## Department Of Computer Science And Engineering

Program Name: B.Tech

Faculty Name: Dr. A.Rama Devi

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | I-I | ENGLISH-I | R161101 | 18/06/2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 57 Hours | Theory 4 | Practical 3 | 3 | Internal 30 | External 70 | 3 |

Programme Outcomes:

| | **Program Outcome** |
|---|---|
| PO1. | **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO2. | **Problem analysis**: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO3. | **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO4. | **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| **Not-selected as the course does not address any of these aspects.** | |

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|---|---|
| PO5. | **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO6. | **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO7. | **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| **Selected as the course addresses knowledge domain for sustainable development** | |
| PO8. | **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| **Not-selected as the course does not address ethical issues .** | |
| | |
| PO9. | **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| **Selected as the course addresses the importance of teamwork and leadership qualities.** | |
| PO10. | **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| **Selected as the course addresses the importance of communication skills and effective presentation.** | |
| PO11. | **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| **Selected as students can understand how to manage projects in multidisciplinary environment** | |
| PO12. | **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |
| **Selected as student can recognize the need for life-long learning.** | |

Programme Specific Outcomes:

| | |
|---|---|
| **PSO1** | Practices of mathematical ideas: By using mathematical techniques to solve problems using appropriate |

| | |
|---|---|
| | mathematical study, data structure and algorithms. |
| **Not-selected as the course does not address any of these aspects.** | |
| **PSO2** | Practices Of Computing: The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| **Not-selected as the course does not address any of these aspects.** | |
| **PSO3** | Practices of Software Development: By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and plat form independent skills |
| **Not selected as the course does not address any aspects.** | |

Course Objectives:

1. To learn the skills of grammar

2. To communicate in English very clearly and effectively

Course Outcomes:

CO1: Develop knowledge in different fields and serve the society accordingly.

CO2: Develop listening skills to communicate effectively.

CO3: Improve comprehension skills.

CO4: Improve fluency of speech

CO5: Develop English language reading skills

CO6: Develop writing skills

# ENGLISH-I
## (Common to all Branches)

**ENGLISH FOR ENGINEERS AND TECHNOLOGISTS**, Published by **Orient Blackswan Pvt.Ltd.**

**NON-DETAILED TEXTBOOK:**

**PANORAMA: A COURSE ON READING**, Published by **Oxford University Press India**

**UNIT I:**

1. 'Human Resources' from English for Engineers and Technologists.

2. 'An Ideal Family' from Panorama: A Course on Reading

**UNIT 2:**

1. ' Transport: Problems and Solutions' from English for Engineers and Technologists.

2. 'War' from 'Panorama : A Course on Reading'

**UNIT 3:**

1. 'Evaluating Technology' from English for Engineers and Technologists.

2. 'The Verger' from ‘Panorama: A Course on Reading'

**UNIT 4:**

1. 'Alternative Sources of Energy' from English for Engineers and Technologists.

2. ' The Scarecrow' from Panorama: A Course on Reading

**UNIT 5:**

1. 'Our Living Environment' from English for Engineers and Technologists.

2. 'A Village Host to Nation' from Panorama: A Course on Reading

UNIT 6:

1. ' Safety and Training' from English for Engineers and Technologists.
2. 'Martin Luther King and Africa' from Panorama: A Course on Reading

**Program Name: B.Tech (LAB)** **Faculty Name: Dr. A.Rama Devi**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | I-I | ECS-I | IR161114 | 18/06/2018 |

## SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 33 Hours | Theory 4 | Practical 3 | 3 | Internal 25 | External 50 | 2 |

Programme Outcomes:

| | Program Outcome |
|---|---|
| PO1. | **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO2. | **Problem analysis**: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO3. | **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO4. | **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| **Not-selected as the course does not address any of these aspects.** | |

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|---|---|
| PO5. | **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO6. | **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO7. | **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| **Selected as the course addresses knowledge domain for sustainable development** | |
| PO8. | **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| **Not-selected as the course does not address ethical issues .** | |
| | |
| PO9. | **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| **Selected as the course addresses the importance of teamwork and leadership qualities.** | |
| PO10. | **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| **Selected as the course addresses the importance of communication skills and effective presentation.** | |
| PO11. | **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| **Selected as students can understand how to manage projects in multidisciplinary environment** | |
| PO12. | **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |
| **Selected as student can recognize the need for life-long learning.** | |

Programme Specific Outcomes:

| | |
|---|---|
| **PSO1** | Practices of mathematical ideas: By using mathematical techniques to solve problems using appropriate |

| | |
|---|---|
| | mathematical study, data structure and algorithms. |
| **Not-selected as the course does not address any of these aspects.** | |
| **PSO2** | Practices Of Computing: The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| **Not-selected as the course does not address any of these aspects.** | |
| **PSO3** | Practices of Software Development: By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and plat form independent skills |
| **Not selected as the course does not address any aspects.** | |

Course Objective:

To communicate in English very clearly and effectively

Course Outcomes:

CO1: Develop LSRW Skills to communicate effectively.

**SYLLABUS: ENGLISH COMMUNICATION SKILLS LAB – I**

UNIT 1:
Why Study Spoken English
Making Inquiries on Phone
Responding to Thanks
Practice Work
UNIT 2:
Requests, Permissions, and Directions
Practice Work
UNIT 3:
Clarifying, Inviting, Complaining, Congratulating and Expressing Sympathy
Apologizing, Advising, Suggesting, Agreeing and Disagreeing
Practice Work
UNIT 4:
Letters and Sounds
Practice Work
UNIT 5:
The Sounds of English
Practice Work
UNIT 6:
Pronunciation
Stress and Intonation
Practice Work

**Program Name: B.TECH** **Faculty Name: A.BINDU MADHAVI**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | I-I | APPLIED PHYSICS | R161104 | 18/06/2018 |

SYLLABUS

| Total No. of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical 6 | 3 | Internal 30 | External 70 | 3 |

**OBJECTIVES:** Physics curriculum which is re-oriented to the needs of Circuital branches of graduate engineering courses offered by JNTUniv.Kkd. That serves as a transit to understand the branch specific advanced topics

The courses are designed to:

• Impart Knowledge of Physical Optics phenomena like Interference, Diffraction and Polarization involving required to design instruments with higher resolution.

• Teach Concepts of coherent sources, its realization and utility optical instrumentation.

• Study the concepts regarding the bulk response of materials to the EM fields and their analytically study in the back-drop of basic quantum mechanics.

• Understand the physics of Semiconductors and their working mechanism for their utility in sensors.

**OUTCOME:**

Construction and working details of instruments, that is Interferometer, Diffractometer and Polarimeter are learnt. Study EM-fields and semiconductors under the concepts of Quantum mechanics paves way for their optimal utility

**Programme Outcomes:**

1. **Engineering knowledge:**

   Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis:**

   Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions:**

   Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems:**

   Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage:**

   Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society:**

   Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**9. Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**10. Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**11. Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**12. Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

| | |
|---|---|
| PS01 | Produce graduates who will demonstrate skills required to communicate, collaborate and continue to learn effectively as ethically and socially responsible computer science and engineering professionals. |
| PS02 | Produce graduates who will be employed as Computer Science & Engineering professionals who serve beyond entry level positions in industrial/R&D organizations and/or be making satisfactory progress in higher degree programs in national/international repute institutes. |
| PS03 | Predict the changing direction of information technology and evaluate and communicate the likely utility of new technologies to computer science and engineering professionals. |
| | |

**SYLLABUS**

**UNIT-I**

**INTERFERENCE**: Principle of Superposition – Coherent Sources – Interference in thin films (reflection geometry) – Newton's rings – construction and basic principle of Interferometers.

**UNIT-II**

DIFFRACTION: Fraunhofer diffraction at single slit - Cases of double slit, N-slits & Circular Aperture (Qualitative treatment only)-Grating equation - Resolving power of a grating, Telescope and Microscopes.

**UNIT-III**

POLARIZATION: Types of Polarization – Methods of production - Nicol Prism - Quarter wave plate and Half Wave plate – Working principle of Polarimeter (Sacharimeter). LASERS: Characteristics– Stimulated emission – Einstein's Transition ProbabilitiesPumping schemes - Ruby laser – Helium Neon laser.

**UNIT-IV**

ELECTROMAGNETIC FIELDS: Scalar and Vector Fields – Electric PotentialGradient, Divergence of fields – Gauss and Stokes theorems-Propagation of EM waves through dielectric medium.

**UNIT-V**

QUANTUM MECHANICS: Introduction - Matter waves – Schröedinger Time Independent and Time Dependent wave equations – Particle in a box.

FREE ELECTRON THEORY: Defects of Classical free electron theory –Quantum Free electron theory - concept of Fermi Energy

**UNIT-VI**

BAND THEORY OF SOLIDS: Bloch's theorem (qualitative) – Kronig – Penney model – energy bands in crystalline solids – classification of crystalline solids– effective mass of electron & concept of hole. SEMICONDUCTOR PHYSICS: Conduction – Density of carriers in Intrinsic and Extrinsic semiconductors – Drift & Diffusion – relevance of Einstein's equation- Hall effect in semiconductors

| | Course Outcome | POs/ PSOs | CL | Class Sessions (approximate) | Tutorial (Hrs) | Lab Sessions (Hrs) |
|---|---|---|---|---|---|---|
| CO1 | **Identify** the principles and concepts of Interference observations in daily life, Construction and working details of optical instruments based on concepts of Interference. | PO1,PO2 PO6,PO7 PO8,PO9 PO10,PO12 PSO1,PSO2 | **Apply (K3)** | 10 | 1 | 6 |
| CO2 | **Identify** the diffraction due to different obstacles , resolving powers of optical instruments . Construction, working details of the optical instruments based on concepts of diffraction | PO1,PO2 PO6,PO7 PO8,PO9 PO10,PO12 PSO1,PSO2 | **Apply (K3)** | 10 | 1 | 6 |
| CO3 | **Identify** the concepts of polarization and lasers and Construction, working details of the Ruby, He-Ne lasers | PO1,PO2 PO6,PO7 PO8,PO9 PO10,PO12 PSO1,PSO2 | **Apply (K3)** | 12 | 1 | 0 |
| CO4 | **Explain** the concepts of vector and scalar fields, Propagation of E.M. waves in dielectrics | PO1,PO2 PO6,PO7 PO8,PO9 PO10,PO12 PSO1,PSO2 | **Understand (K2)** | 10 | 1 | 3 |
| CO5 | **Explain** the concepts and equations of matter waves in quantum mechanics and Explain different Electron theories of metals. | PO1,PO2 PO6,PO7 PO8,PO9 PO10,PO12 PSO1,PSO2 | **Understand (K2)** | 10 | 1 | 6 |

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|---|---|---|---|---|---|---|
| CO6 | **Analyze the** band theory of solids, energy band formation and concepts of semiconductor physics | PO1,PO2<br>PO6,PO7<br>PO8,PO9<br>PO10,PO12<br>PSO1,PSO2 | **Analyze (K4)** | 12 | 1 | 12 |
| Total Hours of instruction | | | | 64 | 6 | 39 |

**Program Name: B.Tech** **Faculty Name: SK.AREEF**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | I-I | MATHEMATICS-I | R161102 | 18/06/2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 77 | Internal | External | 3 |

Programme Outcomes:

| | Program Outcome |
|---|---|
| PO1. | **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| **Selected as application of knowledge of mathematics and science is involved in calculating troubles using advanced materials as engineering materials.** | |
| PO2. | **Problem analysis**: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| **Selected as students can identify and analyze the problems of corrosion and can adopt new methods to overcome corrosion** | |
| PO3. | **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| **Selected as the student can develop and construct the fuel cells and batteries.** | |
| PO4. | **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |

| | |
|---|---|
| | **Selected as students are required to do experiments using electronic devices like conductometers, potentiometers.** |
| PO5. | **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| | **selected as students learn the usage of modern tools and techniques for complex engineering materials like nanomaterials , liquid crystals, polymers.** |
| PO6. | **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| | **selected as ,by the contextual knowledge of green chemistry, fuels etc student can assess societal, health and safety issues** |
| PO7. | **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| | **Selected as the course address issues related to environment and sustainability.** |
| PO8. | **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| | **Not-selected as the course does not address ethical issues .** |
| PO9. | **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| | **Not selected as the course does not related.** |
| PO10. | **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| | **Not Selected as the course does not address complex engineering activities with the engineering community.** |
| PO11. | **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| | **Selected as students can understand how to manage projects in multidisciplinary environment** |
| PO12. | **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in |

| | |
|---|---|
| | independent and life-long learning in the broadest context of technological change. |

Programme Specific Outcomes:

| | |
|---|---|
| **selected as student can recognize the need for life-long learning in the context of technological change.** | |
| **PSO1** | Produce graduates who will demonstrate skills required to communicate, collaborate and continue to learn effectively as ethically and socially responsible computer science and engineering professionals. |
| **Selected as the course provides skills required to learn effectively as ethically and socially responsible engineering professionals..** | |
| **PSO2** | Produce graduates who will be employed as Computer Science & Engineering professionals who serve beyond entry level positions in industrial/R&D organizations and/or be making satisfactory progress in higher degree programs in national/international repute institutes. |
| **selected as the course addresses materials which serve Engineering professionals for making satisfactory progress in higher degree programs in national/international repute institutes.** | |
| **PSO3** | Predict the changing direction of information technology and evaluate and communicate the likely utility of new technologies to computer science and engineering professionals |
| **Not selected as the course does not address any aspects.** | |
| **PSO4** | Ensure employability and career development skills through Industry oriented mini & major projects, internship, industry visits, seminars and workshops |
| **Not selected as the course does not address any aspects.** | |

## Course Objectives:

1. The course is designed to equip the students with the necessary mathematical skills and techniques that are essential for an engineering course.
2. The skills derived from the course will help the student from a necessary base to develop analytic and design concepts.

## Course Outcomes:

* Apply first order and first degree differential equation to calculate orthogonal trajectories and current flow in a simple LR circuit.

* Discriminate among the structure and procedures of solving a higher order D.E with constant coefficients to calculate current flow in a simple LCR circuit.

* Apply Laplace transforms to solve ordinary differential equations

* Compute the Jacobians and Maxima and Minima (with constraints and without constraints) for functions of severable variables.

* Solve the partial differential equations of first order

* Solve the higher order Partial Differential Equations with constant coefficients

***UNIT I : Differential equations of first order and first degree:***

Linear- Bernoulli – Exact - Reducible to exact.

Applications: Newton's Law of cooling-Law of natural growth and decay-Orthogonal trajectories- Electrical circuits- Chemical reactions.

***UNIT II: Linear differential equations of higher order:***

Non-homogeneous equations of higher order with constant coefficients with RHS term of the type $e^{ax}$, sin ax, cos ax, polynomials in x, $e^{ax}$ V(x), xV(x)- Method of Variation of parameters.

Applications: LCR circuit, Simple Harmonic motion.

***UNIT III: Laplace transforms:***

Laplace transforms of standard functions-Shifting theorems - Transforms of derivatives and integrals – Unit step function –Dirac's delta function- Inverse Laplace transforms– Convolution theorem (with out proof).

Applications: Solving ordinary differential equations (initial value problems) using Laplace transforms.

***UNIT IV: Partial differentiation:***

Introduction- Homogeneous function-Euler's theorem-Total derivative-Chain rule-Generalized Mean value theorem for single variable (without proof)-Taylor's and Mc Laurent's series expansion of functions of two variables– Functional dependence- Jacobian.

Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with constraints).

***UNIT V: First order Partial differential equations:***

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation and nonlinear (standard types) equations.

***UNIT VI: Higher order Partial differential equations:***

Solutions of Linear Partial differential equations with constant coefficients. RHS term of the type $e^{ax+by}, \sin(ax+by), \cos(ax+by), x^m y^n$

Classification of second order partial differential equations.

**Program Name: B.TECH** **Faculty Name: SD PARVEEN**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSA-A&B | I-I | Mathematics-II | R161109 | 18/6/2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 55,53 | Internal-30 | External-70 | 3 |

Programme Outcomes:

| | Program Outcome |
|---|---|
| PO1. | **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| **Selected as application of knowledge of mathematics and science is involved in calculating troubles using advanced materials as engineering materials.** | |
| PO2. | **Problem analysis**: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| **Selected as students can identify and analyze the problems of corrosion and can adopt new methods to overcome corrosion** | |
| PO3. | **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| **Selected as the student can develop and construct the fuel cells and batteries.** | |
| PO4. | **Conduct investigations of complex problems**: Use research-based knowledge and research methods |

| | |
|---|---|
| | including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| **Selected as students are required to do experiments using electronic devices like conductometers, potentiometers.** | |
| PO5. | **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| **selected as students learn the usage of modern tools and techniques for complex engineering materials like nanomaterials , liquid crystals, polymers.** | |
| PO6. | **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| **selected as ,by the contextual knowledge of green chemistry, fuels etc student can assess societal, health and safety issues** | |
| PO7. | **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| **Selected as the course address issues related to environment and sustainability.** | |
| PO8. | **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| **Not-selected as the course does not address ethical issues .** | |
| | |
| PO9. | **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| **Not selected as the course does not related.** | |
| PO10. | **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| **Not Selected as the course does not address complex engineering activities with the engineering community.** | |
| PO11. | **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| **Selected as students can understand how to manage projects in multidisciplinary environment** | |
| PO12. | **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |

Programme Specific Outcomes:

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|---|---|
| **selected as student can recognize the need for life-long learning in the context of technological change.** | |
| **PSO1** | Produce graduates who will demonstrate skills required to communicate, collaborate and continue to learn effectively as ethically and socially responsible computer science and engineering professionals. |
| **Selected as the course provides skills required to learn effectively as ethically and socially responsible engineering professionals..** | |
| **PSO2** | Produce graduates who will be employed as Computer Science & Engineering professionals who serve beyond entry level positions in industrial/R&D organizations and/or be making satisfactory progress in higher degree programs in national/international repute institutes. |
| **selected as the course addresses materials which serve Engineering professionals for making satisfactory progress in higher degree programs in national/international repute institutes.** | |
| **PSO3** | Predict the changing direction of information technology and evaluate and communicate the likely utility of new technologies to computer science and engineering professionals |
| **Not selected as the course does not address any aspects.** | |
| **PSO4** | Ensure employability and career development skills through Industry oriented mini & major projects, internship, industry visits, seminars and workshops |

Course Objectives:

1. 1. The course is designed to equip the students with the necessary mathematical skills and techniques that are essential for an engineering course.
2. The skills derived from the course will help the student from a necessary base to develop analytic and design concepts.
3. Understand the most basic numerical methods to solve simultaneous linear equations.

**Course Outcomes:**

CO1 Compare the rate of accuracy between Different methods in approximating a root of an equation.

CO2 Estimate the best fit polynomial for the given tabulated data using the methods of Newton's, Gauss and Lagrange's interpolation.

CO3 Solve an initial value problem involving an ordinary differential equation by using various numerical methods

CO4 Determine the Fourier coefficients in the Fourier series expansion of a given function in both Standard as well as arbitrary intervals.

CO5 Evaluate the solutions of heat, wave and Laplace equations.

CO6 Distinguish Among the three transformation techniques Fourier Transforms, Fourier cosine transforms and Fourier sine transforms.

***UNIT I: Solution of Algebraic and Transcendental Equations:***

Introduction- Bisection method – Method of false position – Iteration method – Newton-Raphson method (One variable and simultaneous Equations).

***UNIT II: Interpolation:***

Introduction- Errors in polynomial interpolation – Finite differences- Forward differences-Backward differences –Central differences – Symbolic relations and separation of symbols - Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unequal intervals - Lagrange's interpolation formula.

**UNIT III: Numerical Integration and solution of Ordinary Differential equations:** Trapezoidal rule- Simpson's $1/3^{rd}$ and $3/8^{th}$ rule-Solution of ordinary differential equations by Taylor's series-Picard's method of successive approximations-Euler's method - Runge-Kutta method (second and fourth order).

***UNIT IV: Fourier Series:***

Introduction- Periodic functions – Fourier series of -periodic function - Dirichlet's conditions – Even and odd functions –Change of interval– Half-range sine and cosine series.

***UNIT V: Applications of PDE:***

Method of separation of Variables- Solution of One dimensional Wave, Heat and two-dimensional Laplace equation.

***UNIT VI: Fourier Transforms:***

Fourier integral theorem (without proof) – Fourier sine and cosine integrals - sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.

**Program Name:** B.Tech **Faculty Name:** Anand Thota

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE – A & B | I-I | **COMPUTER PROGRAMMING** | R161107 | 18-06-2018 |

| .Total No.of Hours | Hours / Week | | End Examination | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| | Theory | Practical | | Internal | External | |
| 66 Hrs | 4 | - | 3 Hrs | 30 | 70 | 3 |

**Programme Outcomes:**

**PO1: Engineering knowledge:**

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO2: Problem analysis:**

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations

**PO3: Design/development of solutions:**

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO4: Conduct Investigations of Complex problems:**

Use research–based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5: Modern tool usage:**

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6: The engineer and society:**

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7: Environment and sustainability:**

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8: Ethics:**

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9: Individual and team work:**

Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10: Communication:**

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11: Project management and finance:**

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12: Life-long learning:**

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**Programme Specific Outcomes:**

**PSO1 Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms.

**PSO2 Practices of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems.

**PSO3 Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills.

**Course Objectives:**

Student able to

1. Understand Notion of Operation of a CPU, Notion of an algorithm and computational procedure, editing and
2. Execute programs in Linux.
3. Understand branching, iteration and data representation using arrays.
4. Understand modular programming and recursive solution formulation.
5. Understand pointers and dynamic memory allocation.

**Course Outcomes:**

Student able to:

- **CO1: Understand** the working of key components of a computer system.(K2)
- **CO2: Describe** the fundamental programming constructs and articulate how they are used to develop a program with a desired runtime execution flow.(K2)
- **CO3: Identify** the right control statements based on the problem statement.(K3)

**CO4:** **Understand** procedural oriented programming using functions.(K2)
**CO5:** **Distinguish** homogenous and heterogeneous data types(K4)
**CO6:** **Illustrate** the concept of pointers and file system for handling data storage.(K2)

**Program Name:** B.Tech **Faculty Name:** Anand Thota

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE – A & B | I-I | **COMPUTER PROGRAMMING LAB** | R161119 | 18-06-2018 |

| .Total No.of Hours | Hours / Week | | End Examination | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| | Theory | Practical | | Internal | External | |
| 42 Hrs | - | 3 | 3 Hrs | 25 | 50 | 2 |

**Programme Outcomes:**

**PO1: Engineering knowledge:**

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO2: Problem analysis:**

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations

**PO3: Design/development of solutions:**

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO4: Conduct Investigations of Complex problems:**

Use research–based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5: Modern tool usage:**

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6: The engineer and society:**

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7: Environment and sustainability:**

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8: Ethics:**

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9: Individual and team work:**

Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10: Communication:**

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11: Project management and finance:**

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12: Life-long learning:**

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**Programme Specific Outcomes:**

**PSO1 Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms.

**PSO2 Practices of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems.

**PSO3 Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills.

**Course Objectives:**

Student able to

1. Understand the basic concept of C Programming, and its different modules that includes conditional and looping expressions, Arrays, Strings, Functions, Pointers, Structures and File programming.
2. Acquire knowledge about the basic concept of writing a program.
3. Role of constants, variables, identifiers, operators, type conversion and other building blocks of C Language.
4. Use of conditional expressions and looping statements to solve problems associated with conditions and repetitions.
5. Role of Functions involving the idea of modularity.

**Course Outcomes:**

Student able to:

**CO7:** Apply and practice logical ability to solve the problems and Analyzing the complexity of problems, Modularize the problems into small modules and then convert them into programs (K3)

**Program Name: B.TECH** **Faculty Name: A. BINDU MADHAVI**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | I-I | APPLIED PHYSICS LAB | R161115 | 2016 |

**SYLLABUS**

| Total No. of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 6 | 3 | Internal 25 | External 50 | 3 |

**Outcome:** *Physics lab curriculum gives fundamental understanding of design of an instrument with targeted accuracy for physical measurements.*

**Programme Outcomes:**

1. **Engineering knowledge:**
   a. Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:**
   a. Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:**
   a. Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:**
   a. Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:**
   a. Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:**

a. Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

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

**Programme Specific Outcomes:**

| | |
|---|---|
| **PSO1** | Produce graduates who will demonstrate skills required to communicate, collaborate and continue to learn effectively as ethically and socially responsible computer science and engineering professionals. |
| **selected as the course does not address any aspects.** | |
| **PSO2** | Produce graduates who will be employed as Computer Science & Engineering professionals who serve beyond entry level positions in industrial/R&D organizations and/or be making satisfactory progress in higher degree programs in national/international repute institutes |
| **selected as the course does not address any aspects.** | |
| **PSO 3** | Predict the changing direction of information technology and evaluate and communicate the likely utility of new technologies to computer science and engineering professionals. |
| **Not selected as the course does not address any aspects.** | |

**SYLLABUS**

**LIST OF EXPERIMENTS:**

1. ***Determination of wavelength of a source-Diffraction Grating-Normal incidence.***
2. ***Newton's rings – Radius of Curvature of Plano - Convex Lens.***
3. ***Determination of thickness of a spacer using wedge film and parallel interference fringes.***
4. ***Determination of wavelength of laser source using diffraction grating.***

5. ***Determination of Planck's constant using photocell.***
6. Determination of Young's modulus by method of single cantilever oscillations.
7. Determination of Rigidity modulus of a material- Torsional Pendulum
8. Determination of lattice constant – lattice dimensions kit.
9. ***Determination of velocity of sound – Volume Resonator.***
10. ***Melde's experiment – Transverse and Longitudinal modes.***
11. ***Determination of surface tension of liquid by capillary rise method.***
12. ***Determination of Acceleration due to Gravity and Radius of Gyration- Compound Pendulum***.
13. L- C- R Series Resonance Circuit.
14. Study of I/V Characteristics of Semiconductor diode.
15. I/V characteristics of Zener diode.
16. Energy Band gap of a Semiconductor p - n junction.
17. Time constant of CR circuit
18. ***Verification of laws of vibrations in stretched strings – Sonometer.***
20. Hall Effect in semiconductors.
21. Magnetic field along the axis of a current carrying coil – Stewart and Gee's apparatus.

| | Course Outcome | POs/ PSOs | CL (Cognitive level) | Class Sessions |
|---|---|---|---|---|
| CO1 | Determination of the physical values with targeted accuracy by explaining the principle involved in design of instruments. | PO1,PO2,PO4,PO6 ,PO7,PO8,PO9,PO10 PO11,PO12,PSO1 | **Evaluation** | 6 |

| **CO** | **POs** | | | | | | | | | | | | **PSOs** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **PO1 (K3)** | **PO2 (K4)** | **PO3 (K6)** | **PO4 (K6)** | **PO5 (K6)** | **PO6 (K6)** | **PO7 (K1)** | **PO8 (K3)** | **PO9 (K3)** | **PO10 (K2)** | **PO11 (K5)** | **PO12 (K2)** | **PSO1 (K5)** | **PSO2 (K5)** | **PSO3 (K5)** |
| **CO 1 (K5)** | **3** | **3** | | **1** | | **1** | **3** | **3** | **3** | **3** | **2** | **3** | **1** | | |

**Program Name: CSE-A&B** **Faculty Name: Dr.P.S. SRINIVAS**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| I | II | Engineering Drawing | R161106 | 11/06/2018 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 80 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

**OBJECTIVES:** Engineering drawing being the principle method of communication for engineers, the objective to introduce the students, the techniques of constructing the various types of polygons, curves and scales. The objective is also to visualize and represent the 3D objects in 2D planes with proper dimensioning, scaling etc.

**The courses are designed to:**

• To introduce the use and the application of drawing instruments and to make the students construct the polygons, curves and various types of scales. The student will be able to understand the need to enlarge or reduce the size of objects in representing them.

• To introduce orthographic projections and to project the points and lines parallel to one plane and inclined to other.

• To make the students draw the projections of the lines inclined to both the planes.

• To make the students draw the projections of the plane inclined to both the planes.

• To make the students draw the projections of the various types of solids in different positions inclined to one of the planes.

• To represent the object in 3D view through isometric views. The student will be able to represent and convert the isometric view to orthographic view and vice versa.

**COUIRSE OUTCOME:**

**1**. Understand the importance of BIS and ISO Standards in Engineering Drafting 2. Graphically construct and understand the importance of mathematical curves in Engineering applications 3. Visualize geometrical lines in 3D space through exercises in Orthographic Projections 4. Visualize geometrical Planes in 3D space through exercises in Orthographic Projections 5. Visualize geometrical Solids in 3D space through exercises in Orthographic Projections 6. Interpret Orthographic, Isometric and Perspective views of objects

**Programme Outcomes:**

**1. Engineering knowledge:**

Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**2. Problem analysis:**

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**3. Design/development of solutions:**

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**4. Conduct investigations of complex problems:**

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**5. Modern tool usage:**

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**6. The engineer and society:**

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**7. Environment and sustainability:**

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**8. Ethics:**

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**9. Individual and team work:**

Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**10. Communication:**

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**11. Project management and finance:**

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**12. Life-long learning:**

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

**PS01**

Produce graduates who will demonstrate skills required to communicate, collaborate and continue to learn effectively as ethically and socially responsible computer science and engineering professionals.

**PS02**

Produce graduates who will be employed as Computer Science & Engineering professionals who serve beyond entry level positions in industrial/R&D organizations and/or be making satisfactory progress in higher degree programs in national/international repute institutes.

**PS03**

Predict the changing direction of information technology and evaluate and communicate the likely utility of new technologies to computer science and engineering professionals

## SYLLABUS

**UNIT I** Polygons, Construction of regular polygons using given length of a side; Ellipse, arcs of circles and Oblong methods; Scales – Vernier and Diagonal scales.

**UNIT II** Introduction to orthographic projections; projections of points; projections of straight lines parallel to both the planes; projections of straight lines – parallel to one plane and inclined to the other plane.

**UNIT III** Projections of straight lines inclined to both the planes, determination of true lengths, angle of inclinations and traces.

**UNIT IV** Projections of planes: regular planes perpendicular/parallel to one plane and inclined to the other reference plane; inclined to both the reference planes.

**UNIT V** Projections of Solids – Prisms, Pyramids, Cones and Cylinders with the axis inclined to one of the

planes.

**UNIT VI** Conversion of isometric views to orthographic views; Conversion of orthographic views to isometric views.

**Text Books:**

1. Engineering Drawing, N. D. Butt, Chariot Publicatio

**Program Name: B.Tech** **Faculty Name: Dr. A.Rama Devi**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | I-II | ECS-II | R161221 | 19/11/2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 33 Hours | Theory 4 | Practical 3 | 3 | Internal 25 | External 50 | 2 |

## Programme Outcomes:

| | Program Outcome |
|---|---|
| PO1. | **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO2. | **Problem analysis**: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO3. | **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO4. | **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |

| | |
|---|---|
| **Not-selected as the course does not address any of these aspects.** | |
| PO5. | **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO6. | **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO7. | **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| **Selected as the course addresses knowledge domain for sustainable development** | |
| PO8. | **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| **Not-selected as the course does not address ethical issues .** | |
| | |
| PO9. | **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| **Selected as the course addresses the importance of teamwork and leadership qualities.** | |
| PO10. | **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| **Selected as the course addresses the importance of communication skills and effective presentation.** | |
| PO11. | **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| **Selected as students can understand how to manage projects in multidisciplinary environment** | |
| PO12. | **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |
| **Selected as student can recognize the need for life-long learning.** | |

## Programme Specific Outcomes:

| | |
|---|---|
| **PSO1** | Practices of mathematical ideas: By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| **Not-selected as the course does not address any of these aspects.** | |
| **PSO2** | Practices Of Computing: The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| **Not-selected as the course does not address any of these aspects.** | |
| **PSO3** | Practices of Software Development: By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and plat form independent skills |
| **Not selected as the course does not address any aspects.** | |

## Course Objective:

To communicate in English very clearly and effectively

## Course Outcomes:

CO1: Develop LSRW Skills to communicate effectively.

**SYLLABUS: ENGLISH COMMUNICATION SKILLS LAB – II**

UNIT 1
Debating
Practice Work
UNIT 2:
Group Discussions
Practice Work
UNIT 3:
Presentation Skills
Practice Work
UNIT 4:
Interview Skills
Practice Work
UNIT 5:
3.Mail
Curriculum
Vitae Practice
Work UNIT 6:
Idiomatic Expressions
Common Errors in English
Practice Work

**Program Name: I BTECH** **Faculty Name: S.SRAVYA**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | I-II | APPLIED CHEMISTRY | **R161227** | 5/11/2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 39Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 2 |

## Programme Outcomes:

| *Program Outcome* | |
|---|---|
| PO1. | Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| **Selected as application of knowledge of mathematics and science is involved in calculating troubles by chemical methods and instrumental methods of analysis.** | |
| PO2. | Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| **Selected as students can identify and analyze complex engineering problems and can adopt new methods .** | |
| PO3. | Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| **Selected as the student can develop chemical and instrumental methods for the public health and safety, and the cultural, societal, and environmental considerations.** | |

| | |
|---|---|
| PO4. | Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| **Selected as students are required to do experiments using electronic devices like conductometers, potentiometers.** | |
| PO5. | Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| **selected as the course apply appropriate techniques and modern engineering tools** | |
| PO6. | The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| **selected as the contextual knowledge of conductance, potential of materials helps to assess societal, health and safety issues** | |
| PO7. | Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| **Selected as the course address issues related to environment and sustainability.** | |
| PO8. | Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| **Selected as the courseapply ethical principles and responsibilities and norms of the engineering practice**. | |
| PO9. | Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| **Not selected as the course does not related**. | |
| PO10. | Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| **Not Selected as the course does not address complex engineering activities with the engineering community**. | |
| PO11. | Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| **Not Selected as course doesnot relate to this.** | |
| | PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |

| |
|---|
| **Selected as student can recognize the need for life-long learning in the context of technological change.** |

## Programme Specific Outcomes:

| | |
|---|---|
| **PSO1** | Practices of mathematical ideas: By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms |
| **Not selected as the course does not address any aspects.** | |
| **PSO2** | Practices Of Computing: The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| **Not selected as the course does not address any aspects.** | |
| **PSO3** | Practices of Software Development: By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and plat form independent skills |
| **Not selected as the course does not address any aspects.** | |

## Course Objectives:

3. The students entering into the professional course have practically very little exposure to lab classes.
4. The experiments introduce volumetric analysis; redox titrations with different indicators; EDTA titrations; then they are exposed to a few instrumental methods of chemical analysis.

## Course Outcomes:

| | Course Outcome | POs/ PSOs | CL (Cognitive level) | Class Sessions Taken |
|---|---|---|---|---|
| CO - 1 | Develop the knowledge of volumetric and instrumental methods of analysis in determining the quality of unknown products. | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO12. | EV | 14 |

List of Experiments

3. Introduction to chemistry laboratory – Molarity, Normality, Primary, Secondary standard solutions, Volumetric titrations, Quantitative analysis, Quantitative analysis etc.,
4. Trial experiment – Estimation of HCI using standard Na2CO3 solutions
5. Determination of alkalinity of a sample containing Na2CO3 and NaOH.
6. Determination of KMnO4 using standard Oxalic acid solution.
7. Determination of Ferrous iron using standard K2Cr2O7 solution.
8. Determination of Copper using standard K2Cr2O7 solution.
9. Determination of temporary and permanent hardness of water using standard EDTAsolution.
10. Determination of Copper using standard EDTA solution.
11. Determination of Iron by a Colorimetric method using thiocynate as reagent.
12. Determination of pH of the given sample solution using pH meter.
13. Conductometric titration between strong acid and strong base.
14. Conductometric titration between strong acid and weak base.

3. Potentiometric titration between strong acid and strong base.
4. Potentiometric titration between strong acid and weak base.
5. Determination of Zinc using standard EDTA solution.
6. Determination of Vitamin – C.

**Program Name: I BTECH** **Faculty Name: S.SRAVYA**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | I-II | ENVIRONMENTAL STUDIES | **R161212** | 5/11/2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 42 Hours | Theory 3 | Practical | 3 | Internal 30 | External 70 | 3 |

## Programme Outcomes:

| | Program Outcome |
|---|---|
| PO1. | **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| **Selected as application knowledge of topography for calculating challenges of environment.** | |
| PO2. | **Problem analysis**: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| **Selected as students can identify and analyze the problems of natural recourses and can adopt new methods to over-exploitation.** | |
| PO3. | **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| **Selected as the student can nature and conserve species richness** | |
| PO4. | **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to |

| | |
|---|---|
| | provide valid conclusions. |
| **Selected as students are required to overcome pollution using plants as devices like green campus and green belt.** | |
| PO5. | **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| **selected as students learn the usage of environmental laws as tools to protect the environment..** | |
| PO6. | **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| **selected as ,by the contextual knowledge of green business ,green politics can asses societal, health and safely.** | |
| PO7. | **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. |
| **Selected as the course address issues related to environment and sustainabilit.** | |
| PO8. | **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| **selected as the course needs ethical values.** | |
| | |
| PO9. | **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| **selected as the course needs awareness about waste management and pollution control.** | |
| PO10. | **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| **Selected as the course needs effective communication for sustainability.** | |
| PO11. | **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| **Selected as students can understand how to manage projects in multidisciplinary environment** | |
| PO12. | **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |

**selected as student can recognize the need for life-long learning in the context of technological change**

## Programme Specific Outcomes:

| | |
|---|---|
| **PSO1** | Practices of mathematical ideas: By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms |
| **Not selected as the course does not address any aspects.** | |
| **PSO2** | Practices Of Computing: The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| **Not selected as the course does not address any aspects.** | |
| | **PSO3** Practices of Software Development: By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and plat form independent skills |

**Not selected as the course does not address any aspects.**

## Course Objectives:

•Overall understanding of the natural resources.
• Basic understanding of the ecosystem and its diversity.
3. Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities.
• An understanding of the environmental impact of developmental activities.
• Awareness on the social issues, environmental legislation and global treaties

## Course Outcomes:

| | Course Outcome | POs/ PSOs | CL (Cognitive level) | Class Sessions taken |
|---|---|---|---|---|
| CO1 K2 | Illustrate various environmental challenges due to anthropogenic activities &awareness on social issues | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9 | UN | 14 |
| CO2K 2 | *To make students understand the importance of natural resources and their conservation.* | PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO9, PO10, PO12 | UN | 11 |
| C03 K3 | *Solve the threats of bio-diversity* | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, | SOLVE | 8 |

| | | | | |
|---|---|---|---|---|
| | | PO11, PO12 | | |
| CO4<br>K2 | Minimize the pollution by creating awareness in people | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11,PO12 | UN | 9 |
| CO5<br>K3 | Minimize environmental laws to combat the challenges | PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10 | SOLVE | 9 |
| CO6<br>K2 | *Create awareness on green concepts.* | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12. | UN | 10 |
| Total Hours of instruction | | | | 42 |

**UNIT – I** Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, Carbon Credits, acid rains, ozone layer depletion, population growth and explosion, effects. Role of information Technology in Environment and human health

Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem. - Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. - Food chains, food webs and ecological pyramids. - Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.

**UNIT – II Natural Resources:** Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, Sustainable mining of Granite, Literate, Coal, Sea and River sands. Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources Vs Oil and Natural Gas Extraction. Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources. Equitable use of resources for sustainable lifestyles.

**UNIT – III Biodiversity and its conservation: Definition:** genetic, species and ecosystem diversityclassification - Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-spots of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts - Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.

UNIT – IV Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an

individual in prevention of pollution. - Pollution case studies, Sustainable Life Studies. Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.

**UNIT – V Social Issues and the Environment:** Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act -Wildlife Protection Act - Forest Conservation Act-Issues involved in enforcement of environmental legislation. -Public awareness. UNIT – VI Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism, Green Campus – Green business and Green politics. The student should Visit an Industry/Ecosystem and submit a report individually on any issues related to Environmental Studies course and make a power point presentation.

Text Books: 1. Environmental Studies, K.V. S. G. Murali Krishna, VGS Publishers, Vijayawada 2. Environmental Studies , R. Rajagopalan, 2nd Edition, 2011, Oxford University Press. 3. Environmental Studies, P.N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai Reference: 1. Text Book of Environmental Studies, Deeshita Dave & P. UdayaBhaskar, Cengage Learning. 2. A Textbook of Environmental Studies, Shaashi Chawla, TMH, New Delhi 3. Environmental Studies, Benny Joseph, Tata McGraw Hill Co, New Delhi 4. “Perspectives in Environment Studies” Anubha Kaushik, C P Kaushik, New Age International

**Program Name: B.Tech** **Faculty Name: Dr. A.Rama Devi**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | I-II | ENGLISH-II | R161201 | 19/11/2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 56 Hours | Theory 4 | Practical 3 | 3 | Internal 30 | External 70 | 3 |

## Programme Outcomes:

| | Program Outcome |
|---|---|
| PO1. | **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO2. | **Problem analysis**: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO3. | **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO4. | **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO5. | **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO6. | **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. |
| **Not-selected as the course does not address any of these aspects.** | |
| PO7. | **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need |

| | |
|---|---|
| | for sustainable development. |
| **Selected as the course addresses knowledge domain for sustainable development** | |
| PO8. | **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| **Not-selected as the course does not address ethical issues .** | |
| | |
| PO9. | **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. |
| **Selected as the course addresses the importance of teamwork and leadership qualities.** | |
| PO10. | **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions. |
| **Selected as the course addresses the importance of communication skills and effective presentation.** | |
| PO11. | **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. |
| **Selected as students can understand how to manage projects in multidisciplinary environment** | |
| PO12. | **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. |
| **Selected as student can recognize the need for life-long learning.** | |

## Programme Specific Outcomes:

| | |
|---|---|
| **PSO1** | Practices of mathematical ideas: By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| **Not-selected as the course does not address any of these aspects.** | |
| **PSO2** | Practices Of Computing: The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| **Not-selected as the course does not address any of these aspects.** | |
| **PSO3** | Practices of Software Development: By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and plat form independent skills |
| **Not selected as the course does not address any aspects.** | |

## Course Objectives:

1.To learn the skills of grammar
2.To communicate in English very clearly and effectively
Course Outcomes:
CO1: Develop English language skills in letter writing.
CO2: Improve technical writing skills
CO3:Interpret differentculturalshocksduetoglobalization
CO4: Improve assertive skills
CO5: Develop vocabulary skills in English language.
CO6: Apply various skills of grammar to speak and write flawless language

**SYLLABUS:**

**DETAILEDTEXTBOOK:ENGLISH ENCOUNTERS Published by MaruthiPublishers.**
**NON-DETAIL: THE GREAT INDIAN SCIENTISTS** Published by**Cengage learning**

**UNIT 1:**
'TheGreatestResource-
Education'fromEnglishEncounters'APJAbdulKalam'fromTheGreatIndianScientists.

**UNIT 2:**
'ADilemma'fromEnglishEncounters'CVRaman'fromTheGreatIndianScientists.

**UNIT 3:**
'CulturalShock':AdjustmentstonewCulturalEnvironmentsfromEnglishEncounters.'HomiJehangirBhabha'fromTheGreatIndianScientists.

**UNIT 4:**
'TheLottery'fromEnglishEncounters.'JagadishChandraBose'fromTheGreatIndianScientists.

**UNIT 5:**

'TheHealthThreatsofClimateChange'fromEnglishEncounters.PrafullaChandraRay'fromTheGreatIndianScientists.

**UNIT 6:**

'TheChiefSoftwareArchitect'fromEnglishEncounters'SrinivasaRamanujan'fromTheGreatIndianScientists.

**Program Name: B.Tech** **Faculty Name: Anand Thota**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE – A & B | I-II | OBJECT ORIENTED PROGRAMMING THROUGH C++ | R161215 | 19-11-2018 |

| .Total No.of Hours | Hours / Week | | End Examination | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| | Theory | Practical | | Internal | External | |
| 72 Hrs | 4 | - | 3 Hrs | 30 | 70 | 3 |

**Programme Outcomes:**

**PO1: Engineering knowledge:**

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO2: Problem analysis:**

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations

**PO3: Design/development of solutions:**

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO4: Conduct Investigations of Complex problems:**

Use research–based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5: Modern tool usage:**

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6: The engineer and society:**

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7: Environment and sustainability:**

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9: Individual and team work:**

Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10: Communication:**

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11: Project management and finance:**

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12: Life-long learning:**

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**Programme Specific Outcomes:**

**PSO1 Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms.

**PSO2 Practices of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems.

**PSO3 Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills.

**Course Objectives:**

Student able to

3. **Understand** the basic object oriented programming concepts and apply them in problem solving.
4. **Demonstrate** inheritance concepts for reusing the program
5. **Illustrate** on the member function overloading using polymorphism
6. **Develop** real world programs using generic programming.
7. **Understand** STL programming.

**Course Outcomes:**

Student able to:

**CO1:** **Understand** object oriented programming concepts to solve real world problems.(K2)

**CO2:** **Illustrate** the behavior of programs involving the basic programming constructs like control structures, Constructors and Destructors.(K2)

**CO3:** **Illustrate** the concept of abstract classes and inheritance to define generic classes.(K2)

**CO4:** **Apply** dynamic and static polymorphism to process objects depending on their class. (K3)

**CO5:** **Understand** the impact of exception handling to avoid abnormal termination of program and standard template programming. (K2)

**CO6:** **Understand the** concept of Standard Template Library(K2

**Program Name: B.Tech** **Faculty Name: Anand Thota**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE – A & B | I-II | OBJECT ORIENTED PROGRAMMING LAB | R161229 | 19-11-2018 |

| .Total No.of Hours | Hours / Week | | End Examination | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| | Theory | Practical | | Internal | External | |
| 42 Hrs | - | 3 | 3 Hrs | 25 | 50 | 2 |

**Programme Outcomes:**

**PO1: Engineering knowledge:**

Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO2: Problem analysis:**

Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations

**PO3: Design/development of solutions:**

Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO4: Conduct Investigations of Complex problems:**

Use research–based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5: Modern tool usage:**

Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6: The engineer and society:**

Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7: Environment and sustainability:**

Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8: Ethics:**

Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9: Individual and team work:**

Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10: Communication:**

Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11: Project management and finance:**

Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12: Life-long learning:**

Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**Programme Specific Outcomes:**

**PSO1 Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms.

**PSO2 Practices of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems.

**PSO3 Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills.

**Course Objectives:**

Student able to

- **Learn** adequate knowledge by problem solving techniques. Acquire knowledge about the basic concept of writing a program.
- **Understand** programming skills using the fundamentals and basics of object oriented Language.
- **Demonstrate** the differences between traditional imperative design and object-oriented design.
- **Improve** problem solving skills using inheritance, polymorphism, dynamic binding and generic structures in building reusable code.
- **Illustrate** standard temporary library.

**Course Outcomes:**

**CO7:** **Apply** object-oriented concepts to develop real world applications. (K3)

2. ns

3. Engineering Drawing, K. L. Narayana & P. Kannaiah, Scitech Publishers.

4. Engineering Graphics, P.I. Varghese, McGraw Hill Publishers

**Reference Books:**

1. Engineering Graphics for Degree, K. C. John, PHI Publishers

2. Engineering Drawing, Agarwal & Agarwal, Tata McGraw Hill Publishers

3. Engineering Drawing + AutoCad – K Venugopal, V. Prabhu Raja, New Age.

Program Name: B.Tech

Faculty Name: **G. Padmaja**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | II-I | Statistics With R programming | R1621051 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

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

8. Ethics: Apply ethical principles and commit to professional ethics and norms of the engineering practice.

5. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

6. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

7. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

## Programme Specific Outcomes:

| | |
|---|---|
| **PSO1** | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| **PSO2** | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| **PSO3** | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Course Objectives:**

15. Use R for statistical programming, computation, graphics, and modeling,

16. Write functions and use R in an efficient way,

17. Fit some basic types of statistical models.

18. Use R in their own research,

19. Be able to expand their knowledge of R on their own.

**Course Outcomes:**

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Create Various Advanced Data structures through R | Create |
| CO2 | Develop R programs using control structures | Create |
| CO3 | Apply Math and Simulation functions on various Problems like Vector cross product, Finding Stationary Distribution of Markov Chains and Vector cross product | Apply |
| CO4 | Develop Graphs using different R graphical functions. | Create |
| CO5 | Test the hypothesis using various probability distributions. | Evaluate |
| CO6 | Illustrate the linear and non linear regression models Understand | Understand |

UNIT-I:

Introduction, How to run R, R Sessions and Functions, Basic Math, Variables, Data Types, Vectors, Conclusion, Advanced Data Structures, Data Frames, Lists, Matrices, Arrays, Classes.

UNIT-II:

R Programming Structures, Control Statements, Loops, - Looping Over Non vector Sets,- If-Else, Arithmetic and Boolean Operators and values, Default Values for Argument, Return Values, Deciding Whether to explicitly call return- Returning Complex Objects, Functions are Objective, No Pointers in R, Recursion, A Quicksort Implementation-Extended Extended Example: A Binary Search Tree.

UNIT-III:

Doing Math and Simulation in R, Math Function, Extended Example Calculating Probability Cumulative Sums and Products-Minima and Maxima- Calculus, Functions Fir Statistical Distribution, Sorting, Linear Algebra Operation on Vectors and Matrices, Extended Example: Vector cross Product- Extended Example: Finding Stationary Distribution of Markov Chains, Set Operation, Input /out put, Accessing the Keyboard and Monitor, Reading and writer Files,

UNIT-IV:

Graphics, Creating Graphs, The Workhorse of R Base Graphics, the plot() Function – Customizing Graphs, Saving Graphs to Files.

UNIT-V:

Probability Distributions, Normal Distribution- Binomial Distribution- Poisson Distributions Other Distribution, Basic Statistics, Correlation and Covariance, T-Tests,-ANOVA.

UNIT-VI:

Linear Models, Simple Linear Regression, -Multiple Regression Generalized Linear Models, Logistic Regression, - Poisson Regression- other Generalized Linear Models-Survival Analysis, Nonlinear Models, Splines- Decision- Random Forests,

Program Name B.Tech Faculty Name: **Mr. Bhanu Chandra**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | II-I | Mathematical Foundations of Computer Science | R1621052 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

7. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

8. Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

9. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

10. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

11. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

12. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

4. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and norms of the engineering practice.

8. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

9. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

10. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

## Programme Specific Outcomes:

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Course Objectives:**

- To introduce the students to the topics and techniques of discrete methods and combinatorial reasoning.
- To introduce a wide variety of applications. The algorithmic approach to the solution of problems is fundamental in discrete mathematics, and this approach reinforces the close ties between this discipline and the area of computer science.

**Course Outcomes:**

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Create Various Advanced Data structures through R | Create |
| CO2 | Develop R programs using control structures | Create |
| CO3 | Apply Math and Simulation functions on various Problems like Vector cross product, Finding Stationary Distribution of Markov Chains and Vector cross product | Apply |
| CO4 | Develop Graphs using different R graphical functions. | Create |

| | | |
|---|---|---|
| CO5 | Test the hypothesis using various probability distributions. | Evaluate |
| CO6 | Illustrate the linear and non linear regression models Understand | Understand |

**UNIT –I Mathematical Logic:**

Propositional Calculus: Statements and Notations, Connectives, Well Formed Formulas, Truth Tables, Tautologies, Equivalence of Formulas, Duality Law, Tautological Implications, Normal Forms, Theory of Inference for Statement Calculus, Consistency of Premises, Indirect Method of Proof. Predicate Calculus: Predicative Logic, Statement Functions, Variables and Quantifiers, Free and Bound Variables, Inference Theory for Predicate Calculus.

**UNIT –II Set Theory:**

Introduction, Operations on Binary Sets, Principle of Inclusion and Exclusion, Relations: Properties of Binary Relations, Relation Matrix and Digraph, Operations on Relations, Partition and Covering, Transitive Closure, Equivalence, Compatibility and Partial Ordering Relations, Hasse Diagrams, Functions: Bijective Functions, Composition of Functions, Inverse Functions, Permutation Functions, Recursive Functions, Lattice and its Properties.

**UNIT- III Algebraic Structures and Number Theory:**

Algebraic Structures:Algebraic Systems, Examples, General Properties, Semi Groups and Monoids, Homomorphism of Semi Groups and Monoids, Group, Subgroup, Abelian Group, Homomorphism, Isomorphism

Number Theory: Properties of Integers, Division Theorem, The Greatest Common Divisor, Euclidean Algorithm, Least Common Multiple, Testing for Prime Numbers, The Fundamental Theorem of Arithmetic, Modular Arithmetic (Fermat's Theorem and Euler's Theorem)

**UNIT –IV Combinatorics:**

Basic of Counting, Permutations, Permutations with Repetitions, Circular Permutations, Restricted Permutations, Combinations, Restricted Combinations, Generating Functions of Permutations and Combinations, Binomial and Multinomial Coefficients, Binomial and Multinomial Theorems, The Principles of Inclusion–Exclusion, Pigeonhole Principle and its Application.

**UNIT –V Recurrence Relations:**

Generating Functions, Function of Sequences, Partial Fractions, Calculating Coefficient of Generating Functions, Recurrence Relations, Formulation as Recurrence Relations, Solving Recurrence Relations by Substitution and Generating Functions, Method of Characteristic Roots, Solving Inhomogeneous Recurrence Relations

**UNIT –VI Graph Theory:** Basic Concepts of Graphs, Sub graphs, Matrix Representation of Graphs: Adjacency Matrices, Incidence Matrices, Isomorphic Graphs, Paths and Circuits, Eulerian and Hamiltonian Graphs, Multigraphs, Planar Graphs, Euler's Formula, Graph Colouring and Covering, Chromatic Number, Spanning Trees, Algorithms for Spanning Trees (Problems Only and Theorems without Proofs).

**Program Name: B.Tech** **Faculty Name: P.Sri Silpa**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE -A | II-I | Digital Logic Design | R1621053 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

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

8. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
9. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Course Objectives:**

13. To introduce the basic tools for design with combinational and sequential digital logic and state machines.

**14.** To learn simple digital circuits in preparation for computer engineering.

**Course Outcomes:**

| | Course Outcomes | Cognitive Levels |
|---|---|---|
| CO1 | Apply the principles of number system, binary codes for addition and subtraction of signed and unsigned numbers | Apply |
| CO2 | Solve Boolean algebra expressions with min or max terms | Apply |
| CO3 | Design K-maps to minimize logical functions | Create |
| CO4 | Develop HDL Model and combinational logic circuits composed of encoders, decoders, multiplexers and demultiplexer | Create |
| CO5 | Design Moore and Mealy Models of Finite state machines with storage elements | Create |
| CO6 | Illustrate various Registers and Counters | Understand |

**UNIT- I: Digital Systems and Binary Numbers**

Digital Systems, Binary Numbers, Binary Numbers, Octal and Hexadecimal Numbers, Complements of Numbers, Complements of Numbers, Signed Binary Numbers, Arithmetic addition and subtraction

**UNIT -II: Concept of Boolean algebra**

Basic Theorems and Properties of Boolean algebra, Boolean Functions, Canonical and Standard Forms, Min terms and Max terms,

**UNIT- III: Gate level Minimization**

Map Method, Two-Variable K-Map, Three-Variable K-Map, Four Variable K-Maps. Products of Sum Simplification, Sum of Products Simplification, Don't – Care Conditions, NAND and NOR Implementation, Exclusive-OR Function

**UNIT- IV: Combinational Logic**

Introduction, Analysis Procedure, Design Procedure, Binary Adder−Sub tractor, Decimal Adder, Binary Multiplier, Decoders, Encoders, Multiplexers, HDL Models of Combinational Circuits

**UNIT- V: Synchronous Sequential Logic**

Introduction to Sequential Circuits, Storage Elements: Latches, Storage Elements: Flip-Flops, Analysis of Clocked Sequential Circuits, Mealy and Moore Models of Finite State Machines

**UNIT -VI: Registers and Counters**

Registers, Shift Registers, Ripple Counters, Synchronous Counters, Ring Counter, Johnson Counter, Ripple Counter

**Program Name: B.Tech** **Faculty Name: VSRK Prasad G**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE -A | II-I | Python Programming | R1621054 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

\endash **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

\endash **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

\endash **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

\endash **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

\endash **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

\endash **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

\endash **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

\endash **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

\endash **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

3. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

4. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

5. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

| | |
|---|---|
| **PSO1** | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| **PSO2** | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| **PSO3** | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Course Objectives:**

* Introduction to Scripting Language

* Exposure to various problems solving approaches of computer science

**Course Outcomes:**

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Create Various Advanced Data structures through R | Create |
| CO2 | Develop R programs using control structures | Create |
| CO3 | Apply Math and Simulation functions on various Problems like Vector cross product, Finding Stationary Distribution of Markov Chains and Vector cross product | Apply |
| CO4 | Develop Graphs using different R graphical functions. | Create |
| CO5 | Test the hypothesis using various probability distributions. | Evaluate |
| CO6 | Illustrate the linear and non linear regression models Understand | Understand |

**UNIT – I:**

Introduction: History of Python, Need of Python Programming, Applications Basics of Python Programming Using the REPL(Shell), Running Python Scripts, Variables, Assignment, Keywords, Input-Output, Indentation.

**UNIT – II:**

Types, Operators and Expressions: Types - Integers, Strings, Booleans; Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Expressions and order of evaluations Control Flow- if, if-elif-else, for, while, break, continue, pass

**UNIT – III:**

Data Structures Lists - Operations, Slicing, Methods; Tuples, Sets, Dictionaries, Sequences. Comprehensions.

**UNIT – IV:**

Functions - Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Fruitful Functions(Function Returning Values), Scope of the Variables in a Function - Global and Local Variables. Modules: Creating modules, import statement, from. Import statement, name spacing, Python packages, Introduction to PIP, Installing Packages via PIP, Using Python Packages

**UNIT – V:**

Object Oriented Programming OOP in Python: Classes, 'self variable', Methods, Constructor Method, Inheritance, Overriding Methods, Data hiding, Error and Exceptions: Difference between an error and Exception, Handling Exception, try except block, Raising Exceptions, User Defined Exceptions

**UNIT – VI:**

Brief Tour of the Standard Library - Operating System Interface - String Pattern Matching, Mathematics, Internet Access, Dates and Times, Data Compression, Multithreading, GUI Programming, Turtle Graphics Testing: Why testing is required ?, Basic concepts of testing, Unit testing in Python, Writing Test cases, Running Tests.

Program Name: **B.Tech** Faculty Name: **B.HANUMANTHA RAO**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE -A | II-I | Computer Graphics | R1621056 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

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

6. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

7. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
8. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

| | |
|---|---|
| **PSO1** | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| **PSO2** | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| **PSO3** | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Course Objectives:**

6. To develop, design and implement two and three dimensional graphical structures
7. To enable students to acquire knowledge Multimedia compression and animations
8. To learn Creation, Management and Transmission of Multimedia objects.

**Course Outcomes:**

| **CO 's** | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | **Describe** the basic output primitive drawing algorithms along with 2D transformation ,viewing &clipping concepts to display the objects | Understand |
| CO2 | **Describe** the theory of 3d transformations, projection ,viewing and visible detection methods | Understand |
| CO3 | **Create** computer graphics programs using opengl, | Apply |
| CO4 | **Create** rendering, shading and animation using opengl. | Apply |
| CO5 | **Create** fractals , Peano curves using iterated and random | Apply |
| CO6 | **Explain** ray tracing intersecting rays with other primitives Adding Surface texture Reflections and Transparency | Understand |

**UNIT-I:**

**2D Primitives**

Output primitives – Line, Circle and Ellipse drawing algorithms - Attributes of output primitives – Two dimensional Geometric transformations - Two dimensional viewing –Line, Polygon, Curve and Text clipping algorithms.

**UNIT-II:**

**3D Concepts**

Parallel and Perspective projections - Three dimensional object representation –Polygons, Curved lines, Splines, Quadric Surfaces, - Visualization of data sets 3Dtransformations – Viewing -Visible surface identification.

**UNIT-III:**

**Graphics Programming**Color Models – RGB, YIQ, CMY, HSV – Animations – General Computer Animation, Raster, Keyframe - Graphics programming using OPENGL Basic graphics primitives –Drawing three dimensional objects - Drawing three dimensional scenes

**UNIT- IV:**

**Rendering** Introduction to Shading models – Flat and Smooth shading – Adding texture to faces–Adding shadows of objects – Building a camera in a program – Creating shaded objects–Rendering texture – Drawing Shadows.

**UNIT- V:**

**Fractals**Fractals and Self similarity , Peano curves – Creating image by iterated functions, Mandelbrot sets – Julia Sets – Random Fractals

**UNIT- VI:**

**Overview of Ray Tracing** Intersecting rays with other primitives Adding Surface texture Reflections andTransparency – Boolean operations on Objects

Program Name: B.Tech Faculty Name: **Ch.B.V.Durga.**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE -A | II-I | Data Structures through C++ | R1621055 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

**2** **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**3** **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**4** **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

5 **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

6 **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

7 **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

8 **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

9 **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

10 **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

11 **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

8. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
9. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

| | |
|---|---|
| **PSO1** | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| **PSO2** | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| **PSO3** | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Course Objectives:**

13. To be familiar with basic techniques of object oriented principles and exception handling using C++
14. To be familiar with the concepts like Inheritance, Polymorphism
15. Solve problems using data structures such as linear lists, stacks, queues, hash tables
16. Be familiar with advanced data structures such as balanced search trees, AVL Trees, and B Trees.

**Course Outcomes:**

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Design various ADT's like Polynomial ADT, Sparse Matrix ADT using Arrays | Create |
| CO2 | Design Stack & Queue ADT's with Templates and Arrays | Create |
| CO3 | Design various linked list ADT's and polynomial operations with Templates and Linked Lists | Create |
| CO4 | Design various operations on Binary Trees, Threaded Binary Trees, Heap Trees and Binary Search Trees. | Create |
| CO5 | Construct Minimum cost spanning trees, Shortest path, and transitive closure with Graph ADT's. | Create |
| CO6 | Analyze Insertion, merge, quick and heap Sorting Techniques. | Analyze |

**UNIT-I: ARRAYS**

Abstract Data Types and the C++ Class, An Introduction to C++ Class- Data Abstraction and Encapsulation in C++- Declaring Class Objects and Invoking Member Functions- Special Class Operations- Miscellaneous

Topics- ADTs and C++Classes, The Array as an Abstract Data Type, The Polynomial Abstract Data type- Polynomial Representation- Polynomial Addition. Spares Matrices, Introduction- Sparse Matrix Representation- Transposing a Matrix- Matrix Multiplication, Representation of Arrays.

**UNIT-II: STACKS AND QUEUES**

Templates in C++, Template Functions- Using Templates to Represent Container Classes, The Stack Abstract Data Type, The Queue Abstract Data Type, Sub typing and Inheritance in C++, Evaluation of Expressions, Expression- Postfix Notation- Infix to Postfix.

**UNIT-III: LINKED LISTS**

Single Linked List and Chains, Representing Chains in C++, Defining a Node in C++- Designing a Chain Class in C++- Pointer manipulation in C++- Chain Manipulation Operations, The Template Class Chain, Implementing Chains with Templates- Chain Iterators- Chain Operations- Reusing a Class, Circular Lists, Available Space Lists, Linked Stacks and Queues, Polynomials, Polynomial Representation- Adding Polynomials- Circular List Representation of Polynomials, Equivalence Classes, Sparse Matrices, Sparse Matrix Representation- Sparse Matrix Input- Deleting a Sparse Matrix, Doubly Linked Lists, Generalized Lists, Representation of Generalized Lists- Recursive Algorithms for Lists- Reference Counts, Shared and Recursive Lists

**UNIT-IV: TREES**

Introduction, Terminology, Representation of Trees, Binary Trees, The Abstract Data Type, Properties of Binary Tress, Binary Tree Representations, Binary Tree Traversal and Tree Iterators, Introduction, In order Traversal Preorder Traversal, Post order Traversal, Thread Binary Trees, Threads, In order Traversal of a Threaded Binary Tree, Inserting a Node into a Threaded Binary Tree, Heaps, Priority Queues, Definition of a Max Heap, Insertion into a Max Heap, Deletion from a Max Heap, Binary Search Trees, Definition, Searching a Binary Search Tree, Insertion into a Binary Search Tree, Deletion from a Binary Search Tree, Height of Binary Search Tree.

**UNIT-V: GRAPHS**

The Graph Abstract Data Type, Introduction, Definition, Graph Representation, Elementary Graph Operation, Depth First Search, Breadth First Search, Connected Components, Spanning Trees, Bi connected Components, Minimum Cost Spanning Trees, Kruskal S Algorithm, Prim s Algorithm Sollin' s Algorithm, Shortest Paths and Transitive Closure, Single Source/All Destination: Nonnegative Edge Cost, Single Source/All Destination: General Weights, All-Pairs Shortest Path, Transitive Closure.

**UNIT-VI: SORTING**

Insertion Sort, Quick Sort, Merge Sort Merging, Iterative Merge Sort, Recursive Merge Sort, Heap Sort.

Program Name:B.Tech Faculty Name: **Ch.B.V.Durga.**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE A&B | II-I | DATASTRUCTURES THROUGH C++ LAB | R1621057 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 2 |

## Programme Outcomes:

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

10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

| | |
|---|---|
| **PSO1** | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| **PSO2** | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| **PSO3** | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Objectives:

22. To develop skills to design and analyze simple linear and non linear data structures

23. To Strengthen the ability to identify and apply the suitable data structure for the given real world problem

24. To Gain knowledge in practical applications of data structures

## Course Outcomes:

| | Course Outcomes | Cognitive Levels |
|---|---|---|
| CO1 | Develop Linear, Non Linear Data Structures and sorting techniques. | Create |

- Implementation of Singly linked list.
- Implementation of Doubly linked list.
- Implementation of Multistack in a Single Array.
- Implementation of Circular Queue
- Implementation of Binary Search trees.
- Implementation of Hash table.
- Implementation of Heaps.
- Implementation of Breadth First Search Techniques.

- Implementation of Depth First Search Techniques.
- Implementation of Prim's Algorithm.
- Implementation of Dijkstra's Algorithm.
- Implementation of Kruskal's Algorithm
- Implementation of Merge Sort
- Implementation of Quick Sort
- Implementation of Data Searching using divide and conquer technique

Program Name:B.Tech

Faculty Name: **VSRK Prasad G**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE A&B | II-I | Python Programming Lab | R1621058 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 2 |

## Programme Outcomes:

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

engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

10. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
11. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Name: B.Tech

Faculty Name: **D.DURGA PRASAD**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | II-II | Software Engineering | R1622051 | 19-11-18 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

11. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
12. **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
13. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
14. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
15. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
16. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

8. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
9. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
10. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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13. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**Programme Specific Outcomes:**

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

Program Name: B.Tech

Faculty Name: **Mr.I.MURALI KRISHNA**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | II-II | Java Programming | R1622052 | 19-11-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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**Programme Specific Outcomes:**

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|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Course Outcomes:**

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Explain the principles of the Object-Oriented Programming and key features of Java language | **Understand** |
| CO2 | Design Java classes and objects using constructor | **Create** |
| CO3 | Apply various Object -Oriented features like Inheritance, dynamic polymorphism, Packaging and Exception handling on Java classes | **Apply** |
| CO4 | Illustrate the multi-threading and file operations in Java | **Understand** |
| CO5 | Apply Event driven features using Applets | **Apply** |
| CO6 | Design Graphical User Interfaces for applications | **Create** |

## SYLLABUS

**UNIT-I:**

Introduction to OOP, procedural programming language and object oriented language, principles of OOP, applications of OOP, history of java, java features, JVM, program structure. Variables,

primitive data types, identifiers, literals, operators, expressions, precedence rules and associativity, primitive type conversion and casting, flow of control.

**UNIT-II:**

Classes and objects, class declaration, creating objects, methods, constructors and constructor overloading, garbage collector, importance of static keyword and examples, this keyword, arrays, command line arguments, nested classes.

**UNIT-III:**

Inheritance, types of inheritance, super keyword, final keyword, overriding and abstract class. Interfaces, creating the packages, using packages, importance of CLASSPATH and java.lang package. Exception handling, importance of try, catch, throw, throws and finally block, user defined exceptions, Assertions.

**UNIT-IV:**

Multithreading: introduction, thread life cycle, creation of threads, thread priorities, thread synchronization, communication between threads. Reading data from files and writing data to files, random access file.

**UNIT-V:**

Applet class, Applet structure, Applet life cycle, sample Applet programs. Event handling: event delegation model, sources of event, Event Listeners, adapter classes, inner classes.

**UNIT-VI:**

AWT: introduction, components and containers, Button, Label, Checkbox, Radio Buttons, List Boxes, Choice Boxes, Container class, Layouts, Menu and Scrollbar.

Program Name: B.Tech Faculty Name: **CH.B.V.DURGA**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | II-II | Advanced Data Structures | R1622053 | 19-11-18 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

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

11. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
12. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
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14. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
15. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
16. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**Programme Specific Outcomes:**

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Course Outcomes:**

| | Course Outcomes | Cognitive Levels |
|---|---|---|
| CO1 | Design various optimised external sorting algorithms like K-way Merge sort , Parallelly operative buffer handling. | Create |
| CO2 | Demonstrate varioushashing techniques like static hashing and dynamic hashing using hash tables, directories and continuous address spaces. | Apply |
| CO3 | Demonstrate the operations performed onBinary heaps and Binomial Queues . | Apply |
| CO4 | Design AVL trees, Red-Black trees for efficient insertion and deletion operations. | Create |
| CO5 | Demonstrate search , insertion ad delete operations using M-Way trees, B trees and B+ trees. | Apply |
| CO6 | Demonstrate insert ,delete ,search operations using various digital search structures like binary tries , Patricia tries , multiway tries, | Apply |

| | | |
|---|---|---|
| | compressed tries, Bit tries and fixed bit tries. | |

## SYLLABUS

UNIT-I: SORTING
External Sorting, Introduction, K-way Merging - Buffer Handling for parallel Operation- Run Generation- Optimal Merging of Runs.

UNIT-II: HASHING
Introduction-Static Hashing- Hash Table- Hash Functions- Secure Hash Function- Overflow Handling- Theoretical Evaluation of Overflow Techniques, Dynamic Hashing- Motivation for Dynamic Hashing -Dynamic Hashing Using Directories- Directory less Dynamic Hashing,

UNIT-III: PRIORITY QUEUES (HEAPS)
Model, Simple Implementation, Binary Heap-Structure Property-Heap-Order Property-Basic Heap Operations- Other Heap Operation, Applications of Priority Queues- The Selection Problem Event Simulation Problem, Binomial Queues- Binomial Queue Structure – Binomial Queue Operation- Implementation of Binomial Queues

UNIT-IV: EFFICIENT BINARY SEARCH TREES
Optimal Binary Search Trees, AVL Trees, Red-Black Trees, Definition- Representation of a Red- Black Tree- Searching a Red-Black Tree- Inserting into a Red Black Tree- Deletion from a Red-Black Tree- Joining Red-Black Trees, Splitting a Red-Black tree.

UNIT-V: MULTIWAY SEARCH TREES
M-Way Search Trees, Definition and Properties- Searching an M-Way Search Tree, B-Trees, Definition and Properties- Number of Elements in a B-tree- Insertion into B-Tree- Deletion froma B-Tree- B+-Tree Definition- Searching a B+-Tree- Insertion into B+-tree- Deletion from aB+-Tree.

UNIT-VI: DIGITAL SEARCH STRUCTURES
Digital Search Trees, Definition- Search, Insert and Delete- Binary tries and Patricia, Binary Tries, Compressed Binary Tries- Patricia, Multiway Tries- Definitions- Searching a Trie- Sampling Strategies- Insertion into a Trie- Deletion from a Trie- Keys with Different Length- Height of a Trie- Space Required and Alternative Node Structure- Prefix Search and Applications- Compressed Tries- Compressed Tries With Skip Fields- Compressed Tries With Labeled Edges- Space Required by a Compressed Tries, Tries and Internet Packet Forwarding - IP Routing- 1-Bit Tries- Fixed-Stride Tries-Variable-Stride Tries

Program Name: B.Tech Faculty Name: **G.Padmaja**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | II-II | Computer Organization | R1622054 | 19-11-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

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

12. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
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14. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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17. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**Programme Specific Outcomes:**

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Course Outcomes:**

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | ic structure of Computer and its components. | Understand |
| CO2 | Illustrate Register transfer and various internal micro-instructions in digital hard ware. | Understand |
| CO3 | Analyze different types of micro processor instructions. | Analyze |
| CO4 | ccessing mechanisms in input and output organization. | Understand |
| CO5 | Distinguish different kinds of memories in digital computer system | Analyze |
| CO6 | Illustrate basic concepts of hardwired control unit and micro programmed control unit. | Understand |

# SYLLABUS

UNIT -I:

**Basic Structure Of Computers:** Functional unit, Basic Operational concepts, Bus structures, System Software, Performance, The history of computer development.

UNIT -II:

**Machine Instruction and Programs:**

Instruction and Instruction Sequencing: Register Transfer Notation, Assembly Language Notation, Basic Instruction Types,

Addressing Modes, Basic Input/output Operations, The role of Stacks and Queues in computer programming equation. Component of Instructions: Logic Instructions, shift and Rotate Instructions

UNIT -III:

**Type of Instructions:** Arithmetic and Logic Instructions, Branch Instructions,

Addressing Modes, Input/output Operations

UNIT -IV:

**INPUT/OUTPUT ORGANIZATION:** Accessing I/O Devices, Interrupts: Interrupt Hardware, Enabling and Disabling Interrupts, Handling Multiple Devices, Direct Memory Access,

Buses: Synchronous Bus, Asynchronous Bus, Interface Circuits, Standard I/O Interface: Peripheral Component Interconnect (PCI) Bus, Universal Serial Bus (USB)

UNIT -V:

**The MEMORY SYSTEMS:**

Basic memory circuits, Memory System Consideration, Read- Only Memory: ROM, PROM, EPROM, EEPROM, Flash Memory, Cache Memories: Mapping Functions, interleaving, Secondary Storage: Magnetic Hard Disks, Optical Disks

UNIT -VI:

Processing Unit: Fundamental Concepts: Register Transfers, Performing An Arithmetic Or Logic Operation, Fetching A Word From Memory, Execution of Complete Instruction, Hardwired Control, Micro programmed Control: Microinstructions, Micro program Sequencing, Wide Branch Addressing Microinstructions with next –Address Field

Program Name: B.Tech

Faculty Name: **P.SRI SILPA**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | II-II | Formal Languages and Automata Theory | R1622055 | 19-11-18 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
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12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

**Programme Specific Outcomes:**

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Course Outcomes:**

| CO # | **Course Outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Illustrate the concepts of formal languages and automata | Understand |
| CO2 | Translate the regular expressions to Finite Automata and vice versa | Understand |
| CO3 | Illustrate about grammars, classification and simplification of grammars and context free grammars | Understand |
| CO4 | Design various PDA like DPDA and NPDA | Create |
| CO5 | Design TM for various languages | Create |
| CO6 | Differentiate between decidable and undecidable problems | Understand |

# SYLLABUS

## UNIT – I: Finite Automata

Why Study Automata Theory? The Central Concepts of Automata Theory, Automation, Finite Automation, Transition Systems, Acceptance of a String by a Finite Automation, DFA, Design of DFAs, NFA, Design of NFA, Equivalence of DFA and NFA, Conversion of NFA into DFA, Finite Automata with E-Transition, Minimization of Finite Automata, Mealy and Moore.

## UNIT – II: Regular Expressions

Regular Expressions, Regular Sets, Identity Rules, Equivalence of two Regular Expressions, Manipulations of Regular Expressions, Finite Automata, and Regular Expressions, Inter Conversion, Equivalence between Finite Automata and Regular Expressions, Pumping Lemma, Closers Properties, Applications of Regular Expressions, Finite Automata and Regular Grammars, Regular Expressions and Regular Grammars.

## UNIT – III: Context Free Grammars

Formal Languages, Grammars, Classification of Grammars, Chomsky Hierarchy Theorem, Context Free Grammar, Leftmost and Rightmost Derivations, Parse Trees, Ambiguous Grammars, Simplification of Context Free Grammars-Elimination of Useless Symbols, E-Productions and Unit Productions, Normal Forms for Context Free Grammars-Chomsky Normal Form and Greibach Normal Form, Pumping Lemma, Closure Properties, Applications of Context Free Grammars

## UNIT – IV: Pushdown Automata

Pushdown Automata, Definition, Model, Graphical Notation, Instantaneous Description Language Acceptance of pushdown Automata, Design of Pushdown Automata, Deterministic and Non – Deterministic Pushdown Automata, Equivalence of Pushdown Automata and Context Free Grammars Conversion, Two Stack Pushdown Automata, Application of Pushdown Automata.

## UNIT – V: Turning Machine

Turing Machine, Definition, Model, Representation of Turing Machines-Instantaneous Descriptions, Transition Tables and Transition Diagrams, Language of a Turing Machine, Design of Turing Machines, Techniques for Turing Machine Construction, Types of Turing Machines, Church's Thesis, Universal Turing Machine, Restricted Turing Machine.

## UNIT – VI: Computability

Decidable and Un-decidable Problems, Halting Problem of Turing Machines, Post's Correspondence Problem, Modified Post's Correspondence Problem, Classes of P and NP, NP-Hard and NP-Complete Problems.

Program Name: B.Tech Faculty Name: **S.B.R. PRASAD**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | II-II | Principles of Programming Languages | R1622056 | 19-11-18 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

\endash **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

\endash **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

\endash **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

\endash **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

\endash **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

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**Programme Specific Outcomes:**

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|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
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| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Course Outcomes:**

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Describe syntax and semantics of programming languages. | Understand |
| CO2 | Summarize data, data types, and basic constructs of programming languages. | Understand |
| CO3 | Illustrate the various design issues involved in sub programs and its implementation. | Apply |
| CO4 | Use object-oriented design issues, semaphores, monitors, message passing, exceptions, event handling, and concurrency in various programming languages. | Apply |
| CO5 | Describe the fundamentals of functional programming language-ML, Schema. | Understand |
| CO6 | Describe the fundamentals of logical Programming language- PROLOG. | Understand |

## SYLLABUS

**UNIT I: SYNTAX AND SEMANTICS:** Evolution of programming languages, describing syntax, context free grammars, attribute grammars, describing semantics, lexical analysis, parsing, recursive - decent bottom - up parsing

**UNIT II: DATA, DATA TYPES, AND BASIC STATEMENTS:** Names, variables, binding, type checking, scope, scope rules, lifetime and garbage collection, primitive data types, strings, array types, associative arrays, record types, union types, pointers and references, Arithmetic expressions, overloaded operators, type conversions, relational and Boolean expressions , assignment statements , mixed mode assignments, control structures – selection, iterations, branching, guarded Statements

**UNIT III: SUBPROGRAMS AND IMPLEMENTATIONS:** Subprograms, design issues, local referencing, parameter passing, overloaded methods, generic methods, design issues for functions, semantics of call and return, implementing simple subprograms, stack and dynamic local variables, nested subprograms, blocks, dynamic scoping

**UNIT IV: OBJECT- ORIENTATION, CONCURRENCY, AND EVENT HANDLING:** Object – orientation, design issues for OOP languages, implementation of object, oriented constructs, concurrency, semaphores, Monitors, message passing, threads, statement level concurrency, exception handling, event handling

**UNIT V: FUNCTIONAL PROGRAMMING LANGUAGES:** Introduction to lambda calculus, fundamentals of functional programming languages, Programming with Scheme, – Programming with ML,

**UNIT VI: LOGIC PROGRAMMING LANGUAGES:** Introduction to logic and logic programming, –Programming with Prolog, multi - paradigm languages

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Program Name: B.Tech Faculty Name: **CH.B.V.DURGA**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | II-II | Advanced Data Structures Lab | R1622057 | 19-11-18 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 2 |

**Programme Outcomes:**

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

13. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
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15. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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17. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
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**Programme Specific Outcomes:**

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| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
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**Course Outcomes:**

| | Course Outcomes | Cognitive Levels |
|---|---|---|
| CO1 | Construct linear and non-linear data structures for efficient traversals and data operation | Create |

## SYLLABUS

9. To perform various operations i.e., insertions and deletions on AVL trees.
10. To implement operations on binary heap.
9. Vertex insertion
10. Vertex deletion
11. Finding vertex
12. Edge addition and deletion

7. To implement Prim's algorithm to generate a min-cost spanning tree.
8. To implement Krushkal's algorithm to generate a min-cost spanning tree.
9. To implement Dijkstra's algorithm to find shortest path in the graph.
10. To implementation of Static Hashing (Use Linear probing for collision resolution)
11. To implement of Huffmann coding.
12. To implement of B-tree

Program Name: B.Tech Faculty Name: **I.MURALI KRISHNA**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | II-II | Java Programming Lab | R1622058 | 19-11-18 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 2 |

**Programme Outcomes:**

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**Course Outcomes:**

## Course Outcomes

| | Course Outcomes | Cognitive Levels |
|---|---|---|
| CO1 | Design Object Oriented applications using Java Programming Language | CREATE (K6) |

## SYLLABUS

**Exercise - 1** (Basics)

a). Write a JAVA program to display default value of all primitive data type of JAVA

b). Write a java program that display the roots of a quadratic equation ax2+bx=0. Calculate the discriminate D and basing on value of D, describe the nature of root.

c). Five Bikers Compete in a race such that they drive at a constant speed which may or may not be the same as the other. To qualify the race, the speed of a racer must be more than the average speed of all 5 racers. Take as input the speed of each racer and print back the speed of qualifying racers.

17. Write a case study on **public static void main(250 words) Exercise - 2** (Operations, Expressions, Control-flow, Strings)

5. . Write a JAVA program to search for an element in a given list of elements using binary search mechanism.

6. . Write a JAVA program to sort for an element in a given list of elements using bubble sort

(c). Write a JAVA program to sort for an element in a given list of elements using merge sort.

(d) Write a JAVA program using StringBufferto delete, remove character. **Exercise - 3** (Class, Objects)

19. . Write a JAVA program to implement class mechanism. – Create a class, methods and invoke them inside main method.

20. . Write a JAVA program to implement constructor. **Exercise - 4** (Methods)

25. . Write a JAVA program to implement constructor overloading.

26. . Write a JAVA program implement method overloading. **Exercise - 5** (Inheritance)

- . Write a JAVA program to implement Single Inheritance
- . Write a JAVA program to implement multi level Inheritance
- . Write a java program for abstract class to find areas of different shapes

**Exercise - 6** (Inheritance - Continued)

- . Write a JAVA program give example for "super" keyword.
- . Write a JAVA program to implement Interface. What kind of Inheritance can be achieved?

**Exercise - 7** (Exception)

5. .Write a JAVA program that describes exception handling mechanism

6. .Write a JAVA program Illustrating Multiple catch clauses

**Exercise – 8 (**Runtime Polymorphism)

2 . Write a JAVA program that implements Runtime polymorphism

3 . Write a Case study on run time polymorphism, inheritance that implements in above problem

**Exercise – 9** (User defined Exception)

4. . Write a JAVA program for creation of Illustrating throw

5. . Write a JAVA program for creation of Illustrating finally

6. . Write a JAVA program for creation of Java Built-in Exceptions

7. .Write a JAVA program for creation of User Defined Exception

**Exercise – 10** (Threads)

a). Write a JAVA program that creates threads by extending Thread class .First thread display "Good Morning "every 1 sec, the second thread displays "Hello "every 2 seconds and the third display "Welcome" every 3 seconds ,(Repeat the same by implementing Runnable)

b). Write a program illustrating **isAlive** and **join ()**

c). Write a Program illustrating Daemon Threads.

**Exercise - 11** (Threads continuity)

a).Write a JAVA program Producer Consumer Problem

b).Write a case study on thread Synchronization after solving the above producer consumer problem

**Exercise – 12** (Packages)

d). Write a JAVA program illustrate class path

e). Write a case study on including in class path in your os environment of your package.

c). Write a JAVA program that import and use the defined your package in the previous Problem
**Exercise - 13** (Applet)
a).Write a JAVA program to paint like paint brush in applet.
a) Write a JAVA program to display analog clock using Applet.
c). Write a JAVA program to create different shapes and fill colors using Applet. **Exercise - 14** (Event Handling)
a).Write a JAVA program that display the x and y position of the cursor movement using Mouse.
b).Write a JAVA program that identifies key-up key-down event user entering text in a Applet.
**Exercise - 15** (Swings)
a).Write a JAVA programto build a Calculator in Swings
b). Write a JAVA program to display the digital watch in swing tutorial.
**Exercise – 16 (Swings - Continued)**
a). Write a JAVA program that to create a single ball bouncing inside a JPanel. b). Write a JAVA program JTree as displaying a real tree upside down

| | |
|---|---|
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## Course Outcomes:

| Course Outcomes | | Cognitive level |
|---|---|---|
| **CO1** | Design applications using Python | Create |

**Exercise 1 - Basics**

8. Running instructions in Interactive interpreter and a Python Script
9. Write a program to purposefully raise Indentation Error and Correct it

**Exercise 2 - Operations**

d) Write a program to compute distance between two points taking input from the user

(Pythagorean Theorem)

e) Write a program add.py that takes 2 numbers as command line arguments and prints its sum.

**Exercise - 3 Control Flow**

c) Write a Program for checking whether the given number is a even number or not.

d) Using a for loop, write a program that prints out the decimal equivalents of 1/2, 1/3, 1/4, . . . ,1/10

e) Write a program using a for loop that loops over a sequence. What is sequence ?

f) Write a program using a while loop that asks the user for a number, and prints a countdown from that number to zero.

**Exercise 4 - Control Flow - Continued**

b) Find the sum of all the primes below two million. Each new term in the Fibonacci sequence is generated by adding the previous two terms. By starting with 1 and 2, the first 10 terms will be: 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, ...

c) By considering the terms in the Fibonacci sequence whose values do not exceed four million, find the sum of the even-valued terms.

**Exercise - 5 - DS**

a) Write a program to count the numbers of characters in the string and store them in a dictionary data structure.

b) Write a program to use split and join methods in the string and trace a birthday with a dictionary data structure.

**Exercise - 6 DS - Continued**

a) Write a program combine lists that combines these lists into a dictionary.

b) Write a program to count frequency of characters in a given file. Can you use character frequency to tell whether the given file is a Python program file, C program file or a text file?

**Exercise - 7 Files**

a) Write a program to print each line of a file in reverse order.

b) Write a program to compute the number of characters, words and lines in a file.

**Exercise - 8 Functions**

a) Write a function ball_collide that takes two balls as parameters and computes if they are colliding. Your function should return a Boolean representing whether or not the balls are colliding. Hint: Represent a ball on a plane as a tuple of (x, y, r), r being the radius If (distance between two balls centers) <= (sum of their radii) then (they are colliding)

b) Find mean, median, mode for the given set of numbers in a list.

**Exercise - 9 Functions - Continued**

a) Write a function nearly_equal to test whether two strings are nearly equal. Two strings a and b are nearly equal when a can be generated by a single mutation on b.

b) Write a function dups to find all duplicates in the list.

c) Write a function unique to find all the unique elements of a list.

**Exercise - 10 - Functions - Problem Solving**

a) Write a function cumulative_product to compute cumulative product of a list of numbers.

b) Write a function reverse to reverse a list. Without using the reverse function.

c) Write function to compute gcd, lcm of two numbers. Each function shouldn't exceed one line.

**Exercise 11 - Multi-D Lists**

a) Write a program that defines a matrix and prints

b) Write a program to perform addition of two square matrices

c) Write a program to perform multiplication of two square matrices

**Exercise - 12 - Modules**

a) Install packages requests, flask and explore them. using (pip)

b) Write a script that imports requests and fetch content from the page. Eg. (Wiki)

c) Write a simple script that serves a simple HTTP Response and a simple HTML Page

**Exercise - 13 OOP**

a) Class variables and instance variable and illustration of the self variable

i) Robot

ii) ATM Machine

**Exercise - 14 GUI, Graphics**

**a)** Write a GUI for an Expression Calculator using tk

**b)** Write a program to implement the following figures using turtle

**Exercise - 15 - Testing**

a) Write a test-case to check the even numbers which return True on Passing a list of all Even numbers

b) Write a test-case to check the Function reverse_string Which return the reversed String **Exercise - 16 - Advanced**

a) Build any one classical data structure

b) Write a program to solve knapsack Problem

**Program Name: B.Tech** **Faculty Name: S.B.R.PRASAD**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-I | Compiler Design | R1631051 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | | Internal 30 | External 70 | 3 |

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## Course Outcomes:

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Illustrate different language translators, phases in the design of compiler and specifying different types of tokens by lexical analyzer. | Understand |
| CO2 | Design various top-down parsers like recursive descent parser, LL(1) parser. | Create |
| CO3 | Design various bottom up parsers like SLR, CLR, and LALR Parsers. | Create |
| CO4 | Develop syntax directed translation schemes and intermediate codes for grammars. | Create |
| CO5 | Explain code generation & runtime storage organization. | Understand |
| CO6 | Apply code optimization Techniques to improve the performance of a program in terms of speed & space. | Apply |

## Course Objectives:

20. Understand the basic concept of compiler design, and its different phases which will be helpful to construct new tools like LEX, YACC, etc.

**UNIT – I**

Introduction Language Processing, Structure of a compiler the evaluation of Programming language, The Science of building a Compiler application of Compiler Technology. Programming Language Basics. Lexical Analysis-: The role of lexical analysis buffing, specification of tokens. Recognitions of tokens the lexical analyzer generator lexical

**UNIT –II**

Syntax Analysis -: The Role of a parser, Context free Grammars Writing A grammar, top down passing bottom up parsing Introduction to Lr Parser.

**UNIT –III**

More Powerful LR parser (LR1, LALR) Using Armigers Grammars Equal Recovery in Lr parser Syntax Directed Transactions Definition, Evolution order of SDTS Application of SDTS. Syntax Directed Translation Schemes.

**UNIT – IV**

Intermediated Code: Generation Variants of Syntax trees 3 Address code, Types and Deceleration, Translation of Expressions, Type Checking. Canted Flow Back patching?

**UNIT – V**

Runtime Environments, Stack allocation of space, access to Non Local date on the stack Heap Management code generation – Issues in design of code generation the target Language Address in the target code Basic blocks and Flow graphs. A Simple Code generation.

**UNIT –VI**

Machine Independent Optimization. The principle sources of Optimization peep hole Optimization, Introduction to Date flow Analysi

**Program Name: B.Tech** **Faculty Name: VENU GOPAL**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-I | Unix Programming | R1631052 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | | Internal 30 | External 70 | 3 |

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## Course Objectives:

17. Written technical communication and effective use of concepts and terminology.

18. Facility with UNIX command syntax and semantics.

19. Ability to read and understand specifications, scripts and programs.

**20.** Individual capability in problem solving using the tools presented within the class. Students will demonstrate a mastery of the course materials and concepts within in class discussions.

**UNIT-I**

Introduction to unix-Brief History-What is Unix-Unix Components-Using Unix-Commands in Unix-Some Basic Commands-Command Substitution-Giving Multiple Commands.

**UNIT-II**

The File system –The Basics of Files-What's in a File-Directories and File Names-Permissions-I Nodes-The Directory Hierarchy, File Attributes and Permissions-The File Command knowing the File Type-The Chmod Command Changing File Permissions-The Chown Command Changing the Owner of a File-The Chgrp Command Changing the Group of a File.

**UNIT-III**

Using the Shell-Command Line Structure-Met characters-Creating New Commands-Command Arguments and Parameters-Program Output as Arguments-Shell Variables- -More on I/O Redirection-Looping in Shell Programs.

**UNIT-IV**

Filters-The Grep Family-Other Filters-The Stream Editor Sed-The AWK Pattern Scanning and processing Language-Good Files and Good Filters.

**UNIT-V**

Shell Programming-Shell Variables-The Export Command-The Profile File a Script Run During Starting-The First Shell Script-The read Command-Positional parameters-The $? Variable knowing the exit Status-More about the Set Command-The Exit Command-Branching Control Structures-Loop Control Structures-The Continue and Break Statement-The Expr Command: Performing

Integer Arithmetic-Real Arithmetic in Shell Programs-The here Document(<<The Sleep Command-Debugging Scripts-The Script Command-The Eval Command-The Exec Command.

**UNIT-VI**

The Process-The Meaning-Parent and Child Processes-Types of Processes-More about Foreground and Background processes-Internal and External Commands-Process Creation-The Trap Command-The Stty Command-The Kill Command-Job Control.

**Program Name: B.Tech** **Faculty Name: SK.AKABAR**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-I | Object Oriented Analysis and Design using UML | R1631053 | 11-06-2018 |

SYLLABUS

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## Course Objectives:

10. To understand how to solve complex problems

11. Analyze and design solutions to problems using object oriented approach

**12.** Study the notations of Unified Modeling Language

**UNIT-I:**

Introduction: The Structure of Complex systems, The Inherent Complexity of Software, Attributes of Complex System, Organized and Disorganized Complexity, Bringing Order to Chaos, Designing Complex Systems, Evolution of Object Model, Foundation of Object Model, Elements of Object Model, Applying the Object Model.

**UNIT-II:**

Classes and Objects: Nature of object, Relationships among objects, Nature of a Class, Relationship among Classes, Interplay of Classes and Objects, Identifying Classes and Objects, Importance of Proper Classification, Identifying Classes and Objects, Key abstractions and Mechanisms.

**UNIT-III:**

Introduction to UML: Why we model, Conceptual model of UML, Architecture, Classes, Relationships, Common Mechanisms, Class diagrams, Object diagrams.

**UNIT-IV:**

Basic Behavioral Modeling: Interactions, Interaction diagrams, Use cases, Use case Diagrams, Activity Diagrams. UNIT-V: Advanced Behavioral Modeling: Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

**UNIT-VI:**

Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams. Case Study: The Unified Library application

**Program Name: B.Tech** **Faculty Name: V.NAVYA SREE**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-I | Database Management Systems | R1631054 | 11-06-2018 |

SYLLABUS

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\endash **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

\endash **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Understand functional components of the DBMS. | UNDETSTAND |
| CO2 | Use the knowledge of basics of SQL and construct queries using SQL | APPLY |
| CO3 | Design E-R model and database schema | CREATE |
| CO4 | Apply the schema refinement concepts using normalization. | APP |
| CO5 | Analyze transaction processing, concurrency control and recovery techniques | Analyze |
| CO6 | Compare the basic database storage structures and access techniques: files, indexing methods including B tree,B+ tree and hashing. | UNDERSTAND |

## Course Objectives:

To learn the principles of systematically designing and using large scale Database Management Systems for various applications.

**Unit – I: INTRODUCTION**

Database system, Characteristics (Database Vs File System), Database Users (Actors on Scene, Workers behind thescene), Advantages of Data base systems, Database applications.
Brief introduction of different Data Models; Concepts of Schema, Instance and data independence; Three tier schema architecture for data independence; Database system structure, environment, Centralized and Client Server architecture for the database.

**Unit – II:**

**RELATIONAL MODEL :** Introduction to relational model, concepts of domain, attribute, tuple, relation, importance of null values, constraints (Domain, Key constraints, integrity constraints) and their importance
**BASIC SQL :** Simple Database schema, data types, table definitions (create, alter), different DML operations (insert, delete, update), basic SQL querying (select and project) using where clause, arithmetic & logical operations, SQL functions(Date and Time, Numeric, String conversion).

**Unit – III:**

**Entity Relationship Model:** Introduction, Representation of entities, attributes, entity set, relationship, relationship set, constraints, sub classes, super class, inheritance, specialization, generalization using ER Diagrams.

**SQL :** Creating tables with relationship, implementation of key and integrity constraints, nested queries, sub queries, grouping, aggregation, ordering, implementation of different types of joins, view(updatable and non-updatable),relational set operations.

**Unit – IV:**

**SCHEMA REFINEMENT (NORMALIZATION) :** Purpose of Normalization or schema refinement, concept of functional dependency, normal forms based on functional dependency(1NF, 2NF and 3 NF), concept of surrogate key, Boyce-codd normal form(BCNF), Lossless join and dependency preserving decomposition, Fourth normal form(4NF).

**Unit – V:**

**TRANSACTION MANAGEMENT AND CONCURRENCY CONTROL :** Transaction, properties of transactions, transaction log, and transaction management with SQL using commit rollback and savepoint. Concurrency control for lost updates, uncommitted data, inconsistent retrievals and the Scheduler. Concurrency control with locking methods : lock granularity, lock types, two phase locking for ensuring serializability, deadlocks,Concurrency control with time stamp ordering : Wait/Die and Wound/Wait Schemes, Database Recovery management: Transaction recovery.
SQL constructs that grant access or revoke access from user or user groups. Basic PL/SQL procedures, functions and triggers.

**UNIT – VI:**

**STORAGE AND INDEXING :** Database file organization, file organization on disk, heap files and sorted files,hashing, single and multi-level indexes, dynamic multilevel indexing using B-Tree and B+ tree, index on multiple keys.

**Program Name: B.Tech** **Faculty Name: M.KALPANA**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-I | Operating Systems | R1631055 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | | Internal 30 | External 70 | 3 |

## Programme Outcomes:

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

## Programme Specific Outcomes:

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | **Fundamentals:** Be able to discuss the characteristics of different structures of the Operating Systems (such as microkernel, layered, virtualization, etc.) and identify the core functions of the Operating Systems | Understand |
| CO2 | **Principles:** Be able to explain the principles and compare the algorithms on which the core functions of the Operating Systems are built on. | Understand |
| CO3 | **Performance**: Be able to analyze and evaluate the algorithms of the core functions of the Operating Systems and explain the major performance issues with regard to the core functions. | Analyze |
| CO4 | **Practicability:** Be able to demonstrate knowledge in applying system software and tools available in modernoperating system (such as threads, system calls, semaphores, etc.) for software development | Understand |
| CO5 | Master issues related to file system interface and implementation, disk management | Create |
| CO6 | Be familiar with various types of operating systems including Unix | Analyze |

## Course Objectives:

* Study the basic concepts and functions of operating systems.
* Understand the structure and functions of OS.
* Learn about Processes, Threads and Scheduling algorithms.
* Understand the principles of concurrency and Deadlocks.
* Learn various memory management schemes.
* Study I/O management and File systems.
* Learn the basics of Linux system and perform administrative tasks on Linux Servers.

**UNIT I**

Introduction to Operating System Concept: Types of operating systems, operating systems concepts, operating systems services, Introduction to System call, System call types.

**UNIT-II:**

Process Management – Process concept, The process, Process State Diagram , Process control block, Process Scheduling- Scheduling Queues, Schedulers, Operations on Processes, Interprocess Communication, Threading Issues, Scheduling-Basic Concepts, Scheduling Criteria, Scheduling Algorithms.

**UNIT-III:**

Memory Management: Swapping, Contiguous Memory Allocation, Paging, structure of the Page Table, Segmentation Virtual Memory Management: Virtual Memory, Demand Paging, Page-Replacement Algorithms, Thrashing

**UNIT-IV:**

Concurrency: Process Synchronization, The Critical- Section Problem, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors, Synchronization examples Principles of deadlock – System Model, Deadlock Characterization, Deadlock Prevention, Detection and Avoidance, Recovery form Deadlock

**UNIT-V:**

File system Interface- the concept of a file, Access Methods, Directory structure, File system mounting, file sharing, protection. File System implementation- File system structure, allocation methods, free-space management Mass-storage structure overview of Mass-storage structure, Disk scheduling, Device drivers,

**UNIT VI:**

Linux System: Components of LINUX, Interprocess Communication, Synchronization, Interrupt, Exception and System Call. Android Software Platform: Android Architecture, Operating System Services, Android Runtime Application Development, Application Structure, Application Process management

**Program Name: B.Tech** FA**culty Name: A.CHANDRA MOULI**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-I | UNIFIED MODELING LAB | R1631056 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | | Internal 25 | External 50 | 2 |

## Programme Outcomes:

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

12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |

PSO3 **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills.

## Course Objectives:

11. Construct UML diagrams for static view and dynamic view of the system.
12. Generate creational patterns by applicable patterns for given context.
13. Create refined model for given Scenario using structural patterns.
14. Construct behavioral patterns for given applications.

**Week 1:**

Familiarization with Rational Rose or Umbrello

For each case study:

**Week 2, 3 & 4:**

**For each case study:**

Identify and analyze events

Identify Use cases

Develop event table

Identify & analyze domain classes

Represent use cases and a domain class diagram using Rational Rose

Develop CRUD matrix to represent relationships between use cases and problem domain classes

**Week 5 & 6:**

**For each case study:**

13. Develop Use case diagrams

Develop elaborate Use case descriptions & scenarios

Develop prototypes (without functionality)

Develop system sequence diagrams

**Week 7, 8, 9 & 10:**

**For each case study:**

13. Develop high-level sequence diagrams for each use case

a. Identify MVC classes / objects for each use case

a. Develop Detailed Sequence Diagrams / Communication diagrams for each use case showing interactions among all the three-layer objects

16.Develop detailed design class model (use GRASP patterns for responsibility assignment) • e) Develop three-layer package diagrams for each case study

**Week 11 & 12: • For each case study: •**

18. Develop Use case Packages

19. Develop component diagrams

20. Identify relationships between use cases and represent them

21. Refine domain class model by showing all the associations among classes

**Week 13 onwards: • For each case study:**

7. Develop sample diagrams for other UML diagrams - state chart diagrams, activity diagrams and Develpoment.

**Program Name: B.Tech** **Faculty Name: M.KALPANA**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-I | OPERATING SYSEMS AND LINUX PROGRAMMING LAB | R1631057 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | | Internal 25 | External 50 | 2 |

## Programme Outcomes:

21. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
22. **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
23. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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25. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
26. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
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28. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
29. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
30. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

31. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
32. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

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|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Bu using C, create different algorithms in operating systems, To use Unix utilities and perform basic shell control of the utilities, use the Unix file system and file access control and use of an operating system to develop software | Create |
| CO2 | Students will be able to use Linux environment efficiently and<br>Solve problems using bash for shell scripting | Create |

## Course Objectives:

27. To understand the design aspects of operating system.
28. To study the process management concepts & Techniques.
29. To study the storage management concepts.
30. To familiarize students with the Linux environment
31. To learn the fundamentals of shell scripting/programming
32. To conceptualize Data Mining and the need for pre-processing.
**33.** To learn the algorithms used for various types of Data Mining Problem

**OPERATING SYSTEMS**

- Simulate the following CPU scheduling algorithms

a) Round Robin b) SJF c) FCFS d) Priority

- Multiprogramming-Memory management- Implementation of fork (), wait (), exec() and exit (), System calls
- Simulate the following
- Multiprogramming with a fixed number of tasks (MFT)
- Multiprogramming with a variable number of tasks (MVT)

4. Simulate Bankers Algorithm for Dead Lock Avoidance
5. Simulate Bankers Algorithm for Dead Lock Prevention.
6. Simulate the following page replacement algorithms.
7. FIFO b) LRU c) LFU
7. Simulate the following File allocation strategies
4 Sequenced b) Indexed c) Linked

**LINUX PROGRAMMING**

1. a) Study of Unix/Linux general purpose utility command list
   man,who,cat, cd, cp, ps, ls, mv, rm, mkdir, rmdir, echo, more, date, time, kill, history, chmod, chown, finger, pwd, cal, logout, shutdown.
   Study of vi editor.
   Study of Bash shell, Bourne shell and C shell in Unix/Linux operating system.
   Study of Unix/Linux file system (tree structure).
   Study of .bashrc, /etc/bashrc and Environment variables.

   Write a C program that makes a copy of a file using standard I/O, and system calls

   Write a C program to emulate the UNIX ls –l command.

   Write a C program that illustrates how to execute two commands concurrently with a command pipe.

   Ex: - ls –l | sort

f) Write a C program that illustrates two processes communicating using shared memory

g) Write a C program to simulate producer and consumer problem using semaphores

h) Write C program to create a thread using p threads library and let it run its function.

i) Write a C program to illustrate concurrent execution of threads using p threads

**Program Name: B.Tech** **Faculty Name: V.NAVYA SREE**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-I | DATA BASE MANAGEMENT SYSTEM LAB | R1631058 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | | Internal 25 | External 50 | 2 |

## Programme Outcomes:

g) **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

h) **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

i) **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

j) **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

k) **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

l) **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

m) **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

n) **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

o) **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

p) **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

q) **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

r) **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

| Programme Specific Outcomes: | |
|---|---|
| | |
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| CO # | Course outcome | Cognitive level |
|---|---|---|
| CO1 | Design and Implement a database schema | create |
| CO2 | Devise queries using DDL, DML, DCL and TCL commands | create |
| CO3 | Develop application programs using PL/SQL | create |

## Course Objectives:

d) To provide a sound introduction to the discipline of database management as a subject in its own right, rather than as a compendium of techniques and product specific tools.
e) To familiarize the participant with the nuances of database environments towards an information-oriented data-processing oriented framework
f) To give a good formal foundation on the relational model of data
g) To present SQL and procedural interfaces to SQL comprehensively
h) To give an introduction to systematic database design approaches covering conceptual design, logical design and an overview of physical design

**SQL**

c) Queries to facilitate acquaintance of Built-In Functions, String Functions, Numeric Functions, Date Functions and Conversion Functions.
d) Queries using operators in SQL
e) Queries to Retrieve and Change Data: Select, Insert, Delete, and Update
f) Queries using Group By, Order By, and Having Clauses
g) Queries on Controlling Data: Commit, Rollback, and Save point
h) Queries to Build Report in SQL *PLUS
i) Queries for Creating, Dropping, and Altering Tables, Views, and Constraints
j) Queries on Joins and Correlated Sub-Queries
k) Queries on Working with Index, Sequence, Synonym, Controlling Access, and Locking Rows for Update, Creating Password and Security features

**PL/SQL**

c) Write a PL/SQL Code using Basic Variable, Anchored Declarations, and Usage of Assignment Operation
d) Write a PL/SQL Code Bind and Substitution Variables. Printing in PL/SQL
e) Write a PL/SQL block using SQL and Control Structures in PL/SQL
f) Write a PL/SQL Code using Cursors, Exceptions and Composite Data Types
g) Write a PL/SQL Code using Procedures, Functions, and Packages FORMS
h) Write a PL/SQL Code Creation of forms for any Information System such as Student Information System, Employee Information System etc. 18

Demonstration of database connectivity

**Program Name: B.Tech** **Faculty Name: B.SRIKANTH REDDY**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-I | Professional Ethics & Human Values | R1631049 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | | Internal 25 | External 50 | 2 |

## Programme Outcomes:

c) **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

d) **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

e) **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

f) **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

g) **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

h) **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

i) **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

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k) **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

l) **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

m) **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

n) **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

| | |
|---|---|

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Objectives:

b) To give basic insights and inputs to the student to inculcate Human values to grow as a responsible human beings with proper personality.
c) Professional Ethics instills the student to maintain ethical conduct and discharge their professional duties.

**UNIT I: Human Values**:
Morals, Values and Ethics – Integrity –Trustworthiness - Work Ethics – Service Learning – Civic Virtue – Respect for others – Living Peacefully – Caring – Sharing – Honesty –Courage – Value Time – Co-operation – Commitment – Empathy – Self-confidence – Spirituality-Character.

**UNIT: II: Principles for Harmony:** Truthfulness – Customs and Traditions -Value Education – Human Dignity – Human Rights – Fundamental Duties - Aspirations and Harmony (I, We & Nature) – Gender Bias – Emotional Intelligence – Salovey – Mayer Model – Emotional Competencies – Conscientiousness.
**UNIT III: Engineering Ethics and Social Experimentation:** History of Ethics - Need of Engineering Ethics - Senses of Engineering Ethics- Profession and Professionalism —Self Interest - Moral Autonomy – Utilitarianism – Virtue Theory - Uses of Ethical Theories - Deontology- Types of Inquiry –Kohlberg's Theory - Gilligan's Argument – Heinz's Dilemma - Comparison with Standard Experiments — Learning from the Past – Engineers as Managers – Consultants and Leaders – Balanced Outlook on Law - Role of Codes – Codes and Experimental Nature of Engineering.
**UNIT IV: Engineers' Responsibilities towards Safety and Risk:** Concept of Safety - Safety and Risk – Types of Risks – Voluntary v/sInvoluntary Risk – Consequences - Risk Assessment – Accountability – Liability - Reversible Effects – Threshold Levels of Risk - Delayed v/sImmediate Risk - Safety and the Engineer – Designing for Safety – Risk-Benefit Analysis-Accidents.
**UNIT V: Engineers' Duties and Rights:**
Concept of Duty - Professional Duties – Collegiality - Techniques for Achieving Collegiality – Senses of Loyalty - Consensus and Controversy - Professional and Individual Rights – Confidential and Proprietary Information - Conflict of Interest-Ethical egoism – Collective Bargaining – Confidentiality - Gifts and Bribes - Problem solving-Occupational Crimes- Industrial Espionage- Price Fixing-Whistle Blowing.
**UNIT VI: Global Issues:**
Globalization and MNCs –Cross Culture Issues - Business Ethics – Media Ethics - Environmental Ethics – Endangering Lives - Bio Ethics - Computer Ethics - War Ethics – Research Ethics -Intellectual Property Rights.
• Related Cases Shall be dealt where ever necessary.

**Program Name: B.Tech** **Faculty Name: A. Chandra mouli**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| III CSE | II | DATA WARE HOUSING AND MINING | RT32052 | 19-11-18 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

## Programme Outcomes:

17. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
18. **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
19. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
20. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
21. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
22. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

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15. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
16. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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19. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

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|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| **CO1** | Explain the fundamentals of data mining and data warehousing | **Understand** |
| **CO2** | Apply the various data preprocessing techniques like data cleaning,data integration,data transformation,datareduction,data descretization and concept hierarchy generation. | **Apply** |
| **CO3** | Design of physical and logical data warehouses using OLAP technology. | **Create** |
| **CO4** | Design classification algorithm using decision tree induction including model overfitting | **Create** |
| **CO5** | Design the algorithm for frequent item set generation and FP-growth. | **Create** |
| **CO6** | Analyze various clustering algorithms like K-means ,agglomerative hierarichal clustering and DBSCAN. | **Analyze** |

# SYLLABUS

**UNIT –I: Introduction:** What Motivated Data Mining? Why Is It Important, Data Mining—On What Kind of Data, DataMining Functionalities—What Kinds of Patterns Can Be Mined? Are All of the Patterns Interesting? Classification of Data Mining Systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or Data Warehouse System, Major Issues in Data Mining

**UNIT II: Data Pre-processing:** Why Pre-process the Data? Descriptive Data Summarization, Data Cleaning, Data Integrationand Transformation, Data Reduction, Data Discretization and Concept Hierarchy Generation

**UNIT III:** Data Warehouse and OLAP Technology: An Overview: What Is a Data Warehouse? A Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation, From Data Warehousing to Data Mining. .

**UNIT IV: Classification:** Basic Concepts, General Approach to solving a classification problem, Decision Tree Induction:Working of Decision Tree, building a decision tree, methods for expressing an attribute test conditions, measures for selecting the best split, Algorithm for decision tree induction.
**Model Over fitting:** Due to presence of noise, due to lack of representation samples, evaluating the performance ofclassifier: holdout method, random sub sampling, and cross-validation, bootstrap

**UNIT V: Association Analysis: Basic Concepts and Algorithms:** Introduction, Frequent Item Set generation, Rulegeneration, compact representation of frequent item sets, FP-Growth Algorithm

**UNIT VI Cluster Analysis: Basic Concepts and Algorithms:** What Is Cluster Analysis? Different Types of Clustering,Different Types of Clusters, K-means, The Basic K-means Algorithm, K-means: Additional Issues, Bisecting K-means, K-means and Different Types of Clusters, Strengths and Weaknesses, K-means as an Optimization Problem, Agglomerative Hierarchical Clustering, Basic Agglomerative Hierarchical Clustering Algorithm, Specific Techniques, DBSCAN, Traditional Density: Center-Based Approach, The DBSCAN Algorithm, Strengths and Weaknesses

**Program Name: B.Tech** **Faculty Name: M.KALPANA**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-II | COMPUTER NETWORKS | RT32053 | 19-11-18 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

## Programme Outcomes:

21. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
22. **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
23. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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## Programme Specific Outcomes:

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| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| | Course Outcomes | Cognitive Levels |
|---|---|---|
| CO1 | **Compare** different network models, and Network topologies. | Understand |
| CO2 | **Contrast** multiplexing techniques and switching techniques | Understand |
| CO3 | **Explain** Data link Layer Framing, Error control, Sliding Window Protocols like data link layer HDLC, point to point protocol ( PPP). | Understand |
| CO4 | **Explain** Random Access, Controlled Access, Channelization | Understand |
| CO5 | **Explain** IEEE Standards, Standard Ethernet, Fast Ethernet, IEEE-802.11, | Understand |
| CO6 | **Illustrate** Application layer protocols and Wireless Application Protocol | Understand |

## SYLLABUS

**UNIT – I: Introduction**: OSI overview, TCP/IP and other networks models, Examples of Networks: Novell Networks, Arpanet, Internet, Network Topologies WAN, LAN, MAN.

**UNIT – II: Physical Layer and overview of PL Switching**: Multiplexing: frequency division multiplexing, wave length division multiplexing, synchronous time division multiplexing, statistical time division multiplexing, introduction to switching: Circuit Switched Networks, Datagram Networks, Virtual Circuit Networks.

**UNIT – III: Data link layer**: Design issues, **Framing**: fixed size framing, variable size framing, flow control, error control, error detection and correction, CRC, Checksum: idea, one's complement internet checksum, services provided to Network Layer, **Elementary Data Link Layer protocols**: simplex protocol, Simplex stop and wait, Simplex protocol for Noisy Channel.
**Sliding window protocol**: One bit, Go back N, Selective repeat-Stop and wait protocol, Data link layer in HDLC: configuration and transfer modes, frames, control field, point to point protocol (PPP): framing transition phase, multiplexing, multi link PPP.

**UNIT – IV: Random Access**: ALOHA, MAC addresses, Carrier sense multiple access (CSMA), CSMA with Collision Detection, CSMA with Collision Avoidance, Controlled Access: Reservation, Polling, Token Passing, Channelization: frequency division multiple access(FDMA), time division multiple access(TDMA), code division multiple access(CDMA).
**Network Layer**: Virtual circuit and Datagram subnets-Routing algorithm shortest path routing, Flooding, Hierarchical routing, Broad cast, Multi cast, distance vector routing.

**UNIT –V: IEEE Standards**: – data link layer, physical layer, Manchester encoding, Standard Ethernet: MAC sub layer, physical layer, Fast Ethernet: MAC sub layer, physical layer, IEEE-802.11: Architecture, MAC sub layer, addressing mechanism, frame structure.

**UNIT –VI:**
**Application layer (WWW and HTTP):** ARCHITECTURE: Client (Browser), Server, Uniform Resource Locator HTTP: HTTP Transaction, HTTP Operational Model and Client/Server Communication, HTTP Generic Message Format, HTTP Request Message Format, HTTP Response Message Format **The wireless web :** WAP—The Wireless Application Protocol

**Program Name: B.Tech** **Faculty Name: V.S.R.K.PRASAD.G**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-II | DESIGN AND ANALYSIS OF ALGORITHMS | RT32054 | 19-11-18 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

## Programme Outcomes:

12. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
13. **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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## Programme Specific Outcomes:

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| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
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| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Classify the Characteristics of various problem analysis like Asymptotic, probabilistic, Amortized analysis. | Understand |
| CO2 | Illustrate the complexities of various problems in Divide and Conquer design Strategies | Understand |
| CO3 | Apply the greedy design techniques to various problems like knapsack, Spanning tree. | Apply |
| CO4 | construct the problems using dynamic programming design strategy. | Create |
| CO5 | Design back tracking technique for N-Queen, sum of subsets, graph coloring. | Create |

## SYLLABUS

### UNIT-I: Introduction to Algorithm

Introduction: Algorithm, Pseudo code for expressing algorithms, performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation, probabilistic analysis, Amortized analysis.

**UNIT-II: Divide and conquer**

General method, applications-Binary search, Quick sort, Merge sort

**UNIT-III: Greedy method**

General method, applications-Job sequencing with deadlines, knapsack problem, spanning trees, Minimum cost spanning trees, Single source shortest path problem.

**UNIT-IV: Dynamic Programming**

General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design.

**UNIT-V: Backtracking**

General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.

**UNIT-VI: Branch and Bound**

General method, applications - Travelling sales person problem,0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution.

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**Program Name: B.Tech** **Faculty Name :B. Srikanth Reddy**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-II | IPR AND PATENTS | | 19-11-18 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 3 |

## Programme Outcomes:

- **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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**Program Name: B.Tech** **Faculty Name: M.Kalpana**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | III-II | COMPUTER NETWORKS AND NETWORK<br><br>PROGRAMMING LAB | RT32057 | 19-11-18 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 2 |

## Programme Outcomes:

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## Course Outcomes:

| | Course Outcomes | Cognitive Levels |
|---|---|---|
| CO1 | **I**mplement the data link layer and Network layer responsibilities like framing, Error Control (CRC) and Routing. | **Create** |
| CO2 | Implement the forms of IPC. a)Pipes b)FIFO and file transfer using Message Queue form of IPC and implement shared memory concept | **Create** |
| CO3 | Design TCP,UDP Client and server applications and RPC application | **Create** |

**SYLLABUS**

## Computer Networks & Network Programming Lab

**PART – A**

\endash **I**mplement the data link layer framing methods such as character stuffing and bit stuffing.

\endash Implement on a data set of characters the three CRC polynomials – CRC 12, CRC 16 and CRC CCIP.

24. Implement Dijkstra‘s algorithm to compute the Shortest path thru a graph.
25. Take an example subnet graph with weights indicating delay between nodes. Now obtain Routing table art each node using distance vector routing algorithm
26. Take an example subnet of hosts. Obtain broadcast tree for it.

* Implement the following forms of IPC. a)Pipes b)FIFO
* Implement file transfer using Message Queue form of IPC
* Write a programme to create an integer variable using shared memory concept and increment the variable
* simultaneously by two processes. Use senphores to avoid race conditions
* Design TCP iterative Client and server application to reverse the given input sentence
* Design TCP iterative Client and server application to reverse the given input sentence
* Design TCP client and server application to transfer file
* Design a TCP concurrent server to convert a given text into upper case using multiplexing system call “select”
* Design a TCP concurrent server to echo given set of sentences using poll functions
* Design UDP Client and server application to reverse the given input sentence
* Design UDP Client server to transfer a file
* Design using poll client server application to multiplex TCP and UDP requests for converting a given text into upper case.
* Design a RPC application to add and subtract a given pair of integers

**Program Name: B.Tech** **Faculty Name: V.NavyaSree**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE- A | III-II | SOFTWARE TESTING METHODOLOGIES | | 19-11-18 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 3 |

**PROGRAM OUTCOMES (PO's)**

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## Program Educational Objectives (P.E.O's)

| | |
|---|---|
| PE01 | Acquire sound foundations in Basic Sciences and fundamentals in Engineering Sciences. |
| PE02 | Analyze technical solutions to computational problems and develop efficient algorithms. |
| PE03 | Apply knowledge in the identification, design, development, production, configuration, and maintenance of computing systems, for real life problems. |
| PE04 | Gain multidisciplinary knowledge through projects and industrial training, leading to a sustainable competitive edge in R&D,meeting societal needs, and as per the needs of the industry. |
| PE05 | Develop managerial skills, leadership quality and entrepreneurial spirit. |
| PE06 | Inculcate healthy interpersonal skills and strong communication skills, as well as adherence to professional and ethical principles. |

## Program Specific Objectives (PSOs)

| | |
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## SYLLABUS

**UNIT I:** Software Testing: Introduction, Evolution, Myths & Facts, Goals, Psychology, Definition, Model for testing, Effective Vs Exhaustive Software Testing.
Software Testing Terminology and Methodology: Software Testing Terminology, Software Testing Life Cycle, relating test life cycle to development life cycle Software Testing Methodology.

**UNIT II:**

Verification and Validation: Verification & Validation Activities, Verification, Verification of Requirements, High level and low level designs, How to verify code, Validation.
Dynamic Testing I: Black Box testing techniques: Boundary Value Analysis, Equivalence class Testing, State Table based testing, Decision table based testing, Cause-Effect Graphing based testing, Error guessing.

**UNIT III:**

Dynamic Testing II: White-Box Testing: need, Logic coverage criteria, Basis path testing, Graph matrices, Loop testing, data flow testing, mutation testing.
Static Testing: inspections, Structured Walkthroughs, Technical reviews

**UNIT IV:**

Validation activities: Unit testing, Integration Testing, Function testing, system testing, acceptance testing.
Regression testing: Progressives Vs regressive testing, Regression testability, Objectives of regression testing, When regression testing done? Regression testing types, Regression testing techniques

**UNIT V:**

Efficient Test Suite Management: Test case design why does a test suite grow, Minimizing the test suite and its benefits, test suite prioritization, Types of test case prioritization, prioritization techniques, measuring the effectiveness of a prioritized test suite Software Quality Management: Software Quality metrics, SQA models
Debugging: process, techniques, correcting bugs, Basics of testing management tools, test link and Jira.

**UNIT VI:**

Automation and Testing Tools: need for automation, categorization of testing tools, selection of testing tools, Cost incurred, Guidelines for automated testing, overview of some commercial testing tools.
Testing Object Oriented Software: basics, Object oriented testing.
Testing Web based Systems: Challenges in testing for web based software, quality aspects, web engineering, testing of web based systems, Testing mobile system

**Program Name: B.Tech** **Faculty Name: Srikanth Reddy**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE- B | III-II | SOFTWARE TESTING METHODOLOGIES | | 19-11-18 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 2 |

**PROGRAM OUTCOMES (PO's)**

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## Program Educational Objectives (P.E.O's)

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| PE03 | Apply knowledge in the identification, design, development, production, configuration, and maintenance of computing systems, for real life problems. |
| PE04 | Gain multidisciplinary knowledge through projects and industrial training, leading to a sustainable competitive edge in R&D,meeting societal needs, and as per the needs of the industry. |
| PE05 | Develop managerial skills, leadership quality and entrepreneurial spirit. |
| PE06 | Inculcate healthy interpersonal skills and strong communication skills, as well as adherence to professional and ethical principles. |

## Program Specific Objectives (PSOs)

| | |
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| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## SYLLABUS

### UNIT I:

Software Testing: Introduction, Evolution, Myths & Facts, Goals, Psychology, Definition, Model for testing, Effective Vs Exhaustive Software Testing.

Software Testing Terminology and Methodology: Software Testing Terminology, Software Testing Life Cycle, relating test life cycle to development life cycle Software Testing Methodology.

**UNIT II:**

Verification and Validation: Verification & Validation Activities, Verification, Verification of Requirements, High level and low level designs, How to verify code, Validation.
Dynamic Testing I: Black Box testing techniques: Boundary Value Analysis, Equivalence class Testing, State Table based testing, Decision table based testing, Cause-Effect Graphing based testing, Error guessing.

**UNIT III:**

Dynamic Testing II: White-Box Testing: need, Logic coverage criteria, Basis path testing, Graph matrices, Loop testing, data flow testing, mutation testing.
Static Testing: inspections, Structured Walkthroughs, Technical reviews

**UNIT IV:**

Validation activities: Unit testing, Integration Testing, Function testing, system testing, acceptance testing.
Regression testing: Progressives Vs regressive testing, Regression testability, Objectives of regression testing, When regression testing done? Regression testing types, Regression testing techniques

**UNIT V:**

Efficient Test Suite Management: Test case design why does a test suite grow, Minimizing the test suite and its benefits, test suite prioritization, Types of test case prioritization, prioritization techniques, measuring the effectiveness of a prioritized test suite Software Quality Management: Software Quality metrics, SQA models
Debugging: process, techniques, correcting bugs, Basics of testing management tools, test link and Jira.

**UNIT VI:**

Automation and Testing Tools: need for automation, categorization of testing tools, selection of testing tools, Cost incurred, Guidelines for automated testing, overview of some commercial testing tools.
Testing Object Oriented Software: basics, Object oriented testing.
Testing Web based Systems: Challenges in testing for web based software, quality aspects, web engineering, testing of web based systems, Testing mobile systems

**Program Name: B.Tech** **Faculty Name: V.Navyasree**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE- A | III-II | SOFTWARE TESTING METHODOLOGIES LAB | | 19-11-18 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 2 |

**PROGRAM OUTCOMES (PO's)**

18 **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

19 **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

20 **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

21 **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

22 **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

23 **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

17. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
18. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
19. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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## Program Educational Objectives (P.E.O's)

| | |
|---|---|
| PE01 | Acquire sound foundations in Basic Sciences and fundamentals in Engineering Sciences. |
| PE02 | Analyze technical solutions to computational problems and develop efficient algorithms. |
| PE03 | Apply knowledge in the identification, design, development, production, configuration, and maintenance of computing systems, for real life problems. |
| PE04 | Gain multidisciplinary knowledge through projects and industrial training, leading to a sustainable competitive edge in R&D,meeting societal needs, and as per the needs of the industry. |
| PE05 | Develop managerial skills, leadership quality and entrepreneurial spirit. |
| PE06 | Inculcate healthy interpersonal skills and strong communication skills, as well as adherence to professional and ethical principles. |

## Program Specific Objectives (PSOs)

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## Course Outcomes

| CO# | Course Outcomes | Cognitive Levels |
|---|---|---|
| CO1 | Design test cases for Black box and White box testing. | Create |

# SYLLABUS

## Problem Statement 01

Consider an automated banking application. The user can dial the bank from a personal computer, provide a six-digit password, and follow with a series of keyword commands that activate the banking function. The software for the application accepts data in the following form:

| | |
|---|---|
| Area Code | Blank or three-digit number |
| Prefix | Three-digit number, not beginning with 0 or 1 |
| Suffix | Four-digit number |
| Password | Six-character alphanumeric |
| Commands | "Check status", "Deposit", "Withdrawal" |

Design adhoc test cases to test the system.

## Problem Statement 02

Consider an automated banking application. The user can dial the bank from a personal computer, provide a six-digit password, and follow with a series of keyword commands that activate the banking function. The software for the application accepts data in the following form:

| | |
|---|---|
| Area Code | Blank or three-digit number |
| Prefix | Three-digit number, not beginning with 0 or 1 |
| Suffix | Four-digit number |
| Password | Six-character alphanumeric |
| Commands | "Check status", "Deposit", "Withdrawal" |

Design the test cases to test the system using following Black Box testing technique:
BVA, Worst BVA, Robust BVA, Robust Worst BVA
Equivalence class testing (Input/output domain)

## Problem Statement 03

Consider an application that is required to validate a number according to the following simple rules:

22. A number can start with an optional sign.
23. The optional sign can be followed by any number of digits.
24. The digits can be optionally followed by a decimal point, represented by a period.
25. If there is a decimal point, then there should be two digits after the decimal.
26. Any number-whether or not it has a decimal point, should be terminated a blank.
27. A number can start with an optional sign.
28. The optional sign can be followed by any number of digits.
29. The digits can be optionally followed by a decimal point, represented by a period.
30. If there is a decimal point, then there should be two digits after the decimal.
31. Any number-whether or not it has a decimal point, should be terminated a blank. Generate test cases to test valid

and invalid numbers.
(HINT) Use Decision table and cause-effect graph to generate test cases.

**Problem Statement 04**

Generate test cases using Black box testing technique to Calculate Standard Deduction on Taxable Income. The standard deduction is higher for tax payers who are 65 or older or blind. Use the method given below to calculate tax.
8. The first factor that determines the standard deduction is the filing status. The basic standard deduction for the
various filing status are:
Single $4,750
Married, filing a joint return $9,500
Married, filing a separate return $7,000
9. If a married couple is filing separate returns and one spouse is not taking standard Deduction, the other spouse also is not eligible for standard deduction.
10. An additional $1,000 is allowed as standard deduction, if either the filer is 65 yrs or the spouse is 65 yrs or older
(the latter case applicable when the filing status is "Married" and filing "joint").
11. An additional $1,000 is allowed as standard deduction, if either the filer is blind or the spouse is blind (the latter
case applicable when the filing status is
"married" and filing "joint").
(HINT):
From the above description, it is clear that the calculation of standard deduction depends on the following 3 factors:
33. Status of filing of the filer
34. Age of the filer
35. Whether the filer is blind or not
In addition, in certain cases, the following additional factors also come into play in calculating the standard deduction.
34. Whether spouse has claimed standard deduction
35. Whether spouse is blind
36. Whether the spouse is more than 65 years old.

**Problem Statement 05**

Consider the following program segment:

```
Int max (int i, int j, int k)
{
Int max;
if (i>j) then
if (i>k) then max=i;
else max=k;
else if (j > k) max=j
else max=k
```

- return (max);
- }

8. Draw the control flow graph for this program segment
9. Determine the cyclomatic complexity for this program
10. Determine the independent paths.

**Problem Statement 06**

Source code of simple insertion sort implementation using array in ascending order in c programming language

```
#include<stdio.h>
int main(){
int i,j,s,temp,a[20];Printf ("Enter total elements:
"); Scanf ("%d",&s);
printf("Enter %d elements: ",s); for(i=0;i<s;i++) scanf("%d",&a[i]);
for(i=1;i<s;i++){ temp=a[i]; j=i-1; while((temp<a[j])&&(j>=0)){ a[j+1]=a[j]; j=j-1;

}
a[j+1]=temp;
}
printf("After sorting: ");
for(i=0;i<s;i++)
printf(" %d",a[i]);
return 0;
}
```

HINT: for loop is represented as while loop

5 Draw the program graph for given program segment b) Determine the DD path graph
10. Determine the independent paths
11. Generate the test cases for each independent path.

**Problem Statement 07**

Consider a system having an FSM for a stack having the following states and transitions:
States
Initial: Before creation
Empty: Number of elements = 0
Holding: Number of elements > 0, but less than the maximum capacity
Full: Number elements = maximum
Final: After destruction
Initial to Empty: Create
Empty to Holding, Empty to Full, Holding to Holding, Holding to Full: Add
Empty to Final, Full to Final, Holding to Final: Destroy
Holding to Empty, Full to Holding, Full to Empty: Delete
Design test cases for this FSM using state table-based testing.

**Problem Statement 08**

Given the following fragment of code, how many tests are required for 100% decision coverage? Give the test cases.
if width > length
then biggest_dimension = width if height > width
then biggest dimension = height end_if
else if biggest dimension = length then if height >
length then biggest_dimension = height end_if end_if
end_if
Hint 04 test cases.

**Problem Statement 09**

Given the following code, how much minimum number of test cases is required for full statement and branch coverage?read p read q If p+q> 100

then
print "Large"
endif
if p > 50
then
print "p Large"
endif
Hint 1 test for statement coverage, 2 for branch coverage.

**Problem Statement 10**

Consider a program to input two numbers and print them in ascending order given below. Find all du paths and
identify those du-paths that are not feasible. Also find all dc paths and generate the test cases for all paths (dc paths
and non dc paths).

```
#include<stdio.h>
#include<conio.h>
f) void main ()
g) {
3 int a, b, t;
j) Clrscr ();
k) Printf (“Enter first number”);
l) scanf (“%d”,&a);
m)      printf(“Enter second number”);
n) scanf(“%d”,&b);
o) if (a<b){
p)  t=a;
11a=b;
12 b=t;
```

```
13}
s)   printf ("%d %d", a, b);
i)   getch ();
}
```

**Problem Statement 11**

Consider the above program and generate possible program slices for all variables. Design at least one test case from every slice.

**Problem Statement 12**

Consider the code to arrange the nos. in ascending order. Generate the test cases for relational coverage, loop coverage and path testing. Check the adequacy of the test cases through mutation testing and also compute the mutation score for each. i = 0;

```
n=4; //N-Number of nodes present in the graph
While (i<n-1) do j = i + 1;
While (j<n) do
if A[i]<A[j] then swap (A[i], A[j]);
end do;
```

**Program Name: B.Tech** **Faculty Name: Dr.A.P.Sastri**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE- A | III-II | ARTIFICIAL INTELLIGENCE | | 19-11-18 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
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**Program Name: B.Tech** **Faculty Name: S. Krishna Kishore**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | IV-I | Cryptography and Network Security | RT41051 | 11-06-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | 3 | Internal 30 | External 70 | 3 |

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## Course Outcomes:

| CO # | Course outcome | Cognitive level |
|---|---|---|
| **CO1** | Apply different Encryption Techniques to avoid threats and Attacks. | **Apply** |
| **CO2** | Illustrate various Symmetric key Cryptography Techniques like DES, AES, CAST, Blowfish, Feistel Cipher. | **Understand** |
| **CO3** | Illustrate various Asymmetric key Cryptography Techniques like RSA Algorithms, Diffie Hellman Key Exchange, Elgamal and ECC. | **Understand** |
| **CO4** | Explain about HMAC, CMAC Cryptographic Hash Functions and MD5, SSH Digital Signatures. | **Understand** |
| **CO5** | Summerize SSL, TLS, SSH under Transport Layer Security and PGP, MIME under Application Level Security . | **Understand** |
| **CO6** | Explain IP SECURITY and Intrusion detection systems | **Understand** |

## Course Objectives:

27. In this course the following principles and practice of cryptography and network security are covered:
28. Classical systems, symmetric block ciphers (DES, AES, other contemporary symmetric ciphers)
29. Public-key cryptography (RSA, discrete logarithms),
30. Algorithms for factoring and discrete logarithms, cryptographic protocols, hash functions, authentication, key management, key exchange, signature schemes,

5. Email and web security, viruses, firewalls, digital right management, and other topics.

**UNIT- I:**

**Basic Principles**

Security Goals, Cryptographic Attacks, Services and Mechanisms, Mathematics of Cryptography

**UNIT- II:**

**Symmetric Encryption**

Mathematics of Symmetric Key Cryptography, Introduction to Modern Symmetric Key Ciphers,Data Encryption Standard, Advanced Encryption Standard.

**UNIT- III:**

**Asymmetric Encryption**

Mathematics of Asymmetric Key Cryptography, Asymmetric Key Cryptography

**UNIT- IV:**

**Data Integrity, Digital Signature Schemes & Key Management**

Message Integrity and Message Authentication, Cryptographic Hash Functions, Digital Signature, Key Management.

**UNIT -V:**

**Network Security-I**

Security at application layer: PGP and S/MIME, Security at the Transport Layer: SSL and TLS

**UNIT -VI:**

**Network Security-II**

Security at the Network Layer: IPSec, System Security

**Program Name: B.Tech** **Faculty Name: A.Chandramouli**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | IV –I | UML AND DESIGN PATTERNS | RT41052 | 11-06-2018 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

## Programme Outcomes:

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## Course Outcomes:

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| **CO1** | Model the unified process concepts and techniques for software projects. | Apply |
| **CO2** | Apply the uml patterns for their own designs in projects. | Apply |
| **CO3** | Construct OO Design using design patterns like GRASP and MVC layer. | Create |
| **CO4** | Construct OO Design using design patterns like Fabrication, Indirection, Singleton, Factory, Facade, and Publish-Subscribe. | Create |
| **CO5** | Design various UML models like use case diagrams, class diagrams, interaction diagrams, state chart diagrams, activity diagrams, and implementation diagrams. | Create |
| **CO6** | Explain data dependencies,packaging model,domain model refinement in social context . | understand |

**UNIT I : Introduction :** Introduction to OOAD; typical activities / workflows / disciplines in OOAD, Introduction toiterative development and the Unified Process, Introduction to UML; mapping disciplines to UML artifacts, Introduction to Design Patterns - goals of a good design, Introducing a case study & MVC architecture

**UNIT II: Inception:** Artifacts in inception, Understanding requirements - the FURPS model, Understanding Use casemodel - introduction, use case types and formats, Writing use cases - goals and scope of a use case, elements / sections of a use case, Use case diagrams, Use cases in the UP context and UP artifacts, Identifying additional requirements, Writing requirements for the case study in the use case model

**UNIT III: Elaboration:** System sequence diagrams for use case model, Domain model : identifying concepts, addingassociations, adding attributes, Interaction Diagrams, Introduction to GRASP design Patterns ,Design Model: Use case realizations with GRASP patterns, Design Class diagrams in each MVC layer.

**UNIT IV : More Design Patterns:** Fabrication, Indirection, Singleton, Factory, Facade, Publish-Subscribe.

**UNIT V: More UML diagrams :** State-Chart diagrams, Activity diagrams, Component Diagrams, Deploymentdiagrams, Object diagrams

**UNIT VI: Advanced concepts in OOAD :** Use case relationships, GeneralizationsDomain Model refinements, Architecture, Packaging model elements

**Program Name: B.Tech** **Faculty Name: B.SARATH CHANDRA**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | IV-I | MOBILE COMPUTING | RT41053 | 11-06-2018 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
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## Course Outcomes:

| S.No | Course Outcomes | Cognitive Level |
|---|---|---|
| CO1 | Illustrate the concept of mobile computing and its Architecture, subsystems of GSM, GPRS architecture, protocols and new data services. | Understand |
| CO2 | Explain the MAC, SDMA, FDMA, TDMA, CDMA and Wireless LAN Protocols. | Understand |
| CO3 | Discuss IP and Mobile IP Network Layer concepts such as handover & location management, Encapsulation, Route Optimization. | Understand |
| CO4 | Discuss M-TCP, Indirect TCP , Snooping TCP Transport Layer protocols and database issues for mobile networks. | Understand |
| CO5 | Explain the data Dissemination and Synchronization for mobile networks in asymmetric communication environment | Understand |
| CO6 | Explain MANET including challenges, properties, applications, Routing Algorithms such as DSR, AODV, and DSDV, etc., and differentiatethe different protocols and platform for Mobile Computing. | Understand |

## Course Objectives:

25. To make the student understand the concept of mobile computing paradigm, its novel applications and limitations.
26. To understand the typical mobile networking infrastructure through a popular GSM protocol
27. To understand the issues and solutions of various layers of mobile networks, namely MAC layer, Network Layer & Transport Layer
28. To understand the database issues in mobile environments & data delivery models.
29. To understand the ad hoc networks and related concepts.
30. To understand the platforms and protocols used in mobile environment

**UNIT I**

**Introduction:** Mobile Communications, Mobile Computing – Paradigm, Promises/Novel Applications and Impediments and Architecture; Mobile and Handheld Devices, Limitations of Mobile and Handheld Devices. GSM – Services, System Architecture, Radio Interfaces, Protocols, Localization, Calling, Handover, Security, New Data Services, GPRS.

**UNIT –II**

**(Wireless) Medium Access Control (MAC):** Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals), SDMA, FDMA, TDMA, CDMA, Wireless LAN/(IEEE 802.11)

**UNIT –III**

**Mobile Network Layer :** IP and Mobile IP Network Layers, Packet Delivery and Handover Management, Location Management, Registration, Tunneling and Encapsulation, Route Optimization, DHCP.

**UNIT –IV**

**Mobile Transport Layer :** Conventional TCP/IP Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Transport Layer Protocols for Mobile Networks.

**Database Issues :** Database Hoarding & Caching Techniques, Client-Server Computing & Adaptation, Transactional Models, Query processing, Data Recovery Process & QoS Issues.

**UNIT V**

**Data Dissemination and Synchronization :** Communications Asymmetry, Classification of Data Delivery Mechanisms, Data Dissemination, Broadcast Models, Selective Tuning and Indexing Methods, Data Synchronization – Introduction, Software, and Protocols.

**UNIT VI**

**Mobile Ad hoc Networks (MANETs) :** Introduction, Applications & Challenges of a MANET, Routing, Classification of Routing Algorithms, Algorithms such as DSR, AODV, DSDV, etc. , Mobile Agents, Service Discovery.

**Protocols and Platforms for Mobile Computing :** WAP, Bluetooth, XML, J2ME, JavaCard, PalmOS, Windows CE, SymbianOS, Linux for Mobile Devices,Android

**Program Name: B.Tech** **Faculty Name: B.SRIKANTH REDDY**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | IV-I | SOFTWARE TESTING METHODOLOGIES | RT41054 | 11-06-2018 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

## Programme Outcomes:

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

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

## Programme Specific Outcomes:

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| CO# | Course Outcomes | Cognitive Levels |
|---|---|---|
| CO1 | Explain software testing fundamentals and testing life cycle relating to development life cycle | Understand |
| CO2 | Design the test cases for black box testing techniques like Boundary Value Analysis, Equivalence class Testing, State Table based testing, Decision table based testing, Cause-Effect Graphing based testing and Error guessing | Create |
| CO3 | Design the test cases for white box testing like Logic coverage criteria, Basis path testing, Graph matrices, Loop testing, data flow testing and mutation testing and also for various static testing like inspections, Structured Walkthroughs and Technical reviews. | Create |
| CO4 | Explain various validation activities like unit testing, Integration Testing, Function testing, system testing, acceptance testing and Regression testing | Understand |
| CO5 | Discuss Test Suite Management , Software Quality Management and debugging processes. | Create |
| CO6 | Explain automated testing ,Object oriented and Web based system testing. | Understand |

**UNIT I:**

Software Testing: Introduction, Evolution, Myths & Facts, Goals, Psychology, Definition, Model for testing, Effective Vs Exhaustive Software Testing.

Software Testing Terminology and Methodology: Software Testing Terminology, Software Testing Life Cycle, relating test life cycle to development life cycle Software Testing Methodology.

**UNIT II:**

Verification and Validation: Verification & Validation Activities, Verification, Verification of Requirements, High level and low level designs, How to verify code, Validation.

Dynamic Testing I: Black Box testing techniques: Boundary Value Analysis, Equivalence class Testing, State Table based testing, Decision table based testing, Cause-Effect Graphing based testing, Error guessing.

**UNIT III:**

Dynamic Testing II: White-Box Testing: need, Logic coverage criteria, Basis path testing, Graph matrices, Loop testing, data flow testing, mutation testing.

Static Testing: inspections, Structured Walkthroughs, Technical reviews

**UNIT IV:**

Validation activities: Unit testing, Integration Testing, Function testing, system testing, acceptance testing.

Regression testing: Progressives Vs regressive testing, Regression testability, Objectives of regression testing, When regression testing done? Regression testing types, Regression testing techniques

**UNIT V:**

Efficient Test Suite Management: Test case design why does a test suite grow, Minimizing the test suite and its benefits, test suite prioritization, Types of test case prioritization, prioritization techniques, measuring the effectiveness of a prioritized test suite Software Quality Management: Software Quality metrics, SQA models

Debugging: process, techniques, correcting bugs, Basics of testing management tools, test link and Jira.

**UNIT VI:**

Automation and Testing Tools: need for automation, categorization of testing tools, selection of testing tools, Cost incurred, Guidelines for automated testing, overview of some commercial testing tools.

Testing Object Oriented Software: basics, Object oriented testing.

Testing Web based Systems: Challenges in testing for web based software, quality aspects, web engineering, testing of web based systems, Testing mobile systems

**Program Name: B.Tech** **Faculty Name:A. Pathanjali Sastri**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | IV-I | SOFTWARE PROJECT MANAGEMENT | RT4105C | 11-06-2018 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

## Programme Outcomes:

\endash **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

\endash **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

\endash **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

\endash **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

\endash **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

\endash **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

\endash **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

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

## Programme Specific Outcomes:

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Discuss the fundamental principles and challenges of Software Project management and Project Planning. | Understand |
| CO2 | Describe various project life cycles, process artifacts and workflows in software project arena. | Understand |
| CO3 | Implement different estimation techniques for Project Scheduling, tracking, Risk analysis, Quality management and Project Cost estimation. | Apply |
| CO4 | Demonstrate effective project execution and control techniques that result in successful projects. | Apply |
| CO5 | Demonstrate project planning activities that accurately forecast project costs, timelines, and quality. Implement processes for successful resource, communication, and risk and change management. | Apply |
| CO6 | Distinguish and use the techniques for implementing quality management. | Analyze |

## Course Objectives:

* To study how to plan and manage projects at each stage of the software development life cycle (SDLC)
* To train software project managers and other individuals involved in software project planning and tracking and oversight in the implementation of the software project management process.
* To understand successful software projects that support organization's strategic goals

**Unit I: Introduction:**Project, Management, Software Project Management activities, Challenges in software projects, Stakeholders, Objectives & goalsProject Planning: Step-wise planning, Project Scope, Project Products & deliverables, Project activities, Effort estimation, Infrastructure

**Unit II:**
**Project Approach:** Lifecycle models, Choosing Technology, Protoyping, Iterative & incremental Process Framework: Lifecycle phases, Process Artifacts, Process workflows (Book 2

**Unit III: Effort estimation & activity Planning:**
Estimation techniques, Function Point analysis, SLOC, COCOMO, Usecase-based estimation , Activity Identification Approaches, Network planning models, Critical path analysis

**Unit IV: Risk Management:**
Risk categories, Identification, Assessment, Planning and management, PERT technique, Monte Carlo approach

**Unit V: Project Monitoring & Control , Resource Allocation:**
Creating a framework for monitoring & control, Progress monitoring, Cost monitoring, Earned value Analysis, Defects Tracking, Issues Tracking, Status reports, Types of Resources, Identifying resource requirements, Resource scheduling

**Unit VI: Software Quality:**
Planning Quality, Defining Quality - ISO 9016, Quality Measures, Quantitative Quality Management Planning, Product Quality & Process Quality
Metrics, Statistical Process Control Capability Maturity Model, Enhancing software Quality (Book3)

**Program Name: B.Tech** **Faculty Name: A. Chandra Mouli**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | IV-I | UML AND DESIGN PATTERNS LAB | RT4105L | 11-06-2018 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 2 |

## Programme Outcomes:

25. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
26. **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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22. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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## Programme Specific Outcomes:

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| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Design Patterns Lab**

**S. No Programs**

21. Use case Diagram for Librarian Scenario
22. Using UML design Abstract factory design pattern
23. Using UML design Adapter-class Design pattern
24. Using UML design Adapter-object Design pattern
25. Using UML design Strategy Design pattern
26. Using UML design Builder Design pattern
27. Using UML design Bridge Design pattern
28. Using UML design Decorator Design pattern
29. User gives a print command from a word document. Design to represent this chain of responsibility Design pattern
30. Design a Flyweight Design pattern
31. Using UML design Facade Design pattern

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19. Using UML design Iterator Design pattern
20. Using UML design Mediator Design pattern
21. Using UML design Proxy Design pattern
22. Using UML design Visitor Design pattern

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**Program Name: B.Tech** **Faculty Name: B.Charath Chandra**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | IV-I | MOBILE APPLICATION DEVELOPMENT LAB | RT4105M | 11-06-2018 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 2 |

## Programme Outcomes:

24 **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

25 **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

26 **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

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## Programme Specific Outcomes:

| | |
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| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
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| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

**Program Name: B.Tech** **Faculty Name: B.SRIKANTH REDDY**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | IV-I | SOFTWARE TESTING LAB | RT4105N | 11-06-2018 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 2 |

## Programme Outcomes:

32. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
33. **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
34. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
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## Programme Specific Outcomes:

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| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
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## Course Outcomes:

| CO# | Course Outcomes | Cognitive Levels |
|---|---|---|
| CO1 | Design test cases for Black box and White box testing. | Create |

**Problem Statement 01**

Consider an automated banking application. The user can dial the bank from a personal computer, provide a six-digit password, and follow with a series of keyword commands that activate the banking function. The software for the application accepts data in the following form:

| | |
|---|---|
| Area Code | Blank or three-digit number |
| Prefix | Three-digit number, not beginning with 0 or 1 |
| Suffix | Four-digit number |
| Password | Six-character alphanumeric |
| Commands | "Check status", "Deposit", "Withdrawal" |

Design adhoc test cases to test the system.

**Problem Statement 02**

Consider an automated banking application. The user can dial the bank from a personal computer, provide a six-digit password, and follow with a series of keyword commands that activate the banking function. The software for the application accepts data in the following form:

| | |
|---|---|
| Area Code | Blank or three-digit number |
| Prefix | Three-digit number, not beginning with 0 or 1 |
| Suffix | Four-digit number |
| Password | Six-character alphanumeric |
| Commands | "Check status", "Deposit", "Withdrawal" |

Design the test cases to test the system using following Black Box testing technique:
BVA, Worst BVA, Robust BVA, Robust Worst BVA
Equivalence class testing (Input/output domain)

**Problem Statement 03**

Consider an application that is required to validate a number according to the following simple rules:

36. A number can start with an optional sign.
37. The optional sign can be followed by any number of digits.
38. The digits can be optionally followed by a decimal point, represented by a period.
39. If there is a decimal point, then there should be two digits after the decimal.
40. Any number-whether or not it has a decimal point, should be terminated a blank.
41. A number can start with an optional sign.
42. The optional sign can be followed by any number of digits.
43. The digits can be optionally followed by a decimal point, represented by a period.
44. If there is a decimal point, then there should be two digits after the decimal.
45. Any number-whether or not it has a decimal point, should be terminated a blank. Generate test cases to test valid
and invalid numbers.

(HINT) Use Decision table and cause-effect graph to generate test cases.

**Problem Statement 04**

Generate test cases using Black box testing technique to Calculate Standard Deduction on Taxable Income. The standard deduction is higher for tax payers who are 65 or older or blind. Use the method given below to calculate tax.

37. The first factor that determines the standard deduction is the filing status. The basic standard deduction for the
various filing status are:

Single $4,750
Married, filing a joint return $9,500
Married, filing a separate return $7,000

38. If a married couple is filing separate returns and one spouse is not taking standard Deduction, the other spouse also is not eligible for standard deduction.

• An additional $1,000 is allowed as standard deduction, if either the filer is 65 yrs or the spouse is 65 yrs or older
(the latter case applicable when the filing status is “Married” and filing “joint”).
• An additional $1,000 is allowed as standard deduction, if either the filer is blind or the spouse is blind (the latter
case applicable when the filing status is
“married” and filing “joint”).
(HINT):
From the above description, it is clear that the calculation of standard deduction depends on the following 3 factors:
• Status of filing of the filer
• Age of the filer
• Whether the filer is blind or not
In addition, in certain cases, the following additional factors also come into play in calculating the standard deduction.
11. Whether spouse has claimed standard deduction
12. Whether spouse is blind
13. Whether the spouse is more than 65 years old.

**Problem Statement 05**

Consider the following program segment:

```
6  Int max (int i, int j, int k)
7  {
8  Int max;
9  if (i>j) then
10if (i>k) then max=i;
11else max=k;
12else if (j > k) max=j
13else max=k
14return (max);
15  }
```

12. Draw the control flow graph for this program segment
13. Determine the cyclomatic complexity for this program
14. Determine the independent paths.

**Problem Statement 06**

Source code of simple insertion sort implementation using array in ascending order in c programming language

```
#include<stdio.h>
int main(){
int i,j,s,temp,a[20];Printf ("Enter total elements:
"); Scanf ("%d",&s);
printf("Enter %d elements: ",s); for(i=0;i<s;i++) scanf("%d",&a[i]);
for(i=1;i<s;i++){ temp=a[i]; j=i-1; while((temp<a[j])&&(j>=0)){ a[j+1]=a[j];
```

```
j=j-1;
}
a[j+1]=temp;
}
printf("After sorting: ");
for(i=0;i<s;i++)
printf(" %d",a[i]);
return 0;
}
```

HINT: for loop is represented as while loop

h) Draw the program graph for given program segment b) Determine the DD path graph

q) Determine the independent paths

r) Generate the test cases for each independent path.

**Problem Statement 07**

Consider a system having an FSM for a stack having the following states and transitions:
States
Initial: Before creation
Empty: Number of elements = 0
Holding: Number of elements > 0, but less than the maximum capacity
Full: Number elements = maximum
Final: After destruction
Initial to Empty: Create
Empty to Holding, Empty to Full, Holding to Holding, Holding to Full: Add
Empty to Final, Full to Final, Holding to Final: Destroy
Holding to Empty, Full to Holding, Full to Empty: Delete
Design test cases for this FSM using state table-based testing.

**Problem Statement 08**

Given the following fragment of code, how many tests are required for 100% decision coverage? Give the test cases.

```
if width > length
then biggest_dimension = width if height > width
then biggest dimension = height end_if
else if biggest dimension = length then if height >
length then biggest_dimension = height end_if end_if
end_if
```

Hint 04 test cases.

**Problem Statement 09**

Given the following code, how much minimum number of test cases is required for full statement and branch coverage?read p read q If p+q> 100

then
print "Large"
endif
if p > 50
then
print "p Large"
endif
Hint 1 test for statement coverage, 2 for branch coverage.

**Problem Statement 10**

Consider a program to input two numbers and print them in ascending order given below. Find all du paths and
identify those du-paths that are not feasible. Also find all dc paths and generate the test cases for all paths (dc paths
and non dc paths).

```
#include<stdio.h>
#include<conio.h>
t) void main ()
u) {
3 int a, b, t;
j) Clrscr ();
k) Printf ("Enter first number");
l) scanf ("%d",&a);
m)      printf("Enter second number");
n) scanf("%d",&b);
o) if (a<b){
p)  t=a;
11a=b;
t)  b=t;
13}
m) printf ("%d %d", a, b);
o) getch ();
}
```

**Problem Statement 11**

Consider the above program and generate possible program slices for all variables. Design at least one test case from every slice.

**Problem Statement 12**

Consider the code to arrange the nos. in ascending order. Generate the test cases for relational coverage, loop coverage and path testing. Check the adequacy of the test cases through mutation testing and also compute the mutation score for each. i = 0;

n=4; //N-Number of nodes present in the graph

```
While (i<n-1) do j = i + 1;
While (j<n) do
if A[i]<A[j] then swap (A[i], A[j]);
end do;
```

**Program Name: B.Tech** **Faculty Name: K.SUDHAKAR**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| CSE | IV-I | HADOOP AND BIGDATA LAB | RT4105O | 11-06-2018 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory | Practical 3 | 3 | Internal 25 | External 50 | 2 |

## Programme Outcomes:

d) **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

e) **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

f) **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

g) **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

h) **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

i) **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

j) **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

k) **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

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

## Programme Specific Outcomes:

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Design the Linked List, Stacks, Queues, Sets, and Maps using Java; the basic Word Count, weather data and Matrix Multiplication with Hadoop Map Reduce paradigm; scripts to sort, group, join, project, and filter data by using Pig; create, alter, and drop databases, tables, views, functions, and indexes by using Hive | Create |
| CO2 | Design File management tasks by installing Hadoop Distributed File System (HDFS) architecture. | Create |

## Course Objectives:

d) Optimize business decisions and create competitive advantage with Big Data analytics
e) Introducing Java concepts required for developing map reduce programs
f) Derive business benefit from unstructured data
g) Imparting the architectural concepts of Hadoop and introducing map reduce paradigm
h) To introduce programming tools PIG & HIVE in Hadoop echo system

## Week 1,2:

1. Implement the following Data structures in Java a)Linked Lists b) Stacks c) Queues d) Set e) Map

**Week 3, 4:**

d) (I) Perform setting up and Installing Hadoop in its three operating modes: Standalone, Pseudo distributed, Fully distributed

(ii)Use web based tools to monitor your Hadoop setup.

**Week 5:** 3. Implement the following file management tasks in Hadoop:

•Adding files and directories

•Retrieving files

•Deleting files

*Hint: A typical Hadoop workflow creates data files (such as log files) elsewhere and copies them into HDFS using one of the above command line utilities.*

**Week 6:**

d) Run a basic Word Count Map Reduce program to understand Map Reduce Paradigm.

**Week 7:**

e) Write a Map Reduce program that mines weather data. Weather sensors collecting data every hour at many locations across the globe gather a large volume of log data, which is a good candidate for analysis with MapReduce, since it is semi structured and record-oriented.

**Week 8:**

f) Implement Matrix Multiplication with Hadoop Map Reduce

**Week 9, 10:**

g) Install and Run Pig then write Pig Latin scripts to sort, group, join, project, and filter your data.

**Week 11, 12:** 8. Install and Run Hive then use Hive to create, alter, and drop databases, tables, views, functions, and indexes

**Program Name: B.Tech** **Faculty Name: S. Krishna Kishore**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| IV CSE | II | CLOUD COMPUTING | RT42043E | 19-11-18 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4+1 | Practical | 3 | Internal 30 | External 70 | 3 |

## Programme Outcomes:

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

37. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

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

## Programme Specific Outcomes:

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| **CO1** | Demonstrate the environment in Distributed Systems for establishing Public & Private Clouds. | Understand |
| **CO2** | Experiment with Virtual Machines to form Clusters and Datacenters. | Apply |
| **CO3** | Illustrate Cloud Platform Architecture. | Understand |
| **CO4** | Make use of Google app engine with programming knowledge on Amazon AWS | Apply |
| **CO5** | Illustrate Scheduling algorithms and creation policies of Cloud | Understand |
| **CO6** | Distinguish various Storage Systems like DFS, GFS. | Apply |

## SYLLABUS

**UNIT I: Systems modeling, Clustering and virtualization:**

Scalable Computing over the Internet, Technologies for Network based systems, System models for Distributed and Cloud Computing, Software environments for distributed systems and clouds, Performance, Security And Energy Efficiency

**UNIT II: Virtual Machines and Virtualization of Clusters and Data Centers:**

Implementation Levels of Virtualization, Virtualization Structures/ Tools and mechanisms, Virtualization of CPU, Memory and I/O Devices, Virtual Clusters and Resource Management, Virtualization for Data Center Automation.

**UNIT III: Cloud Platform Architecture:**

Cloud Computing and service Models, Architectural Design of Compute and Storage Clouds, Public Cloud Platforms, Inter Cloud Resource Management, Cloud Security and Trust Management. Service Oriented Architecture, Message Oriented Middleware.

**UNIT IV: Cloud Programming and Software Environments:**

Features of Cloud and Grid Platforms, Parallel & Distributed Programming Paradigms, Programming Support of Google App Engine, Programming on Amazon AWS and Microsoft Azure, Emerging Cloud Software Environments.

**UNIT V: Cloud Resource Management and Scheduling:**

Policies and Mechanisms for Resource Management Applications of Control Theory to Task Scheduling on a Cloud, Stability of a Two Level Resource Allocation Architecture, Feedback Control Based on Dynamic Thresholds. Coordination of Specialized Autonomic Performance Managers, Resource Bundling, Scheduling Algorithms for Computing Clouds, Fair Queuing, Start Time Fair Queuing, Borrowed Virtual Time, Cloud Scheduling Subject to Deadlines, Scheduling MapReduce Applications Subject to Deadlines.

**UNIT VI:**

**Storage Systems:** Evolution of storage technology, storage models, file systems and database, distributed file systems, general parallel file systems. Google file system., Apache Hadoop, BigTable, Megastore, Amazon Simple Storage Service(S3)

**Program Name: B.Tech** **Faculty Name:K. Sudhakar**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| IVCSE | II | DISTRIBUTED SYSTEMS | RT42051 | 19-11-2018 |

SYLLABUS

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

**Programme Outcomes:**

31. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
32. **Problem analysis:** Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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41. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Illustrate the Characteristics of Distributed Systems | Understand |
| CO2 | Outline the Distributed Systems Architectural models and the Interprocess Communication | Understand |
| CO3 | Analyze RMI in Java with Distributed Objects | Analyze |
| CO4 | Explain the methods of process and threads with the structure of operating system layer | Understand |
| CO5 | Discuss the architecture of the system with middle ware technologies. | Create |
| CO6 | Analyze the mutual exclusion and communication with deadlocks and transaction recovery. | Analyze |

## SYLLABUS

**UNIT-I: Characterization of Distributed Systems:** Introduction, Examples of Distributed Systems, Resource Sharing and the Web, Challenges.

**UNIT-II: System Models:** Introduction, Architectural Models- Software Layers, System Architecture, Variations, Interface and Objects, Design Requirements for Distributed Architectures, Fundamental Models- Interaction Model, Failure Model, Security Model.

**Interprocess Communication:** Introduction, The API for the Internet Protocols- The Characteristics of Interprocess communication, Sockets, UDP Datagram Communication, TCP Stream Communication; External Data Representation and Marshalling; Client Server Communication; Group Communication- IP Multicast- an implementation of group communication, Reliability and Ordering of Multicast.

**UNIT-III: Distributed Objects and Remote Invocation:** Introduction, Communication between Distributed Objects- Object Model, Distributed Object Modal, Design Issues for RMI, Implementation of RMI, Distributed Garbage Collection; Remote Procedure Call, Events and Notifications, Case Study: JAVA RMI.

**UNIT-IV: Operating System Support:** Introduction, the Operating System Layer, Protection, Processes and Threads –Address Space, Creation of a New Process, Threads.

**UNIT-V: Distributed File Systems:** Introduction, File Service Architecture; Peer-to-Peer Systems: Introduction, Napster and its Legacy, Peer-to-Peer Middle-ware, Routing Overlays.

**UNIT-VI: Coordination and Agreement:** Introduction, Distributed Mutual Exclusion, Elections, And Multicast Communication. **Transactions & Replications:** Introduction, System Model and Group Communication, Concurrency Control in Distributed Transactions, Distributed Dead Locks, Transaction Recovery; Replication-Introduction, Passive (Primary) Replication, Active Replication

**Program Name: B.Tech** **Faculty Name: S.ManiKanta**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| IV CSE | II | MANAGEMENT SCIENCE | RT42052 | 19-11-18 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

## Programme Outcomes:

24. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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35. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Programme Specific Outcomes:

| | |
|---|---|
| PSO1 | **Practices of mathematical ideas:** By using mathematical techniques to solve problems using appropriate mathematical study, data structure and algorithms. |
| PSO2 | **Practices Of Computing:** The students obtain the knowledge of hardware and software by the capability of attaining essential concepts from computing systems. |
| PSO3 | **Practices of Software Development:** By possessing the computing skills and knowledge of software development life cycle, the students gain the practical capability and platform independent skills. |

## Course Outcomes:

| CO # | **Course outcome** | **Cognitive level** |
|---|---|---|
| CO1 | Discuss the importance of the Management, Management Evolution, and its Functions and the Organization structure. | Understand |
| CO2 | Implement the tasks, tools and underlying principles of operations management in the manufacturing and service sectors to improve organizational performance by understanding the roles and responsibilities of operations managers in different organisational contexts and administrative processes. | Apply |
| CO3 | Implement appropriate HRM techniques to make informed decisions that enhance the effectiveness of the HR Manager by aligning the HRM strategy with the overall organizational strategy and purpose. | Apply |
| CO4 | Generate the process of decision making and planning by using quantitative techniques like PERT, CPM and SPC. | Create |
| CO5 | Determine the critical link among strategy, performance measurement, and risk management. | Apply |
| CO6 | Implement relevant theories to critically examine contemporary management issues by applying the current management practices to contemporary management issues and challenges. | Apply |

## SYLLABUS

**Unit I: Introduction to Management:** Concept –nature and importance of Management – Functions of Management – Evaluation of Management thought- Theories of Motivation – Decision making process-Designing organization structure- Principles of organization - Types of organization structure.

**Unit II: Operations Management:** Principles and Types of Management – Work study- Statistical Quality Control- Control charts (P-chart, R-chart, and Cchart) Simple problems- Material Management: Need for Inventory control-EOQ, ABC analysis (simple problems) and Types of ABC analysis (HML, SDE, VED, and FSN analysis).

**Unit III: Functional Management:** Concept of HRM, HRD and PMIR- Functions of HR Manager- Wage payment plans(Simple Problems) – Job Evaluation and Merit Rating - Marketing Management- Functions of Marketing – Marketing strategies based on product Life Cycle, Channels of distributions.

**Unit IV: Project Management:** (PERT/CPM): Development of Network – Difference between PERT and CPM Identifying Critical Path- Probability- Project Crashing (Simple Problems)

**Unit V: Strategic Management:** Vision, Mission, Goals, Strategy – Elements of Corporate Planning Process – Environmental Scanning – SWOT analysis - Steps in Strategy Formulation and Implementation, Generic Strategy alternatives

**Unit VI: Contemporary Management Practice:** Basic concepts of MIS, MRP, Justin-Time(JIT) system, Total Quality Management(TQM), Six sigma and Capability Maturity Model(CMM) Levies, Supply Chain Management , Enterprise Resource Planning (ERP), Business Process outsourcing (BPO), Business process Re-engineering and Bench Marking, Balanced Score Card.

**Program Name: B.TECH** **Faculty Name: B.HanumanthRao**

| Class | Semester | Title of The Paper | Paper Code | W.E.F |
|---|---|---|---|---|
| IV CSE | II | HUMAN COMPUTER INTERACTION | RT42053A | 19-11-18 |

**SYLLABUS**

| Total No.of Hours for Teaching-Learning | Instructional Hours for Week | | Duration of semester End Examination in Hours | Max Marks | | Credits |
|---|---|---|---|---|---|---|
| 60 Hours | Theory 4 | Practical | 3 | Internal 30 | External 70 | 3 |

## Programme Outcomes:

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## Programme Specific Outcomes:

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|---|---|
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## Course Outcomes:

| CO# | Course Outcomes | Cognitive Levels |
|---|---|---|
| CO1 | Illustrate interactive design process and universal design principles in designing HCI systems. | Understand |
| CO2 | Discuss tasks and dialogs of relevant HCI systems based on task analysis and dialog design | Create |
| CO3 | Illustrate Interaction devices, command and natural languages | Understand |
| CO4 | Explain Quality of service, the Balancing function and fashion | Understand |
| CO5 | Build User documentation and help manual for UI applications | Apply |
| CO6 | Discuss information searching and visualization in UI. | Create |

## SYLLABUS

**UNIT I:**

Introduction: Usability of Interactive Systems- introduction, usability goals and measures, usability motivations, universal usability, goals for our profession

Managing Design Processes: Introduction, Organizational design to support usability, Four pillars of design, development methodologies, Ethnographic observation, Participatory design, Scenario Development, Social impact statement for early design review, legal issues, Usability Testing and Laboratories

**UNIT II:**

Menu Selection, Form Fill-In and Dialog Boxes: Introduction, Task- Related Menu Organization, Single menus, Combinations of Multiple Menus, Content Organization, Fast Movement Through Menus, Data entry with Menus: Form Fill-in, dialog Boxes, and alternatives, Audio Menus and menus for Small Displays

**UNIT III:**

Command and Natural Languages: Introduction, Command organization Functionality, Strategies and Structure, Naming and Abbreviations, Natural Language in Computing Interaction Devices: Introduction, Keyboards and Keypads, Pointing Devices, Speech and Auditory Interfaces, Displays- Small and large

**UNIT IV:**

Quality of Service: Introduction, Models of Response-Time impacts, Expectations and attitudes, User Productivity, Variability in Response Time, Frustrating Experiences

Balancing Function and Fashion: Introduction, Error Messages, Non anthropomorphic Design, Display Design, Web Page Design, Window Design, Color

**UNIT V:**

User Documentation and Online Help: Introduction, Online Vs Paper Documentation, Reading from paper Vs from Displays, Shaping the content of the Documentation, Accessing the Documentation, Online tutorials and animated documentation, Online communities for User Assistance, The Development Process

**UNIT VI:**

Information Search: Introduction, Searching in Textual Documents and Database Querying, Multimedia Document Searches, Advanced Filtering and Searching Interfaces

Information Visualization: Introduction, Data Type by Task Taxonomy, Challenges for Information Visualization

CSE-HOD

Principal