> Edition, 2011.



**Reference Books:**

1. Shah, M.B. & Rana B.C. (2008), Engineering Drawing and Computer Graphics, Pearson Education.
2. Narayana, K.L. & P Kannaiah (2012), 5<sup>th</sup> Edition, Text book on Engineering Drawing, Scitech Publishers.
3. Corresponding set of CAD Software Theory and User Manuals.



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Course Title	ENGINEERING PHYSICS LAB					B. Tech I Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1822108	BSC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		0	0	3	1.5	50	50	100
					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>To explore the application of interference and diffraction by doing concerned experiments.</li><li>Elucidate the concepts of Physics through involvement in the experiment by applying theoretical knowledge.</li><li>Develop an ability to apply the knowledge of physics experiments in the later studies.</li><li>To understand the concept of energy gap, B-H curve, and synthesis of nano material by performing the experiments.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Evaluate of the application of interference, diffraction phenomena along with laser							
CO 2	Support the scientific process in the conduct and reporting of experimental investigations.							
CO 3	Formulate the measurement technology, usage of new instruments and real time applications in engineering studies							
CO 4	Justify the theoretical ideas and concepts covered in lecture by doing hands on in the experiments.							
CO 5	Develop the characteristics of various materials in a practical manner and gain knowledge about various optical technique methods							
CO 6	Compose experimental data to examine the physical laws.							

### LIST OF EXPERIMENTS

**Any 7 of the following experiments has to be performed in a semester:**

1. Determination of wavelengths of spectral lines of mercury spectrum using diffraction grating in normal incidence method.
2. Determination of dispersive power of the prism.
3. Rigidity Modulus- Torsional Pendulum.
4. Study of resonance effect in series and parallel LCR circuit.
5. Determination of thickness of thin object by wedge method.
6. Determination of radius of curvature of lens by Newton's Rings.
7. Laser: Determination of wavelength using diffraction grating.
8. Energy gap of a semiconductor using p-n junction diode.
9. Hysteresis: B-H curve.



10. Magnetic field along the axis of a current carrying coil – Stewart and Gee's method.
11. Frequency of the tuning fork - Melde's apparatus.
12. Spring constant - Coupled Pendulums.

**Text books:**

1. S. Balasubramanian, M.N. Srinivasan "A Text book of Practical Physics"- S Chand Publishers,
2. Physics Laboratory Manual by Loyd D H, Cengage learning, 4Th International Edition 2014.
3. Et.Al. Engineering Physics Lab Manual by Madhusudhana Rao, SCITECH PUBLICATIONS (INDIA) PVT.LTD, 2015.
4. Practical Physics by K.Venugopalan (Author), VimalSaraswat (Author), Himanshu Publications.

**Reference Books:**

1. Physics Laboratory Experiments, by Jerry Wilson (Author), Cecilia A. Hernandez Hall (Author), Brooks/cole; 7th edition (11 June 2009).
2. Lab manual Physics, R Rangarajan, R P Manchanda, R K Gupta, Rajesh Kumar NeenaSinha-NewSaraswati House.
3. Practical Physics by Kumar P. R. Sasi, Prentice-Hall of India Pvt.Ltd.

**Web link:**

1. <http://vlab.amrita.edu/index.php> - Virtual Labs, Amrita University.



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Course Title	BASIC ELECTRICAL ENGINEERING LAB					B. Tech I Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1802109	ESC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		--	--	2	1	50	50	100
					End Exam Duration: 3Hrs			
<b>Course Objectives:</b>								
To enable the students to apply the knowledge of mathematics in various engineering fields by making them to learn the following:								
<ul style="list-style-type: none"><li>The objective of the course is to to verify theoretically and practically Kirchhoff's laws, determination of R, L, and C Parameters, measure the power for RL, RC circuits, speed-torque characteristics of DC shunt motor, speed control of 3-F IM, performance of transformer.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Understand the Kirchhoff's laws by theoretically and practically.							
CO 2	Determine the active and reactive power for RL, RC and RLC circuits.							
CO 3	Determine equivalent circuit parameters on no-load and its performance on load of a 1- Ø transformer.							
CO 4	Analyze the characteristics of DC shunt motor and 3-Ø Induction motor							
CO 5	Identify various parts of DC and AC machines, fuse, MCB & Batteries.							

### LIST OF EXPERIMENTS

1. Determination of values of R, L and C parameters of a given R-L-C series circuit.
2. Verification of KCL and KVL.
3. Determination of Active, reactive and apparent power for R-L circuit (series & parallel).
4. Determination of Active, reactive and apparent power for R-C circuit (series & parallel).
5. Load test on 1-phase transformer.
6. OC & SC tests on 1-phase transformer to obtain equivalent circuit.
7. Torque-speed characteristics of DC shunt motor.
8. Speed Control of three-phase induction motors using pole changing method
9. Demonstration of cut out sections of DC & AC machines
10. Study of fuse, MCB, Batteries.



### **Text Books:**

1. E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.
2. D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009.
3. L. S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press, 2011.
4. D. P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.

### **Reference Books:**

1. V. D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India, 1989.
2. Chakrabarti "Circuit Theory", Dhanapath Roy & Co.
3. Electrical Circuits – N. Sreenivasulu – Reem Publications.

<b>Internal Assessment:</b> Record - 10M, Observation - 15M, Day to Day Assessment - 15M, Viva - 10M, Total Internal Marks - 50M
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<b>End Exam:</b> If the question is based on conventional mode: circuit diagram - 10M, connections - 10M, procedure - 10M, result - 10M, viva-10M, total external marks - 50M
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Course Title	WORKSHOP AND MANUFACTURING PRACTICES					B. Tech I Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1803110	ESC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		1	0	4	3	50	50	100
					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>To understand the basic knowledge of Workshop Practice and Safety.</li><li>To identify and use of different hand tools and other instruments like Hack Saw, Jack Plane, Chisels etc. and operations like Marking, Cutting etc.</li><li>To expose students to different types of manufacturing/fabrication processes</li><li>To develop a skill in dignity of labour, precision, safety at work place, team working and development of right attitude.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Identify different manufacturing processes which are commonly employed in the industry							
CO 2	Analyze the practical knowledge about fabricate components using different materials with their own hands							
CO 3	Understand the knowledge of the dimensional accuracies and tolerances applicable for different manufacturing processes							
CO 4	Experiment various basic House Wiring techniques such as connecting one lamp with one switch, connecting two lamps with one switch, connecting a fluorescent tube, Series wiring							

Workshop and manufacturing practices:

### LIST OF EXPERIMENTS IN THE SYLLABUS

#### LIST OF EXPERIMENTS IN THE SYLLABUS

##### 1. MACHINE SHOP:

1. STEP TURNING OPERATION
2. TAPER TURNING OPERATION

##### 2. FITTING SECTION:

1. SQUARE FITTING
2. STEEPED FITTING

##### 3. CARPENTRY SECTION:

1. TEE HALVING JOINT
2. DOVETAIL TEE HALVING JOINT

##### 4. HOUSE WIRING SECTION:

1. TO CONTROL TWO LAMPS BY ONE SINGLE WAY SWITCH (IN SERIES)
2. TO CONTROL TWO LAMPS BY ONE SINGLE WAY SWITCH(PARALLEL)

##### 5. WELDING SECTION:

1. SINGLE V BUTT JOINT
2. LAP JOINT



## **6. FOUNDRY SECTION:**

1. SINGLE PIECE SQUARE PATTERN
2. SINGLE PIECE ROUND PATTERN

## **7. SHEET METAL SECTION**

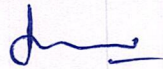
1. SQUARE TRY
2. CYLINDER

### **Text Books:**

1. Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy S.K., —Elements of Workshop Technology, Vol. I 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbai.
2. Roy A. Lindberg, —Processes and Materials of Manufacture, 4th edition, Prentice Hall India, 1998.
3. Rao P.N., —Manufacturing Technology, Vol. I and Vol. II, Tata McGrawHill House, 2017.

### **Reference Books:**

1. (Kalpakjian S. And Steven S. Schmid, —Manufacturing Engineering and Technology, 4th edition, Pearson Education India Edition, 2002.
2. Gowri P. Hariharan and A. Suresh Babu, —Manufacturing Technology – II Pearson Education, 2008.



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Course Title		MATHEMATICS – II				B. Tech II Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1821201	BSC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	1	--	4	30	70	100
Mid Exam Duration: 2Hrs					End Exam Duration: 3Hrs			
<b>Course Objectives:</b>  To enable the students to apply the knowledge of mathematics in various engineering fields by making them to learn the following: <ul style="list-style-type: none"><li>• First order differential equations.</li><li>• Linear differential equations with constant coefficients.</li><li>• Laplace transforms in engineering problems.</li><li>• Evaluate multiple integrals.</li><li>• Understand Vector Calculus concepts and their applications.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Solve the first order linear differential equations (L3)							
CO 2	Solve the higher order linear differential equations with constant coefficients.(L3)							
CO 3	Apply Laplace Transforms in engineering problems.(L3)							
CO 4	Evaluate multiple integrals.(L5)							
CO 5	Understand Vector Calculus concepts and analyze their applications in engineering problems. (L4)							

### UNIT - I

#### **First order ordinary differential equations: (10 Hours)**

Linear, Bernoulli equations, Exact and equations reducible to Exact. Applications: Orthogonal trajectories, Newton's law of cooling, Law of natural growth and decay.

### UNIT - II

#### **Ordinary differential equations of higher order: (10 Hours)**

Linear differential equations of second and higher order with constant coefficients – R.H.S term of the type  $e^{ax}$ ,  $\sin ax$ ,  $\cos ax$ , polynomials in  $x$ ,  $e^{ax} V(x)$ ,  $xV(x)$  – Method of variation of parameters.

### UNIT - III

#### **Laplace transforms: (12 Hours)**

Laplace transforms of standard functions – Properties of Laplace Transforms – Transforms of derivatives and integrals – Evaluation of integrals by Laplace transforms – Laplace transform of periodic functions. Convolution theorem. Inverse Laplace Transforms – Applications of Laplace transforms to ordinary differential equations.



## **UNIT - IV**

### **Multiple Integrals: (10 Hours)**

Evaluation of double integrals in Cartesian coordinates and polar coordinates – Change of variables in double integrals – Change the order of integration in double integrals – Evaluation of triple integrals in Cartesian and polar coordinates – Change of variables in triple integrals.

## **UNIT - V**

### **Calculus: (12 Hours)**


Vector differentiation: Scalar point function - Vector point function – Vector operator Del – Gradient – Divergence – Curl. Vector integration: Line, Surface and Volume integrals. Green's theorem in a plane, Stoke's theorem and Gauss-divergence theorems (Statements only). Applications of Green's, Stoke's and Gauss divergence theorems.

### **Text Books:**

1. Higher Engineering Mathematics, Dr. B.S. Grewal, Khanna Publishers-43 edition 2014.
2. Advanced Engineering Mathematics, Erwin Kreyszig, Wiley Publications, 9<sup>th</sup> edition- 2013
3. Calculus and Analytic geometry, G.B. Thomas and R.L. Finney, Pearson, 9<sup>th</sup> Edition, Reprint, 2002.
4. Advanced Calculus, Widder V David, Pearson Publishers

### **Reference Books:**

1. Higher Engineering Mathematics, B.V. Ramana, Mc. Graw Hill Education (India) Pvt. Ltd, New Delhi, 11<sup>th</sup> Edition, Reprint 2010.
2. A Text Book of Engineering Mathematics, N.P. Bali and Manish Goyal, Lakshmi Publications, Reprint 2008.
3. Advanced Engineering Mathematics, Greenberg Michael D, Cengage Publishers.
4. Advanced Engineering Mathematics, Neil Opeter V

  
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Course Title	ENGINEERING CHEMISTRY					B. Tech II Sem (R18) CSE		
Course Code	Category	Hours/Week		Credits	Maximum Marks			
1823202	BSC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	1	--	4	30	70	100
Mid Exam Duration: 2Hrs					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>Knowledge in Chemistry serves as basic nutrient for the understanding and thereby design of materials of importance in life. Thus the advancement in Engineering depend on the outcome of basic sciences.</li><li>The Engineering Chemistry course for undergraduate students is framed to strengthen the fundamentals of chemistry and then build an interface of theoretical concepts with their industrial! Engineering applications.</li><li>The course main aim is to impart in-depth knowledge of the subject and highlight the role of chemistry principles (or) applications in the field of engineering.</li><li>After the completion of the course, the student would understand about the concepts of chemistry</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Analyze microscopic chemistry in terms of atomic and molecular orbitals and properties of complexes.							
CO 2	Rationalize periodic properties such as ionization potential, electro negativity and oxidation states.							
CO 3	Illustrate the concept of various intramolecular interactions, Properties of metals, water, thermodynamic considerations& application of Nernst equation.							
CO 4	Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques.							
C O 5	Remember the major chemical reactions that are used in the synthesis and stereochemistry of molecules.							

### UNIT-I: Atomic and molecular structure

Schrodinger wave equation. Particle in a box (one dimensional) and their applications .Molecular orbital's of diatomic molecules and plots of the multicenter orbital's. Equations for atomic and molecular orbital's.Crystal field theory and the energy level diagrams for transition metal ions and their magnetic properties.Band structure of solids and the role of doping on band structures.

**Learning Outcomes:** At the end of this unit, the student will be able to

- \*apply Schrodinger wave equation to particle in a box.
- \*illustrate the molecular orbital energy diagrams of diatomic molecules.
- \*get knowledge on properties of conductors, semiconductors and insulators and role of doping.
- \*discuss the magnetic behavior of transition metal complexes.



## **UNIT-II: Periodic properties**

Effective nuclear charge, penetration of orbital's, variations of s, p, d and f orbital energies of atoms in the periodic table, electronic configurations, atomic and ionic sizes, ionization energies, electron affinity and electro negativity, polarizability, oxidation states, coordination numbers and geometries, hard, soft acids and bases.

**Learning Outcomes:** At the end of this unit, the student will be able to

- \*Describe the arrangement of the elements in the periodic table.
- \*Explains the discovery of electron ,proton and neutron and their characteristics.
- \*Explains the rules of electron filling in atoms and writes the electronic configuration.
- \* Explains the energies of s ,p, d, f orbitals & identifies the periodic properties and can explain how they vary in group and period.
- \*Illustrate the geometries of complex structures and explains the acid- base nature

## **UNIT- III :Intermolecular forces**

Ionic, dipolar and van Der Waals interactions. Equations of state of real gases and critical phenomena.

### ***Use of free energy in chemical equilibria***

Thermodynamic functions: Introduction, define energy, entropy, Free energy. Free energy and emf. Cell potentials, Nernst equation and applications. Water chemistry-types of water and Boiler troubles. Corrosion-types of corrosion and factors influencing corrosion.

**Learning Outcomes:** At the end of this unit, the student will be able to

- \*Explains the formation of ionic bond and dipolar interactions.
- \*Explains the behavior of real gases and describe the conditions required for liquification and gases and critical phenomenon.
- \*Illustrate the definitions of energy and entropy and apply Nernst equation for calculating cell potentials.
- \*List the differences between temporary and permanent hardness and illustrate problems associated with use of hard water in boilers
- \*Demonstrate corrosion types and factors influencing corrosion.



#### **UNIT - IV: Spectroscopic techniques and applications**

Principles of spectroscopy and selection rules. Electronic spectroscopy. Fluorescence and its applications in medicine. Vibrational and rotational spectroscopy of diatomic molecules.

**Learning Outcomes:** At the end of this unit, the student will be able to

- \*Explains principles of spectroscopy and explains different types of spectral series in electromagnetic spectrum.
- \*Illustrate the principle of fluorescence and its application in medicine
- \*Derive equation for rotational and vibrational spectra and its application for diatomic molecules.

#### **UNIT - V: Stereochemistry**

Representations of 3 dimensional structures, structural isomers and stereo isomers, configurations and symmetry and chirality, enantiomers, diastereomers, optical activity, absolute configurations and conformational analysis of Cyclohexane.

#### **Simple Organic Reactions**

Introduction to reactions involving Substitution ( $SN^1$  &  $SN^2$ ), Addition Reactions involving  $C=C$  (Markonikoff reaction) &  $C=O$  (Grignard reagent), Elimination ( $E_1$  &  $E_2$ ) Oxidation (Baeyer-Villiger reaction), Reduction (Clemmensen reduction).

**Learning Outcomes:** At the end of this unit, the student will be able to

- \*Represent the organic molecule in 3-dimensional structure.
- \*Explains different types of isomers with examples.
- \*Illustrate the mechanisms of substitution, addition and elimination reaction.
- \*Explains oxidation and reduction reactions.


#### **Text Books:**

1. A textbook of Engineering chemistry by Shashi Chawla, Dhanpat Rai & Co publications
2. Atkins' Physical Chemistry, Peter Atkins, Julio de Paula and James Keeler, Oxford University Press, 2010.
3. An Introduction to Electrochemistry, Glasstone, Arihant Publications.
4. Organic chemistry by Clayden and Warren, Oxford publications



**Reference Books:**

1. Textbook of Engineering Chemistry, Jain and Jain, Dhanpat Rai & Co publications, 2013
2. New Concise Inorganic Chemistry, 5<sup>th</sup> Edition, J. D. Lee, Oxford University Press, 2008.
3. Principles of Instrumental Analysis, 6<sup>th</sup> edition, Douglas A. Skoog, Cengage Publications.
4. Advanced Inorganic Chemistry, Cotton F Albert, Wilkinson Geoffrey, Prism Publications



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Course Title	ENGLISH					B. Tech II Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1824203	HSMC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		2	--	--	2	30	70	100
Mid Exam Duration: 2Hrs					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• To facilitate effective listening skills for better comprehension of academic lectures and English spoken by native speakers</li><li>• To focus on appropriate reading strategies for better understanding of various academic texts and authentic material.</li><li>• To help improve speaking skills through participation in activities such as role plays, group discussions and structured talks/oral presentations.</li><li>• To impart effective strategies for good writing so as to make the essays, paragraphs, reports ... etc. effective.</li><li>• To provide knowledge of sentence structures and vocabulary and encourage their appropriate use in speaking and writing grammatically.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Describe the classification of words, sentences and their usages in sentences.							
CO 2	Understand the difference between spoken and written English.							
CO 3	Analyze the rules in language for changing the form of sentences.							
CO 4	Illustrate the factors that influence grammar and vocabulary in speaking and writing							
CO 5	Classify the parts of speech, tenses and sentence structures							

### UNIT - I: Vocabulary Building

1.1 The concept of Word Formation

1.2 Root word from foreign languages and their use in English

1.3 Acquaintance with prefixes and suffixes from foreign languages in English to form derivatives

1.4 Synonyms, antonyms

1.5 Idioms and phrases.



## **UNIT - II: Basic Writing Skills**

*1.6* Sentence Structures

*1.7* Use of phrases and clauses in sentences

*1.8* Importance of proper punctuation

*1.9* Creating coherence

*1.10* Organizing principles of paragraphs in documents

*1.11* Techniques for writing precisely

## **UNIT - III: Transformation**

*1.12* Interchange of parts of speech

*1.13* Active voice and Passive voice

*1.14* Direct and Indirect speech

*1.15* 3.4Degrees of comparison

*1.16* 3.5Simple, compound and complex sentences

## **UNIT - IV: Identifying Common Errors in Writing**

*4.1* Subject-Verb agreement

*4.2* Noun-pronoun agreement

*4.3* Misplaced modifiers

*4.4* Articles

*4.5* Prepositions

*4.6* Redundancies

*4.7* Clichés

*4.8* Tenses



## **UNIT -V: Reading and Writing Practices**

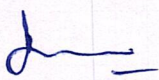
4.9 Comprehension

4.10 Précis Writing

4.11 Essay writing

### **Text Books:**

1. Practical English Usage. Michael Swan. OUP. 1995.
2. Remedial English Grammar. F.T. Wood. Macmillan.2007.
3. On Writing Well. William Zinsser. Harper Resource Book. 2001.
4. Study Writing. Liz Hamp-Lyons and Ben Heasley. Cambridge University Press. 2006.
5. Communication Skills. Sanjay Kumar and PushpLata. Oxford University Press. 2011.
6. Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press.

  
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Course Title	PROGRAMMING FOR PROBLEM SOLVING					B. Tech II Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1805204	ESC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		3	--	--	3	30	70	100
Mid Exam Duration: 2Hrs					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• Understand the concepts of algorithm and use it to solve computational problems</li><li>• Understand programming skills using the fundamentals and basics of C Language</li><li>• Acquire basic knowledge to use proper control structure to solve real world problems</li><li>• Improve problem solving skills using arrays, strings, and functions.</li><li>• Understand memory utilization and organize heterogeneous data properly.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Understand the basics of computer system and C programming.							
CO 2	Analyze a given problem and develop an algorithm to solve the problem.							
CO 3	Apply proper branching and loop constructs to solve a complex problem							
CO 4	Understand the concepts of arrays and strings to solve real time applications							
CO 5	Apply modular approaches for solving complex problems							
CO 6	Illustrate memory optimization for solving real world problems using structures and Unions							

## UNIT - I

**Introduction to Computers:** - Introduction, computer hardware and software, creating and running programs, software development life cycle, algorithms, flowcharts.

**Introduction to C programming:** - Overview of C, structure of a C program, variables, constants, data types, identifiers, keywords, Input/output statements in C, programming examples.

## UNIT - II

**Operators and Expressions:-** Operators, expressions, precedence and associativity, evaluating expressions, type conversion, typedef, enumerations.

**Decision making statements:** if statement, if-else statement, nested if-else statement, switch statement.

**Loops in C:** while loop, for loop, do-while loop, nested for loops,

**Jumping statements:** break, continue and goto statements.



### **UNIT - III**

**Arrays:** Introduction, Declaration and initialization of 1D and 2D arrays.

**Array applications:** -bubble (exchange) sort, selection sort, linear search, binary search.

**Strings:** -Definition, declaration and initialization of strings, string I/O functions, string handling functions, array of strings (table of strings).

### **UNIT - IV**

**Functions:** introduction, category of functions, parameter passing methods, storage classes, recursive function.

**Pointers:** Understanding pointers, declaring and initialization of pointer variable, accessing the address of variables, accessing a variable through its pointer, chain of pointers.

### **UNIT - V**

**Structures and union:** Introduction, defining a structure, declaring structure variable, structure initialization, accessing members of structure, copying and comparing structure variables, structures within structures, array of structures, and introduction of union.

#### **Text Books:**

1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India
2. Rema Theraja, Programming in C, second edition, Oxford
3. R.G. Dromey, How to solve it by Computer, Pearson.
4. E. Balagurusamy, Programming in ANSI C, Fifth Edition, McGraw Hill.

#### **Reference Books:**

1. Yashavant Kanetkar, Let us C, 15<sup>th</sup> edition, BPB Publications.
2. Dr. P. ChennaReddy, Computer Fundamentals and C Programming, Second Edition.
3. Greg Perry, Dean Miller, C Programming Absolute Beginners Guide, 3<sup>rd</sup> Edition, Pearson.
4. Herbert Schildt, The Complete Reference C, 4<sup>th</sup> Edition, Mc Graw Hill Education.



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Course Title	CHEMISTRY LAB					B. Tech II Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1823207	BSC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		--	--	3	1.5	50	50	100
					End Exam Duration: 3Hrs			

#### Course Objectives:

The course consists of experiments related to the principles of chemistry required for engineering student. The student will learn:

- Estimation of hardness and chloride content of water to check its suitability for drinking and industrial purpose.
- To determine the rate constant of reactions from concentrations as a function of time. The measurement of physical properties like adsorption, surface tension and viscosity.
- To synthesize the drug molecules and check the purity of organic molecules by thin layer chromatographic (TLC) technique.
- Conduct metric and potentiometric titration.
- To determine the acid value of oils and Fats.
- Nernst distribution law for the distribution of solute between two immiscible solvents

#### Course Outcomes: On successful completion of this course, the students will be able to

CO 1	Find the cell constant and Conductance of solutions
CO 2	Evaluate molecular/system properties such as surface tension, viscosity, redox potentials, Colligative properties etc.
CO 3	Analyze the acid value in oil.
CO 4	Determine the quantity of water sample by estimation of hardness of water, chloride content, DO, etc.,
CO 5	Demonstrate the process of Adsorption, Partition co-efficient & Chemical oscillations.

#### Choice of Experiments From the Following:

1. Estimation of Hardness of Water present in given water sample by EDTA method.
2. Determination of surface tension and viscosity.
3. Determination of chloride content of water.
4. Colligative properties using freezing point depression.
5. Estimation of Dissolved Oxygen present in given water sample by Winkler's method.
6. Potentiometry - determination of Redox potentials and emfs.
7. Synthesis of a polymer/drug.




8. Saponification/acid value of an oil.
9. Determination of cell constant and conductance of solutions.
10. Chemical oscillations- Iodine clock reaction.
11. Determination of the partition coefficient of a substance between two immiscible liquids.
12. Adsorption of acetic acid by charcoal.

**Textbooks:**

1. Vogel's Text book of Quantitative Chemical Analysis, J. Mendham et.al., Pearson Education, Sixth Edition, 2012.
2. Laboratory manual on Engineering Chemistry, Anupama Rajput, Dhanpat Rai & Co Publications.
3. Essentials of Experimental Engineering Chemistry, Shashi Chawla, Dhanpat Rai & Co Publications.

**Reference Books:**

1. Practical Engineering Chemistry by K. Mukkanti, et al, B.S. Publications, Hyderabad.
2. Instrumental methods of chemical analysis, Chatwal, Anand, Himalaya Publications.
3. Essentials of Physical Chemistry, Bhal & Tuli. (S. Chand Publications).
4. Advanced Inorganic Analysis, Agarwal & Keemtilal (Pragati prakashan)

  
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Course Title	PROGRAMMING FOR PROBLEM SOLVING LAB					B. Tech II Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1805208	ESC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		0	0	4	2	50	50	100
					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>• Develop readable and efficient C programs for computational problems</li><li>• Construct a C-program using language constructs such as Operators, Conditional and Iterative Statements to solve real complex problems</li><li>• Develop modular C programs for large problems</li><li>• Develop optimized programs to solve real world problems</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Analyze given problem and develop an algorithm							
CO 2	Implement Code and debug programs in C language using various constructs							
CO 3	Choose proper C language constructs to solve complex problems.							
CO 4	Organize and implement heterogeneous data in efficient memory utilization							

The student is expected to solve at least 12 assignments from different concepts. (Every year 12 different experiments).

### DOS commands, Algorithms, Flowcharts and sample C programs

1. Practice DOS commands necessary for design of C programs.
2. Design and develop algorithms and flowcharts for simple and logical problems
3. Write a C program to convert a given integer (in days) to years, months and days, assumes that all months have 30 days and all years have 365 days.
4. Ramesh's basic salary is input through the keyboard. His dearness allowance is 40% of basic salary and house rent allowance is 20% of basic salary. Write a C program to calculate his gross salary.
5. Write a C program to implement the following exchanges.
 

$$A \longrightarrow B \longrightarrow C \longrightarrow D$$
6. Write a program to take input of name, roll no and marks obtained by a student in 5 subjects each have its 100 full marks and display the name, roll no with percentage score secured.



### Problems involving if-then-else structures

7. Write a C program to find out whether a given number is even number or odd number.
8. Write a C program to check whether a given year is leap year or not.
9. Design and develop an algorithm that takes three coefficients ( $a$ ,  $b$ , and  $c$ ) of a Quadratic equation ( $ax^2+bx+c=0$ ) as input and compute all possible roots. Implement a C program for the developed algorithm and execute the same to output the possible roots for a given set of coefficients with appropriate messages.
10. Write a C program that reads three floating values and check if it is possible to make a triangle with them. Also calculate area and perimeter of the triangle if the said values are valid.
11. Write a C program to read the coordinates( $x$ ,  $y$ ) (in Cartesian system) and find the quadrant to which it belongs (Quadrant -I, Quadrant -II, Quadrant -III, Quadrant -IV).
12. A character is entered through keyboard. Write a C program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol using if-else and switch case. The following table shows the range of ASCII values for various characters.

Characters	ASCII values
A – Z	65 – 90
a – z	97 – 122
0 – 9	48 – 57
Special symbols	0 – 47, 58 – 64, 91 – 96, 123 – 127.

13. A library charges fine for every book returned late. For first five days the fine is 50 paisa, for 6-10 days fine is one rupee and above 10 days fine is 5 rupees. If you return the book after 30 days your membership will be cancelled. Write a C program to accept the number of days that the member is late to return the book and display the fine or appropriate message.

14. Write a C program which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +, -, \*, /, % and use switch statement).

### Problems involving Looping statements

15. If the sum of the cubes of each digit of a number is equal to the number itself, then the number is called Armstrong number. (for example,  $153 = 1^3 + 5^3 + 3^3$ ). Design and develop an algorithm to find whether a given number is Armstrong number or not. Implement a C program for the developed algorithm.



16. The total distance travelled by vehicle in 't' seconds is given by **distance =  $ut + \frac{1}{2}at^2$**  where 'u' and 'a' are the initial velocity (m/sec.) and acceleration (m/sec<sup>2</sup>). Write C program to find the distance travelled at regular intervals of time given the values of 'u' and 'a'. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of 'u' and 'a'.
17. Write a C program that takes two positive numbers 'a' and 'b' where ( $a \leq b$ ). For each integer n,  $a \leq n \leq b$ .
- If  $1 \leq n \leq 9$ , then print the English representation of it in lowercase. That is "one" for , "two" for , and so on.
  - Else if  $n > 9$  and it is an even number, then print "even".
  - Else if  $n > 9$  and it is an odd number, then print "odd"
- [Input: 8 11 Output: Eight Nine Even Odd]
18. If a number and its reversed number are same then the number is called as palindrome number. Design and develop an algorithm to check whether a given number is palindrome or not. Implement a C program for the same.
19. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
20. Write a C program to evaluate the  $\sin(x)$  function series

— — — —

### 21. Fibonacci Sequence

A Fibonacci sequence is defined as follows:

The first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a program to generate the first N terms of the sequence.

### Arrays

22. Write a C program to find the smallest and largest number in a given array.
23. Write a C program to find the frequency of a particular number in a list of integers.
24. Write a C program to sort the list of elements using
- a) Bubble Sort
  - b) Selection sort.
25. Write a C program to search for an element in a list of elements using
- a) Linear search
  - b) Binary search
26. Write a C program to find the transpose of a matrix.
27. Write a C program to read two matrices and perform the following operations
- a) Addition of two matrices
  - b) Multiplication of two matrices



### Additional Problems on arrays

**28. Partitioning an array**

Given a randomly ordered array of  $n$  elements, write a C program to partition the elements into two subsets such that elements  $\leq X$  are in one subset and elements  $\geq X$  are in another subset.

**29. Finding the  $k^{\text{th}}$  smallest element**

Given a randomly ordered array of  $n$  elements, write a C program to determine the  $k^{\text{th}}$  smallest element.

**30. Array order reversal**

Write a C program to rearrange the elements in an array so that they appear in reverse order.

### Strings

31. If a string and its reversed string are same then the string is called as palindrome string. Design and develop an algorithm to check whether a given string is a palindrome or not and implement a C program for the same.

32. Write a C program to sort the names of students in a class in alphabetical order.

### Additional Problems on strings

33. Write a C program to read two strings and perform the following operations without using built string library functions.

- i) String length
- ii) String reversing
- iii) Comparison of two strings
- iv) Concatenation of two strings

34. Write a C program to count the number of vowels, consonants, digits, blank spaces and special characters in a given string.

### Functions and Recursion

35. Write a C program to swap the contents of two variables using

- a) Call by value
- b) Call by reference.

36. Write a C program using recursion to

- a) Find the factorial of a given number
- b) Print the Fibonacci series up to a given number.
- c) Find the GCD of two integers.



### Structures

37. Write a C program to define a structure with the following members.

Roll No., Name, marks in Sub1, Sub2, Sub3. Read the n students records and find the total marks of each student and print the result in the following format.

Roll No	Name	Sub1	Sub2	Sub3	Total marks	result
189Y1A0501	Kavya	80	70	75	225	Distinction

### Files


38. Write a C program to copy the contents of one file to another file.

### Text Books:

1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice Hall of India.
2. Rema Theraja, Programming in C, second edition, Oxford
3. R.G. Dromey, How to solve it by Computer, Pearson.
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### Reference Books:

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2. Dr. P. ChennaReddy, Computer Fundamentals and C Programming, Second Edition.
3. Greg Perry, Dean Miller, C Programming Absolute Beginners Guide, 3<sup>rd</sup> Edition, Pearson.
4. Herbert Schildt, The Complete Reference C, 4<sup>th</sup> Edition, Mc Graw Hill Education.

  
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Course Title	ENGLISH LAB					B. Tech II Sem (R18) CSE		
Course Code	Category	Hours/Week			Credits	Maximum Marks		
1824209	HSMC	L	T	P	C	Continuous Internal Assessment	End Exams	Total
		--	--	2	1	50	50	100
					End Exam Duration: 3Hrs			
<b>Course Objectives:</b> <ul style="list-style-type: none"><li>To facilitate computer-assisted multi-media instruction enabling individualized and independent language learning.</li><li>To sensitize the students to the nuances of English speech sounds, word accent, intonation and rhythm.</li><li>To bring about a consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in speaking.</li><li>To improve the fluency of students in spoken English and neutralize their mother tongue.</li><li>To train students to use language appropriately for public speaking, group discussions and influence interviews.</li></ul>								
<b>Course Outcomes: On successful completion of this course, the students will be able to</b>								
CO 1	Describe objects, places and persons.							
CO 2	Understand the listening process and answer the questions related to it.							
CO 3	Analyse phonetics with examples							
CO 4	Illustrate different modes of communication skills							
CO 5	Classify LSRW skills							

### Syllabus:

- Oral Communication (This unit involve interactive practice sessions in Language Lab)
- Listening Comprehension -----Language Lab
- Pronunciation, Intonation, Stress and Rhythm -----Language Lab
- Everyday Situations: Conversations and Dialogues -----Communication Lab
- Communication at workplace -----Communication Lab
- Interviews -----Communication Lab
- Formal Presentations -----Communication Lab



**Text Books:**

- 1) Cambridge Advanced Learners' English Dictionary with CD.
- 2) Grammar Made Easy by Darling Kindersley.
- 3) Punctuation Made Easy by Darling Kindersley.
- 4) Oxford Advanced Learner's Compass, 8th Edition.
- 5) English in Mind (Series 1-4), Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge.
- 6) English Pronunciation in Use (Elementary, Intermediate, Advanced) Cambridge University Press.
- 7) TOEFL and GRE (KAPLAN, AARCO and BARRONS, USA, Cracking GRE by CLIFFS).



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