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2.6.1 Programme Outcomes (POs) and Course Outcomes (COs) for all Programme offered by the institution are stated and displayed on website and attainment of POs and COs are evaluated.

In IIST, the Program Outcomes (POs) and Course Outcomes (COs) are meticulously aligned with the institution's vision and mission, as well as those of the individual departments. The POs comprehensively define the objectives and scope of both undergraduate and postgraduate programs. Additionally, each department has explicitly articulated Program-Specific Outcomes (PSOs) for the various programs it offers.

For each course, the subject instructor refers to the course objectives and outcomes outlined by the university, ensuring that they match the syllabus and course content, before finalizing the COs.

The institution's vision, mission, Program Educational Objectives (PEOs), POs, and PSOs are prominently displayed on the official website for easy access by all stakeholders.

Student Induction Sessions: At the start of every academic year, the vision and mission of the institute are communicated to incoming students during the induction program, ensuring they are aware of the institute's core values and goals.

Course Introductions and Regular Communication: Throughout theory and practical sessions, the subject teachers introduce the POs, PSOs, and COs to students, integrating these into their teaching methodologies to create a clear understanding of how each course aligns with the program's objectives.

Incorporation into Course Materials: POs, PSOs, and COs are also integrated into course handouts, course files, and presentations, ensuring students are consistently reminded of the learning outcomes throughout the course.

Campus Display: The vision, mission, PEOs, POs, PSOs, and COs are prominently displayed at various key locations on campus, including department notice boards, laboratories, and other prime areas, reinforcing their importance and keeping them visible to students and faculty alike.

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Indore Institute of Science Principal and rectificions, Indore



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Table of Contents

| 1 | Vision of the Institute | 6 |
|---------|------------------------------------------------------------------------------------|---------------|
| 1. | | 6 |
| 2. | Mission of the Institute | 7 |
| 3. | Department of Computer Science and Engineering | 1 |
| ٨ | Vision of Computer Science and Engineering (UG) | 7 |
| A. D | Mission of Computer Science and Engineering (UG) | 7 |
| в. | Brogram Educational Objective (PEO's) of Computer Science and Engineering (UG) | 7 |
| D. | Program Specific Outcomes (PSO's) of Computer Science and Engineering (UG) | 8 |
| р. Б | Programme Outcomes (PO's) of Computer Science and Engineering (UG) | 8 |
| E. E | Course Outcomes (CO's) of Computer Science and Engineering (UG) | 10 |
| r. G | Vision of Computer Science and Engineering (PG) | 20 |
| и. И | Mission of Computer Science and Engineering (PG) | 20 |
| п. | Program Educational Objective (PEO's) of Computer Science and Engineering (PG) | 20 |
| 1. T | Program Specific Outcomes (PSO's) of Computer Science and Engineering (PG) | 21 |
| J. V | Programme Outcomes (PO's) of Computer Science and Engineering (PG) | 21 |
| K. | Course Outcomes (CO's) of Computer Science and Engineering (PG) | 22 |
| ۲. ۱ | Department of Information Technology | 24 |
| 4. | | 24 |
| Α. | Vision of Information Technology (UG) | 24 |
| В. | Mission of Information Technology(UG) | 24 |
| C. | Program Educational Objective (PEO's) of Information Technology (UG) | |
| D. | Program Specific Outcomes (PSO's) of Information Technology (UG) | 25 |
| E. | Programme Outcomes (PO's) of Information Technology (UG) | |
| F. | Course Outcomes (CO's) of Information Technology (CO) | |
| 5. | Department of Electronics and Communication Engineering | |
| A. | Vision of Electronics and Communication Engineering (UG) | |
| В. | Mission of Electronics and Communication Engineering (UG) | |
| C. | Program Educational Objective (PEO's) of Electronics and Communication Engineering | (UG).37 |
| D | Program Specific Outcomes (PSO's) of Electronics and Communication Engineering | |
| | Indexendantitu | te of Science |
| | HOD 15 LISAC 15 and Technol | logy, Indore |
| | Saturday, Decemi | ber 21, 2024 |
| | NOORE | |

| | A | |
|----------------|---------|--|
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Indore Institute of Science & Technology

COMPANY C 1

| | Science & Technology I | 2(f) |
|----|------------------------------------------------------------------------------------|----------|
| | Approved by AICTE, New Denn, Annated to Ator (7,20-4-4) 2023-2024 | 20 |
| E. | Programme Outcomes (PO's) of Electronics and Communication Engineering (UG) | |
| F. | Course Outcomes (CO's) of Electronics and Communication Engineering (UG) | 40 |
| G. | Vision of Electronics and Communication Engineering (PG) | |
| H. | Mission of Electronics and Communication Engineering (PG) | |
| T | Program Educational Objective (PEO's) of Electronics and Communication Engineering | g (PG)49 |
| I. | Program Specific Outcomes (PSO's) of Electronics and Communication Engineering (F | G)49 |
| ĸ | Course Outcomes (CO's) of Electronics and Communication Engineering (PG) | 50 |
| 6 | Department of Civil Engineering | 53 |
| 0. | | |
| Α. | Vision of Civil Engineering (UG) | |
| В. | Mission of Civil Engineering(UG) | |
| C. | Program Educational Objective (PEO's) of Civil Engineering (UG) | |
| D. | Program Specific Outcomes (PSO's) of Civil Engineering (OO) | |
| L. | Programme Outcomes (PO's) of Civil Engineering | |
| E. | Course Outcomes (CO's) of Civil Engineering (UG) | 67 |
| 7. | Department of Chemical Engineering | |
| Δ | Vision of Chemical Engineering (UG) | 67 |
| B. | Mission of Chemical Engineering (UG) | 67 |
| C. | Program Educational Objective (PEO's) of Chemical Engineering (UG) | 67 |
| D. | Program Specific Outcomes (PSO's) of Chemical Engineering (UG) | 67 |
| F. | Programme Outcomes (PO's) of Chemical Engineering (UG) | 68 |
| E. | Course Outcomes (CO's) of Chemical Engineering (UG) | 69 |
| 0 | Department of Mechanical Engineering | 80 |
| 0. | | 80 |
| A. | Vision of Mechanical Engineering (UG) | |
| В. | Mission of Mechanical Engineering (UG) | |
| C. | Program Educational Objective (PEO's) of Mechanical Engineering (UG) | |
| D. | Program Specific Outcomes (PSO's) of Mechanical Engineering (UG) | |
| E. | Programme Outcomes (PO's) of Mechanical Engineering (UG) | |
| F. | Course Outcomes (CO's) of Mechanical Engineering (UG) | |
| G | . Vision of Mechanical Engineering (PG) | |
| Н | . Mission of Mechanical Engineering | |
| I. | Program Educational Objective (PEO:s) of Machanical Engineering (PO) | 1 |
| | 「「「ない」 | IL |
| | $V_{i} = 10 A G_{A} d \epsilon i$ Principal | V/ |

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Indore Institute of Science Saturday, December 21, 2024 and Technology, Indore

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|----------|---|---------------------|
| MA. | | 2 |
| 49 | | Indore Institute of |

| Å | Approved by AICTE, New Delhi, Affiliated to RGPV, Bhopal, Recognized by UGC under Section 2(1) | |
|-----|----------------------------------------------------------------------------------------------------------------|---------------|
| | 2025-2024 Control (PSO's) of Mechanical Engineering (PG) | 92 |
| J. | Program Specific Outcomes (PO's) of Mechanical Engineering (PG) | 93 |
| К. | Programme Outcomes (rO3) of Mechanical Engineering (PG) | 94 |
| L. | Course Outcomes (CO's) of Meening and Machine Learning | 98 |
| 9. | Department of Artificial Intelligence and the | |
| A. | Vision of Artificial Intelligence and machine learning (UG) | |
| в. | Mission of Artificial Intelligence and machine learning (UG) | UG).98 |
| C. | Program Educational Objective (PEO's) of Artificial Intelligence and Machine Learning (UG) | 99 |
| D. | Programme Outcomes (PO's) of Artificial Intelligence and Machine Learning (UG) | 100 |
| E. | Course Outcomes (CO's) of Artificial Intelligence and Machine Learning (CO) | Security |
| 10. | Department of Computer Science and Engineering (Internet of Things and Open | 107 |
| | Including Blockchain Technology) | |
| A. | Vision of CSE (Internet of Things and Cyber Security Including Blockchain Technology) |) (UG) 107 |
| | | y) (UG) . |
| В. | Mission of CSE (Internet of Things and Cycer Section) | |
| C | Brogram Educational Objective (PEO's) of CSE (Internet of Things and Cyber Security | Including |
| C. | Blockchain Technology) (UG) | Including |
| D. | Program Specific Outcomes (PSO's) of CSE (Internet of Things and Cyber Security Blockchain Technology) (UG) | |
| E. | Programme Outcomes (PO's) of CSE (Internet of Things and Cyber Security Including B | |
| | Technology (OG) | lockchain |
| F. | Technology) (UG) | |
| 11. | Department of Data Science | 115 |
| Δ | Vision of Data Science (UG) | |
| B | Mission of Data Science (UG) | 115 |
| C | Program Educational Objective (PEO's) of Data Science (UG) | |
| Г | Program Specific Outcomes (PSO's) of Data Science (UG) | |
| F | Programme Outcomes (PO's) of Data Science (UG) | 110 |
| F | Course Outcomes (CO's) of Data Science (UG) | |
| 13 | Proof of published and disseminated - Vision, Mission, PEO's, PSO's, PO's and | 100 \$ |
| 15. | S Science S | |
| | Drincite | 1 br |
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and Technology, Indore Saturday, December 21, 2024



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2023-2024

| A. | College website http://indoreinstitute.com/iist/ | |
|----|--------------------------------------------------|--|
| в. | Notice boards of Department | |
| C. | Faculty rooms | |
| D. | Various promote location in the Institute. | |
| E. | Head of the Department's Office | |
| F. | Library | |
| G. | Lab Manual and Notice board of Lab | |
| H. | Availability in departmental level documents. | |
| I. | Institute Prospectus | |

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1. Vision of the Institute

To be a nationally recognized institution of excellence in technical education and produce competent professionals capable of making a valuable contribution to society.

2. Mission of the Institute

To promote academic growth by offering state-of-the-art undergraduate and postgraduate programs.

To undertake collaborative projects which offer opportunities for interaction with academia and industry.

To develop intellectually capable human potential who are creative, ethical and gifted leaders.

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- 3. Department of Computer Science and Engineering
- A. Vision of Computer Science and Engineering (UG)

To be a center of academic excellence in the field of computer science and engineering education.

B. Mission of Computer Science and Engineering (UG)

Strive for academic excellence in computer science and engineering through well designed course curriculum, effective classroom pedagogy and in-depth knowledge of laboratory work.

Transform undergraduate engineering students into technically competent, socially responsible and ethical computer science and engineering professionals.

Create computing centers of excellence in leading areas of computer science and engineering to provide exposure to the students on latest software tools and computing technologies.

Incubate, apply and spread innovative ideas by collaborating with relevant industries and R&D labs through focused research groups.

Attain these through continuous teamwork by a group of committed faculty, transforming the computer science and engineering department as a leader in imparting computer science and engineering education and research.

C. Program Educational Objective (PEO's) of Computer Science and Engineering (UG)

PEO 1: To provide students with a solid foundation in mathematics, computer science and engineering, basic science fundamentals required to solve the computing problems.

PEO 2: To expose students to latest computing technologies and software tools, so that they can comprehend, analyze, design and create innovative computing products and solutions for real life problems.



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PEO 3: To inculcate in students multi-disciplinary approach, professional attitude and ethics, communication and teamwork skills, and ability to relate computer engineering issues with social awareness.

PEO 4: To develop professional skills in students that prepare them for immediate employment and for lifelong learning in advanced areas of computer science and related fields which enable them to be successful entrepreneurs.

D. Program Specific Outcomes (PSO's) of Computer Science and Engineering (UG)

PSO 1: Computer Science Specific Skills: The ability to identify, analyze and design solutions for complex engineering problems in multidisciplinary areas by understanding the core principles and concepts of computer science and thereby engage in national grand challenges.

PSO 2: Programming and Software Development Skills: The ability to acquire programming efficiency by designing algorithms and applying standard practices in software project development to deliver quality software products meeting the demands of the industry.

PSO 3: Professional Skills: The ability to apply the fundamentals of computer science in competitive research and to develop innovative products to meet the societal needs thereby evolving as an eminent researcher and entrepreneur.

E. Programme Outcomes (PO's) of Computer Science and Engineering (UG)

PO 1: Apply the knowledge of mathematics, science and engineering fundamentals for the solution of computer science and engineering problems. (Engineering Knowledge)

PO 2: Ability to identify, formulate and analyze the complex engineering problems. (Problem Analysis)

PO 3: Ability to design and develop the computer based systems to meet desired needs within realistic constraints such as public health and safety, environmental, agriculture, economic and societal considerations. (Design/Development of Solutions)

PO 4: Ability to demonstrate with excellent programming, analytical, logical and problem solving skills.







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PO 5: Ability to use the emerging technologies, skills, and modern software tools to design, develop, test and debug the programs or software.

PO 6: Ability to include and solve the social, cultural, ethical issues with computer science and engineering solutions.

PO 7: Ability to design and develop web based solutions with effective graphical user interface for the need of sustainable development.

PO 8: Apply ethical principles and commit to professional ethics and responsibilities and norms of the computer science and engineering practices.

PO 9: Ability to work individually and as a member or leader in diverse teams to accomplish a common goal.

PO 10: Ability to communicate effectively in both verbal and written forms with engineering community and society.

PO 11: 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 the software and IT based projects in multidisciplinary environments.

PO 12: Appreciation of technological change and the need for independent life-long learning.





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F. Course Outcomes (CO's) of Computer Science and Engineering (UG)

| Jniver 1 | Subject Name | CO Description |
|----------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Subject | | the lower steel problems on water |
| Code | Englagaring | Differentiate hard and soft water; solve the related numerical problems on video |
| 3T-101 | Engineering | purification and its significance in industry and daily life. |
| | Chemistry | Select the lubricant for various purposes based on the type of |
| | | Machines methods of |
| | F | Fauinped with basic knowledge of polymer, methods of |
| | | equipped with and various industrial applications of polymers |
| | - | Draw the Phase diagrams of one & amp; two component systems and causes, |
| | | Draw the Thase engrand |
| 1 | ł | Identify the structure of unknown/new compounds with the help of spectroscopy and |
| | | Identify the structure of enterties such as ionization potential, oxidation states and |
| | | understand periodic proprint |
| | | electro negativity |
| BT-102 | Mathematics-1 | To introduce the failouts of fitter |
| | | analysis to Engineering proteining differential and integral calculus to notions of |
| | | To introduce the idea of applying anter from some applications it gives a basic |
| 8 | | curvature and to improper integrals. Apart and |
| | | introduction on Beta and Gamma runeron and Fourier series for learning advanced |
| | | To develop the tool of power series and round |
| | | Engineering Mathematics. |
| | | To familiarize the student with functions of several |
| | | branches of engineering |
| | | To develop the essential tool of matrices and mean agent |
| 0 | | manner. |
| BT-103 | English for | Effective use of verbal and non-verbal communication for the |
| B1-105 | Communicatio | enhanced reading comprehension as well |
| | n | Write the different kinds of letters, reports and technical writing. |
| | | Apply basic rules of grammar in both written as well as of al communication network |
| DT 104 | Pasic | To introduce the concept of Basics of DC electrical Network mendance |
| B1-104 | Electrical & | theorems. |
| | Electronics | To introduce the concept of Basics of AC electrical Network(single phase of a |
| | Engineering | phase) |
| | Engineering | To study of law of Electromagnetism, introduction of transformer. |
| 1 | | To study of various electrical Machines. |
| | | To study Basic Concept Digital Electronics. |
| - | | Draw various types of scales, and curves. |
| BT-105 | Engineering | Draw orthographic projections of points & lines |
| | Graphics | Draw orthographic projections of Planes & Solids |
| | | Draw orthographic projections of solids including cylinders, cones, prisms and |
| | | Draw sections and development of the |
| | | pyramids. |
| | | Draw isometric views of Flancs and Series |
| BT-10 | 6 Manufacturin | Use hand and power tools for different management |
| 1.000 | Practices | Operate machine tools while preparing any componention. |
| | | Select the appropriate tools required to be taken while using the tools. |
| | | Comprehend the safety measures required to be taken ministeries |
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Saturday, December 21, 2024

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| | | Prepare Foundry, Fitting, Carpentry, Welding and smithy Job. |
|--------|----------------------|-------------------------------------------------------------------------------------------------------------|
| PT 107 | Internshin-I | Demonstrate the application of knowledge and skill sets acquired from the course and |
| B1-107 | (60 Hrs | workplace in the assigned job function/s |
| | Duration) at | Solve real life challenges in the workplace by analysing work environment and |
| | the Institute | conditions, and selecting appropriate skill sets acquired from the course |
| | level | Exhibit critical thinking and problem solving skills by analysing underlying issue/s |
| | lever | to challenges |
| | | Demonstrate appreciation and respect for diverse groups of professionals by engaging |
| | | harmoniously with different company stakeholders |
| | | Exhibit professional ethics by displaying positive disposition during internship |
| DT 100 | Coursehb | This course is to sensitize students about the socio-cultural aspects of the rural areas |
| B1-108 | Swachn | parochial to their colleges. |
| | Bharat | Students are expected to observe, investigate and learn about the following aspects of |
| | Summer | the nural region; i Demographics, Literacy, Geographical parameters of the Village; |
| | Internship | iii Schames of government of India and State of Madhya Pradesh in operation in the |
| | Unnat Bharat | ii. Schenies of government of meta and and a |
| | Abniyan (100Uar)/ | The aphance critical thinking by making them participate in social activities and |
| | (100Hrs)/ | imbiba human values among them. |
| | Rurai | Burgel Sweeth Bharat Abbiyan is to promote cleanliness and develop healthy habits |
| | Outreach | kurai Swachi Bharat Koniyan is te president |
| | | In people in vinages. |
| | | Unhat Bharat Abinyan. To ound an institutional capacity and training relevant to |
| | | institutes of Higher Education and an institute of the |
| | | national needs, especially mose of rule indust |
| BT-201 | Engineering | The Coursework is designed to provide students are opportunity |
| | Physics | of wave flature of particles and the knowledge of Wave optics i.e. interference and |
| | | Student will able to understand the knowledge of the r |
| | | The introduces the idea of solids like semiconductors (P type and N Type |
| | | 10 introduce the idea of solids into solids will also be able to understand the |
| | | semiconductors), Diodes and Han encer. Students with and |
| | | basic concept of superconductivity. |
| | | To develop the understanding of Edders, not optice and the Tr |
| | | engineering sciences. |
| | | To provide you to basic understanding of Electrostations of ordinary and partial |
| BT-202 | Mathematics- | To introduce effective mathematical tools for the solutions of the |
| | П | differential equations that model physical processes |
| | | To introduce the tools of differentiation and integration engineering problems. |
| | | variable those are used in various teeningues dealing organization and a variable in vector calculus needed |
| | | To acquaint the student with mathematical tools available in version |
| | | various field of science and engineering. |
| BT-203 | Basic | Understand the properties of material, success strain. I roperate of the properations and their |
| | Mechanical | Understand the concept measurement and machine cools then optimised |
| | Engineering | applications. |
| | | Understand the concept of fluid flow, properties of fluid, before and a |
| | | Pascal's law. |
| | | To Understand the concept of heat and temperature, law of the internet manage sources and its applications. |
| | | and their mountings and accessories, basic Kerrigeration cycles and its appreations |
| | | To Understand the working of different cycles and 4 subres, 2 subre engines and |
| 1 | 1 | their applications. |

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| BT-204 | Basic Civil Engineering & | Students will acquire the basic knowledge in different fields of civil engineering and |
|--------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | materials used in construction. |
| | Mechanics | Gain the ability to use modern survey equipment to measure angles and distances. |
| | | Students will understand the basic of contour lines and map |
| | | Students will have the ability to identify, formulate and solve engineering problems |
| | | related to Engineering Mechanics: Statics |
| | | Students will be able to analyse beam for shear force and bending moment. |
| BT-205 | Basic Computer | Able to understand the basic applications of computers in various fields, describe operating system, its role and functionalities and to apply concepts of MS word, MS |
| | Engineering | power point, MS Excel efficiently. |
| | | Discuss and apply simple algorithms for arithmetic and logical problems. |
| | | Translate the algorithms to programs applying object-oriented concepts in C++ |
| | | Understand basics of computer networks OSI layers and protocols. E commerce |
| | | applications impact of security threats and attacks on networking systems and also |
| | | applications, impact of security uncuts and actuents on networking systems and and |
| | | Understand the different method for representing and processing data and to get |
| | | Understand the different method for representing and processing data and to get |
| DT DOC | Tanana Tat | awareness about the impact of cloud computing, its various type of services. |
| B1-206 | Language Lab | Fragments to develop good listening skills. |
| | & Seminars | Encourages learner to talk freely and lose their snyness when talking in nont of the |
| | | To develop the overall personality of the students by the practical activities |
| | | Helps in confidence building motivation to be more presentable and help in removing |
| | | the stage fright |
| | | Develops speaking writing reading listening and presentation skills |
| CO 201 | Enamers Pr | Cet the knowledge of energy carriers energy technologies renewable energy |
| ES-301 | Energy & | resources, energy challenges and energy system integration and environment |
| | Engineering | sustainability. |
| | | Learn about the different types of ecosystems present in environment, ecological |
| | | succession and energy flow in the ecosystem. |
| | | Understand the value of bio-diversity to human societies, threats to bio-diversity, In- |
| | | situ and Ex-situ conservation of bio-diversity. |
| | | Acquire knowledge of different types of environmental pollution, its effects on life |
| | | Aware about the social issue related to the environment environment ethics. |
| | | protection and conservation acts for the environment. |
| CS-302 | Discrete | Students will be able to understand the notion of mathematical thinking and |
| 00-302 | Structure | algorithmic thinking and be able to apply them in problem solving such as formula |
| | Suuciaio | specifications, verifications and basic concepts of set theory. |
| | | Understand the basic principle of boolean algebra logic and set theory. |
| | | Be able to construct simple mathematical proof and possess the ability to verify them |
| | | Acquire ability to describe computing problems with the help of graph theory and |
| | | finite state machines also express its utility in solving and modeling real time |
| | | mile state machines, also express its utility in solving and modeling rear time |
| | | A multi basis sounting techniques to solve combinatorial problem |
| 00 202 | Data Drawt | Apply basic counting techniques to solve combinatorial problem. |
| CS-303 | Data Structure | To understand the concept of uncar, don-linear data structures, the operations |
| | | performed on them and the appreciations of various data structures. |
| | | Understand the arrays, searching and sorting algorithms. |
| | | Implement stacks, queues and its applications |
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| | | Saturday, December 21, 20 |

Saturday, December 21, 2024



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| | | Implement linked list and its variations. |
|--------|--------------------------------|-----------------------------------------------------------------------------------------|
| | | Solve problem involving graphs, trees and heaps. |
| CS 304 | Digital | Understand the concept of number systems & binary arithmetic. |
| 05-304 | Systems | To study the Boolean algebra and minimization of switching function. |
| | Systems | Understand logic gates, universal gate, adders & subtractors. |
| | | Demonstrate linear wave shaping circuits, logic families, multiplexers and memory. |
| | _ | Understand basic digital communication system. |
| 00.205 | Ohiost | Describe the procedural and object oriented paradigm with concepts of streams, |
| CS-305 | Object | classes functions data and objects. |
| | Programming | Understand dynamic memory management techniques using pointers, constructors, |
| | & | destructors etc. |
| | Methodology | Describe the concept of function overloading, operator overloading, virtual functions |
| | Wiethodology | and polymorphism |
| | | Understand how to apply the major object-oriented concepts to implement object |
| | | oriented programs in C++, encapsulation, inheritance and polymorphism. |
| | | Classify inheritance with the understanding of early and late binding, usage of |
| | | exception handling generic programming. |
| 08 206 | Computer | Understand the concepts of Java programming. |
| CS-300 | Workshop | Understand fundamentals of programming such as variables, conditional and iterative |
| | workshop | execution methods etc. |
| | | Understand fundamentals of object-oriented programming in Java and be familiar of |
| | | the important concepts like class, inheritance and multithreading, AWT and JDBC. |
| | | Lice the Java SDK environment to create, debug and run Java programs. |
| | | Develop Java applet |
| DT 107 | E. bution of | To display the utility of information and talent units obtained from the path and place |
| B1-107 | Internship-I completed at I | of business withinside the assigned task function. |
| | | Solva actual existence demanding situations withinside the path via way of means of |
| | | analyzing the area and choosing suitable ability units obtained from the path. |
| | year lever | Exhibit important questioning and hassle fixing talents via way of means of analysing |
| | | underlying issues to challenges. |
| | | Demonstrate the capacity to harness assets with the aid of using analysing demanding |
| | | situations and thinking about opportunities. |
| | | Articulate profession alternatives via way of means of thinking about possibilities in |
| | | company sector, industry, expert and academic advancement. |
| DT 207 | 00 hrs | Demonstrate the application of knowledge and skill sets acquired from the course and |
| B1-307 | Internshin | workplace in the assigned job functions. |
| | based on using | Solve real life challenges in the workplace by analysing work environment and |
| | various | conditions, and selecting appropriate skill sets acquired from the course. |
| | softwares - | Exhibit critical thinking and problem solving skills by analysing the challenges. |
| | Internship -II | Demonstrate appreciation and respect for diverse groups of professionals by engagin |
| | internoinp in | harmoniously with different company stakeholders. |
| | | Exhibit professional ethics by displaying positive disposition during internship. |
| DT 401 | Mathematics- | Understand mathematical tools for the numerical solutions algebraic an |
| B1-401 | ITT INTALICITATION | transcendental equations. |
| | m | Describe mathematical knowledge to understand laplace transformation, invers |
| | | laplace transformation and fourier transform which are used in various branches of |
| | | engineering |
| | | Work with mathematical tools available in statistics needed in various field of science |
| | | and engineering |
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13 of 140

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Saturday, December 21, 2024



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| | | Fulfil the needs of engineers to understand applications of numerical analysis, transform calculus and statistical techniques in order to acquire mathematical |
| | | Solve wide range of practical problems appearing in different sections of science and engineering. |
| CS 402 | Analysis | Implement sorting and searching algorithms. |
| 03-402 | Design of | Experiment with techniques for obtaining maximum outputs with minimum efforts. |
| | Algorithm | Make use of dynamic program. |
| | rugorium | Solve 8 queens problem and others of the kind for application in real world scenario. |
| | | Distinguish between NP-hard and NP-complete problems and develop their solutions. |
| CS-403 | Software | Define various software application domains and remember different process models |
| | Engineering | Understand various measures of software and generate project schedule. |
| | | Describe functional and nonfunctional requirements of software and develop design |
| | | Investigate the reasons for bugs and apply the software testing techniques in |
| | | Understand various activities to be performed for improving software quality and |
| | 0.1.0. | Software maintenance. |
| CS-404 | Computer Org. | Define the structure, functional units and components of computers. |
| | & Architecture | Litertify the elements of input output in computers. |
| | | Events the function of each element of a memory hierarchy. |
| | 1.2 | Explain the function of multi-processing and techniques to achieve it. |
| 00 105 | Questing | Gain knowledge of history of operating systems and understand design issues |
| CS-405 | Operating | associated with operating systems. |
| | Systems | Understand issues related to file system interfaces and implementation, disk |
| | | Identify the process management policies and analyse and compare scheduling of |
| | | Understand concepts of memory management (including virtual memory), I/O and |
| | | concurrency control. |
| | | Understand network distributed and multiprocessing operating opera |
| CS-406 | Programming | object-oriented Java programs. |
| | Practices | Boad and make elementary modifications to Java programs that solve real-world |
| | | read and make elementary mountearious to the pro- |
| | | Velidate input in a Java program |
| | · · · · · · · · · · · · · · · · · · · | Identify and fix defects and common security issues in code. |
| | | Document a Java program using Javadoc. |
| DT 407 | 00 hrs | Exposure to organizational skills and professional practices. |
| B1-407 | Internship | Efficiently completing tasks, fostering good relationship with seniors and |
| | based on using | Improved communication & interpersonal skills. |
| | software | Exposure to latest technology applications to the specific discipline. |
| | Internship - II | Identification of relevant problems in the industry and innovative solutions. |
| - | Thermin - I | Explain the basic concepts of switching and finite automata theory and languages. |
| CS-501 | Computation | Relate practical problems in languages, automata the computability and complexity. |

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Principal Indore Principate of Science and Technology, Indore Saturday, December 21, 2024



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| | | 2025-2024 |
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| | | Construct abstract models of computing and check their power to recognise the |
| | | languages. |
| | | Analyse the grammar, its types, simplification and normal form. |
| | | Interpret rigorously formal mathematical methods to prove properties of languages, |
| | | grammars and automata. |
| CS-502 | Database | Understand the different issues involved in the design and implementation of a |
| | Management | database system. |
| 3 | Systems | Study the physical and logical database designs, database modeling, relational, |
| | | hierarchical, and network models. |
| | | Understand and use data manipulation language to query, update, and manage a |
| | | database. |
| | | Develop an understanding of essential DBMS concepts such as: database security, |
| | | integrity, concurrency. |
| | | Design and build a simple database system and demonstrate competence with the |
| | | fundamental tasks involved with modeling, designing, and implementing a DBMS. |
| | | Evaluate a business situation and designing & building a database applications. |
| CS-503 | Pattern | To understand the supervised learning and unsupervised learning. |
| 03-303 | Recognition | Describe the various levels of classification models. |
| | Recognition | Describe the various levels of clustering and it's algorithms. |
| | | Understand this feature extraction and its models. |
| | | Construct various types of pattern recognition models. |
| | | Describe the concepts of WWW including browser and HTTP protocol. |
| CS-504 | Internet and | List the various HTML tags and use them to develop the user friendly web pages. |
| | Web | List the various HTML tags and use them to provide the styles to the web pages a |
| | Technology | Define the CSS with its types and use them to provide the styles to the west puget |
| | | various levels. |
| | | Developed the modern web pages using the minute and ebb reduces with distance |
| | | layout as per the need of applications. |
| | | Use of JavaScript to develop the dynamic web pages and This system architecture |
| CS-505 | Lab (Linux) | Understand Functions of operating system and its types and only system are interesting system and |
| | | Understand and make use of the basic commands of Linux operating system and |
| | | Work confidently in Linux environment. |
| | | Understand file systems and illustrate various file operations. |
| | | Create shell scripts to automate different tasks as Linux. |
| | | Understand installation of web servers and proxy servers. |
| CS-506 | Lab (Python) | Understand the basic concepts scripting and the contributions of scripting language. |
| | | Examine the core data structures like lists, dictionaries, tuples and sets in Python to |
| | | store, process and sort the data. |
| | | Identify the external modules and import specific methods form them. |
| | | Demonstrate proficiency in handling Strings and file systems. |
| | | Explore python especially the object oriented concepts, and the built in objects o |
| | | Python. |
| CS-507 | Evaluation of | To display the utility of information and talent units obtained from the path and plac |
| 00 001 | Internship-II | of business withinside the assigned task functions. |
| | memorip n | Solve actual existence demanding situations withinside the path via way of means of |
| | | analysing the area and choosing suitable ability units obtained from the path. |
| | | Exhibit important questioning and hassle fixing talents via way of means of analysin |
| | | underlying issue/s to challenges. |
| | | Demonstrate the contrainers assets with the aid of using analysing demandin |
| | | situations and bibling about opportunities. |
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2023-2024

| | | Articulate profession alternatives via way of means of thinking about possibilities in |
|--------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CS-508 | Minor Project- | A fully engaged student shall be able to get exposure to undertake a short research |
| | I | project. |
| | | To enable the students to develop comprehensive solution of identified proteins. |
| 1.1 | 1.54 | To inculcate the ability to synthesize the results of the detailed and detailed |
| 1.1 | | conducted, lay down validity and design criteria, interpret the result for appretation |
| | 1 | to the problem, develop the concept and detailed design solution. |
| CS-601 | Machine | Apply knowledge of computer and mathematics to machine rearing problems, |
| | Learning | models and algorithms. |
| | | Analyse the problem and identify the computing requirements appropriate for its |
| | | solutions. |
| 1.1 | | Design, implement, and evaluate an algorithm to meet desired needs. |
| | | Apply mathematical foundations, algorithmic principles, and computer science |
| 1.1.1 | | theory to the modelling and design of computer based systems in a way that |
| | | demonstrates comprehension of the trade-offs involved in design choices. |
| | | Analyze the co-occurrence of data to find interesting frequent patterns and Preprocess |
| | | the data before applying to any real-world problem and can evaluate its performance. |
| CS-602 | Computer | Characterise and appreciate computer networks from the viewpoint of components |
| 00 002 | Networks | and from the viewpoint of services. |
| | | Display good understanding of the flow of a protocol in general and a network |
| | | protocol in particular. |
| | | Model a problem or situation in terms of layering consent and map it to the TCP/IP |
| | | stack |
| | | Select the most suitable application layer protocol such as (HTTP, STTP, SMTP, |
| | 1.2 | DNS bit torrent) and as per the requirements of the network application and work |
| | | with available tools to demonstrate the working of these protocols. |
| | | Design a reliable data transfer protocol and incrementally and develop solutions for |
| | | the requirements of transport layer. |
| 00 (02 | Compilar | Demonstrate an understanding of the compilation phases. |
| CS-005 | Design | Specify and analyse the lexical, syntactic and semantic structures of advanced |
| | Design | language features |
| | | Write a coopper parser and semantic analyser without the aid of automatic |
| | | white a scaliner, parser, and bemanie and set |
| | | Describe techniques for intermediate code and machine code optimization. |
| | 1.5 | Describe techniques for intermediate code and intermediate advanced language features |
| | | Design the structures and support required for companing deviated and support required for companing deviated and support in the structures and support required for companing deviated and support in the structures and support required for companing deviated and support in the structures and support in the |
| CS-604 | Project | Understanding the evolution and improvement of software management. |
| | Management | the basic parameters and transition to the modern software managements |
| | 11112 | Learning objectives, activities and evaluation enterna of the various phases of the me |
| | 26 | cycle of software management process. |
| | | Gaining knowledge about the various arteracts, worknows and check points of the |
| | | software management process and exploring the design concepts using model subce |
| | | architecture from technical and management perspective. |
| | 1 | Develop an understanding of project planning, organisation, responsibilities |
| | | automation and control of the processes to achieve the desirable results. |
| | | Develop a project scope while considering factors such as customer requirements and |
| | | internal/external goals? |
| | Data Analytics | Understand the basic of data analytics using concepts of statistics and probability. |
| CS-605 | | |
| CS-605 | Lab | Understand the needs of data processing techniques. |
| CS-605 | Lab | Understand the needs of data processing techniques. |
| CS-605 | Lab | Understand the needs of data processing techniques. |



| | | Implement the data analytics techniques using R, Matlab and python. |
|--------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Apply the data analytics techniques in real life applications. |
| | | Articulate the limitations and abuses of formal inference and modeling. |
| CS-606 | Skill | Demonstrate the basics of software as a product. |
| | Development | Understand the current requirements of industries. |
| | Lab | Implement the software as a product using different design patterns. |
| | | Apply the software development techniques in real life applications. |
| CS-607 | Internship-III | To display the utility of information and talent units obtained from the path and place |
| 20 007 | internoinp in | of business withinside the assigned task functions. |
| | | Solve actual existence demanding situations withinside the path via way of means of analysing the area and choosing suitable ability units obtained from the path. |
| | | Exhibit important questioning and hassle fixing talents via way of means of analysing |
| | | underlying issues to charlenges. |
| | | Demonstrate the capacity to namess assets with the aid of using analysing demanding |
| | | situations and thinking about opportunities. |
| | | Articulate profession alternatives via way of means of thinking about possionities in |
| | | company, sector, industry, expert and academic advancement. |
| CS-608 | Minor Project | A fully engaged student shall be able to get exposure to undertake a short research |
| | II | project. |
| | | To enable the students to develop comprehensive solution of identified problems. |
| | | To inculcate the ability to synthesize the results of the detailed analytical studie |
| | | conducted, lay down validity and design criteria, interpret the result for application |
| | | to the problem, develop the concept and detailed design solution. |
| CS-701 | Software | Describe the fundamentals of software architecture, qualities and terminologies. |
| | Architectures | Understand the fundamental principles and guidelines for software architectur |
| | | design, architectural styles, patterns, and frameworks. |
| | | Use implementation techniques of Software architecture for effective softwar |
| | | development |
| | | Apply core values and principles of software architectures for enterprise application |
| | | development. |
| | | Describe software architecture documentation. |
| CS-702 | Wireless & | Design and create traditional networks. |
| 05-702 | Mobile | Understand the different issues in MAC and routing issues in multi hop wireless an |
| | Computing | ad-hoc, networks and existing solutions for the same. |
| | Computing | Evaluate the transport layer issues in wireless networks due to errors and mobility of |
| | | nodes and understand existing solutions for the same |
| | | Fundain the architecture of GSM |
| | | Disease the services, emerging issues and future trends in m-commerce |
| | | Discuss the services, emerging issues and rutate dends in m-commerce. |
| CS-703 | Agile | Describe the fundamental principles and practices associated with each of the agri |
| | Software | development methods. |
| | Development | Compare agile software development model with traditional development models an |
| | | identity the benefits and pitfalls. |
| | | Use techniques and skills to establish and mentor Agile Teams for effective softwar |
| | | development. |
| | | Apply core values and principles of Agile Methods in software development. |
| | | Judge and craft appropriate adaptations to existing practices or processes dependin |
| | | upon analysis of typical problems. Science |
| | D / / 1 | Demonstrate wireless network with number of nodes and different parameters usin |
| CS-704 | Departmental | Demonstrate miletee and a |
| CS-704 | Elective Lab | simulator. |



| | 00 700 | Understand the basic concept of inter-networking devices. |
|--------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | CS-702 | Describe the basic concept of IP addressing. |
| | [wireless & | Execute the basic network command and Network configuration commands. |
| | Mobile | Execute the basic network using routing protocol. |
| | Computing | Configure fletwork damig rouning processes and the principles behind the Agile |
| S-705 | Open Elective | Understand agne development processes in the |
| | Lab CS-703 | manifesto. |
| | [Agile | Develop a product vision, customici journey, and reacting |
| | Software | Build out a backlog and user stories. |
| | Development] | Leverage Scrum practices in small teams as you ound out a monor of |
| | | your class project. |
| | | Explore advanced and emerging topics in the domain of software development |
| S-706 | Major Project- | Demonstrate a sound technical knowledge of their selected project topic. |
| 0.00 | I | Undertake problem identification, formulation and solution. |
| | · | Design engineering solutions to complex problems utilising a systems apploach. |
| | | Communicate with engineers and the community at large in written and oral forms. |
| | | Demonstrate the knowledge, skills and attitudes of a professional engineer. |
| | T lustion of | Demonstrate awareness of the ethics involved in doing an internship. |
| CS-607 | Evaluation of | Demonstrate underless synthesize their learning experience in the internship in the |
| | Internship -III | form of on internship paper |
| | | form of an internship paper. experience in the form of an ora |
| | | Articulate new learning none are meriding 1 |
| | | presentation. |
| | | Show understanding and assess the challenges can be the short timeframe; |
| | | cultural setting with limited language skins and in a chert field. |
| | | Gain meaningful and practical experience in their chosen netal |
| CS-801 | Internet of | Understand Internet of Things and its hardware and software components |
| | Things | Interface I/O devices, sensors & communication modules. |
| | | Analyze data from various sources in real-time and take necessary actions in a |
| | | intelligent fashion. |
| | | Remotely monitor data and control devices. |
| | | Develop real life IoT based projects. |
| CC 902 | Object | Apply object oriented principles in software design process. |
| 05-002 | Oriented | Understand the phases involved in SDLC. |
| | Software | Describe the use case and activity diagrams. |
| | Engineering | Draw class object and interaction diagrams. |
| | Engineering | Linderstand testing strategies and test cases for OO software process. |
| | | Onderstand testing stategets and whether to real-life organisational issues faced b |
| CS-803 | Managing | Students will be able to get knowledge of the organisations. |
| | Innovation and | those establishing and managing into the key concepts underpinning entrepreneurshi |
| | Entrepreneurs | Students will be able to know about the key concept and product service proce |
| | hip | and its application in the recognition and expression of r |
| | | opportunities. |
| | | Key concepts underpinning innovation and the issues assessment |
| | | sustaining innovation within organisations. |
| | | How to design creative strategies for pursuing, exploiting and rather developing |
| | | opportunities. |
| | | Issues associated with securing and managing financial resources in new a |
| | | established organisations |
| CS-804 | Cloud | Configure various virtualization tools such as virtual box, VMware Workstation. |
| 05-004 | computing | Design and deploy a web application a PaaS environment. |
| | Comparing | Learn how to simulate a cloud environment to implement new schedulers. |
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| | | Install and use a generic cloud environment that can be used as a private cloud. |
|--------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Manipulate large data sets in a parallel environment. |
| CS-805 | Major Project- II | Learn about different software development process models and software engineering principles and develop an ability to apply them to software design of real life problems. |
| | | Plan, analyze, design and implement a software project using programming languages like Java, ASP, PHP etc. |
| | | Gain confidence at having conceptualized, designed and implemented a working major project with their team. |
| | | Understand the fundamental principles of Software Project management & will also have a good knowledge of responsibilities of project manager and how to handle these. |
| | | Be familiar with the different methods and techniques used for project management. |

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Saturday, December 21, 2024

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G. Vision of Computer Science and Engineering (PG)

To be a center of academic excellence in the field of computer science and engineering education.

- H. Mission of Computer Science and Engineering (PG)
 - Strive for academic excellence in computer science and engineering through well designed course curriculum, effective classroom pedagogy and in-depth knowledge of laboratory work.
 - Transform under graduate engineering students into technically competent, socially responsible and ethical computer science and engineering professionals.
 - · Create computing centres of excellence in leading areas of computer science and engineering to provide exposure to the students on latest software tools and computing technologies.
 - Incubate, apply and spread innovative ideas by collaborating with relevant industries and . R&D labs through focused research groups.
 - Attain these through continuous team work by a group of committed faculty, transforming the computer science and engineering department as a leader in imparting computer . science and engineering education and research.
 - I. Program Educational Objective (PEO's) of Computer Science and Engineering (PG)
 - PEO 1: To provide students with a solid foundation in mathematics, computer science and engineering, basic science fundamentals required to solve the computing problems. .
 - PEO 2: To expose students to latest computing technologies and software tools, so that they can comprehend, analyze, design and create innovative computing products and • solutions for real life problems.
 - PEO 3: To inculcate in students multi-disciplinary approach, professional attitude and ethics, communication and teamwork skills, and ability to relate computer engineering issues with social awareness.



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- PEO 4: To develop professional skills in students that prepare them for immediate employment and for life long learning in advanced areas of computer science and related fields which enable them to be successful entrepreneurs.
- J. Program Specific Outcomes (PSO's) of Computer Science and Engineering (PG)
 - PSO 1: Computer Science Specific Skills: The ability to identify, analyze and design solutions for complex engineering problems in multidisciplinary areas by understanding the core principles and concepts of computer science and thereby engage in national grand challenges.
 - PSO 2: Programming and Software Development Skills: The ability to acquire programming efficiency by designing algorithms and applying standard practices in software project development to deliver quality software products meeting the demands of the industry.
 - PSO 3: Professional Skills: The ability to apply the fundamentals of computer science in competitive research and to develop innovative products to meet the societal needs thereby evolving as an eminent researcher and entrepreneur.

K. Programme Outcomes (PO's) of Computer Science and Engineering (PG)

Graduates in M. E (Computer Science and Engineering) will be able to:

- PO1: Development of Solutions: An ability to independently carry out research/investigation and development work to solve practical problems
- PO2: Technical Presentation Skills: An ability to write and present a substantial technical report/document
- PO3: Analyze Complex Systems: A practical ability and theoretical knowledge to design and analyze complex systems.





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Saturday, December 21, 2024

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L. Course Outcomes (CO's) of Computer Science and Engineering (PG)

| MCSE 101 | | | | | |
|--------------|--------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| Ad. Compt. | Identify and comprehend linear algebraic structures that appear in computer science | | | | |
| Mathematics | Use linear algebraic methods to perform computational task. | | | | |
| | Comprehend and apply the algebric processes in real life problems. | | | | |
| MCSE 102 | Use data structures and algorithms to solve computing problems | | | | |
| Ad. Data | Design algorithms using graph structure and various string matching algorithms to solve real-life | | | | |
| Structures | problems | | | | |
| and Algo | Apply suitable design strategy for problem solving | | | | |
| MCSE 103 | Discuss the issues related to multiprocessing and suggest solutions | | | | |
| ACA | Point out the salient features of different multicore architectures and how they exploit parallelism | | | | |
| | Discuss the various techniques used for optimising the cache performance | | | | |
| MCSE 104 | Understand and describe the project principles and constructs of object-oriented system | | | | |
| OOT | Identify and model/represent domain constraints on the objects and (or) on their relationships | | | | |
| | Understand various modeling techniques to model different perspectives of object-oriented | | | | |
| | software design | | | | |
| MCSE 105 | Identify the components required for designing a network | | | | |
| Ad. CN | Design a network at a high-level using different networking technologies | | | | |
| | Analyze the various protocols of wireless and cellular networks | | | | |
| MCSE 201 | To understand the need for interoperable network management and to learn to the concepts and | | | | |
| Web Tech | architecture behind standards based network management. | | | | |
| and E | To understand the concepts and terminology associated with e-commerce and to study the current | | | | |
| commerce | trends in network management technologies. | | | | |
| MCSE 202 | Understand the core fundamentals of information theory and coding | | | | |
| ITC and | Apply the security concepts related to networks in wired and wireless scenario | | | | |
| Cryptography | Implement and Manage the security essentials in IT Sector | | | | |
| MCSE 203 | Comprehend the complex query processing techniques | | | | |
| Ad Concepts | Design and implement databases and writing query structure | | | | |
| in DBMS | Develop skill set in file organization, Query Optimization, Transaction management, and database | | | | |
| | administration techniques | | | | |
| MCSE 204 | Ability to use theoretical and applied information in these areas to design system software with | | | | |
| System | realistic constraints. | | | | |
| Programming | Ability to devise, select, and use modern techniques and tools needed for the design and | | | | |
| | implementation of system programs. | | | | |
| | Ability to work efficiently in intra-disciplinary teams and to work individually. | | | | |
| | Adequate knowledge in system programs (assemblers, loaders, linkers, macro-processors, text | | | | |
| | editors, debuggers, interpreters, compilers, operating systems). | | | | |
| MCSE 205 | Understanding and implementation of different Artificial Neural Network | | | | |
| Son | Implementation of Artificial Intelligence Algorithms like A ⁺ , AO ⁺ of Hin-Chinolog for Searching | | | | |
| Computing | methodology. | | | | |
| MCSE 301 | Understand the functionality of the various data mining and data watchousing component | | | | |
| Elective I | Appreciate the strengths and limitations of various data mining and data warehousing models | | | | |
| (A) Dataware | Explain the analyzing techniques of various data | | | | |
| nousing and | Describe different methodologies used in data mining and data ware nousing. | | | | |
| nining | Compare different approaches of data ware nousing and data mining with various technologies. | | | | |
| MCSE 302 | Analyze and design classical encryption techniques and doion User Authentication | | | | |
| Elective 2 | Understand key management and distribution schemes and design Oser Authentication | | | | |
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Page 2

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|---------------------------------------------------------------------------------------------|
| RSA and other public-key cryptosystems |
| Understand and analyze public-key cryptographing machanisms. Types of Malicious software |
| Know about Intruders and Intruder Detection mechanisms, types of than weldge about a system |
| Understand the techniques of modeling in the context of metatory available software. |
| and develop the capability to apply the same to starburgers |
| Students will learn different types of simulation techniques. |
| Students will learn to simulate the models for the purpose of op- |
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Page 23 of 140

Princ Indore Institute of Science and Facipatiogy, Indore

Saturday, December 21, 2024



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4. Department of Information Technology

A. Vision of Information Technology (UG)

To be a renowned department for imparting quality education, committed to cater the evolving IT industry requirements.

B. Mission of Information Technology(UG)

To provide the best possible IT education to serve the current requirements of the modern IT industry by keeping pace with the latest technical skills.

To inculcate IT professionalism among the students by providing an atmosphere for continuous learning, research, and innovation.

C. Program Educational Objective (PEO's) of Information Technology (UG)

PEO 1. To provide students with a solid foundation in information technology skills, basic programming and algorithm designing fundamentals required to solve the computing problems.

PEO 2. To expose students to latest computing technologies and software tools, so that they can comprehend, analyze, design and create innovative projects and provide solutions for real-life problems.

PEO 3. To inculcate spirit of inquiry, team work skills, professional attitude, and ability to relate IT issues with social awareness that prepare them for immediate employment and for lifelong learning in IT field, which enable them to be successful entrepreneurs.

D. Program Specific Outcomes (PSO's) of Information Technology (UG)

A graduate of the Information Technology Program will demonstrate:

PSO 1: IT Specific Skills: The ability to identify, analyze and design solutions for complex engineering problems in multidisciplinary areas by understanding the core principles and concepts of IT and thereby engage in national grand challenges.

PSO 2: Programming and Software Development Skills: The ability to acquire programming efficiency by designing algorithms and applying standard practices in software project development to deliver quality software products meeting the demands of

the industry.

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PSO 3: Professional Skills: The ability to apply the fundamentals of IT in competitive research and to develop innovative products to meet the societal needs thereby evolving as an eminent researcher and entrepreneur.

E. Programme Outcomes (PO's) of Information Technology (UG)

PO 1: Apply the knowledge of mathematics, science and engineering fundamentals for the solution of IT problems.

PO 2: Ability to identify, formulate and analyze the complex engineering problems

PO 3: Ability to design and develop the computer based systems to meet desired needs within realistic constraints such as public health and safety, environmental, agriculture, economic and societal considerations

PO 4: Ability to demonstrate with excellent programming, analytical, logical and problem solving skills.

PO 5: Ability to use the emerging technologies, skills, and modern software tools to design, develop, test and debug the programs or software.

PO 6: Ability to include and solve the social, cultural, ethical issues with IT solutions.

PO 7: Ability to design and develop web based solutions with effective graphical user interface for the need of sustainable development.

PO 8: Apply ethical principles and commit to professional ethics and responsibilities and norms of the IT practices.

PO 9: Ability to work individually and as a member or leader in diverse teams to accomplish a common goal.

PO 10: Ability to communicate effectively in both verbal and written forms with engineering community and society

PO 11: 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 the software and IT based projects in multidisciplinary environments.

PO 12: Appreciation of technological change and the need for independent life-long learning.

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Saturday, December 21, 2024



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F. Course Outcomes (CO's) of Information Technology (UG)

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| Univ. Subject Code | Subject Name | CO Description |
|--------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | The Coursework is designed to provide students the opportunity to learn key concepts of Wave nature of particles and the Schrodinger equation. |
| | | Student will able to understand the knowledge of Wave optics i.e. interference and diffraction. |
| BT-201 | Engineering Physics | To introduce the idea of solids like semiconductors (P type and N Type semiconductors), Diodes and Hall effect. Students will also be able to understand the basic concept of superconductivity. |
| | | To develop the understanding of Lasers, fiber optics and their applications in field of engineering sciences. |
| | | To provide you to basic understanding of Electrostatics in vacuum. |
| | | To introduce the fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems. |
| | Mathematics | To introduce the idea of applying differential and integral calculus to notions of curvature and to improper integrals. Apart from some applications it gives a basic introduction on Beta and Gamma function |
| BT-102 | -I | To develop the tool of power series and Fourier series for learning advanced Engineering Mathematics. |
| | | To familiarize the student with functions of several variables that is essential in most branches of engineering |
| | | To develop the essential tool of matrices and linear algebra in a comprehensive manner. |
| _ | | Understand the properties of material, stress strain. Properties of alloys and cast iron. |
| | | Understand the concept measurement and machine tools their operations and their applications. |
| DT 202 | Basic | Understand the concept of fluid flow, properties of fluid, Bernoulli's equation, Pascal's law. |
| B1-203 | Engineering | To Understand the concept of heat and temperature, law of thermodynamics, boilers and their mountings and accessories, basic Refrigeration cycles and its applications. |
| | | To Understand the working of different cycles and 4 strokes, 2 stroke engines and their applications. |
| | Basic Civil Engineering & Mechanics | Students will acquire the basic knowledge in different fields of civil engineering and materials used in construction. |
| BT-204 | | Gain the ability to use modern survey equipment to measure angles and distances. |
| | | Students will understand the basic of contour lines and map |
| | | Students will have the ability to identify, formulate and solve engineering problems related to Engineering Mechanics: Statics |
| | | Students will be able to analyse beam for shear force and bending moment. |
| BT-205 | Basic Computer Engineering | Able to understand the basic applications of computers in various fields, describe operating system, its role and functionalities and to apply concepts of MS word, MS power point, MS Excelefficiently. |
| | | Discuss and apply simple algorithms for arithmetic and logical problems. |

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| | T la | ranslate the algorithms to programs applyingobject-oriented concepts in C++ programming inguage. |
|--------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | L a n | Inderstand basics of computer networks, OSI layers and protocols, E commerce pplications, impact of securitythreats and attacks on networking systems and also security neasures |
| | l a | Inderstand the different method for representing and processing data and to get awareness bout the impact of cloud computing, its various type of services. |
| | | earners to develop good listening skills. |
| | l l | Encourages learner to talk freely and lose their shyness when talking in front of the people |
| | Language | To develop the overall personality of the students by the practical activities |
| 3T-206 | Lab & Seminars | Helps in confidence building, motivation to be more presentable and help in removing the stage fright |
| | | Develops speaking, writing, reading, listening and presentation skills. |
| | | Differentiate hard and soft water; solve the related numerical problems on water purification and its significance in industry and daily life. |
| | | Select the lubricant for various purposes based on the type of Machines. |
| BT-101 | Engineering | Equipped with basic knowledge of polymer , methods of polymers |
| DI-IOI | Chemistry | Draw the Phase diagrams of one & amp; two component systems and causes, consequences and methods to minimize corrosion to improve industrial designs. |
| | | Identify the structure of unknown/new compounds with the help of spectroscopy and understand periodic properties such as ionization potential, oxidation states and electro negativity |
| | Mathematics -II | To introduce effective mathematical tools for the solutions of ordinary and partial differential equations that model physical processes. |
| BT-202 | | To introduce the tools of differentiation and integration of functions of complex variable those are used in various techniques dealing engineering problems. |
| | | To acquaint the student with mathematical tools available in vector calculus needed varied field of science and engineering. |
| | English for | Effective use of verbal and non-verbal communication for enhanced soft skill bester enhanced reading comprehension as well |
| BT-103 | Communica | t Write the different kinds of letters, reports and technical writing. |
| | ion | Apply basic rules of grammar in both written as well as oral communication. |
| | | To introduce the concept of Basics of DC electrical Network including network incoments |
| BT-104 | Basic | To introduce the concept of Basics of AC electrical Network(single phase & 5 phase). |
| | Electrical & | To study of law of Electromagnetism, introduction of transformer. |
| | Electronics | To study of various electrical Machines. |
| | | To study Basic Concept Digital Electronics. |
| | | Draw various types of scales, and curves. |
| BT-105 | Engineering | Draw orthographic projections of points & lines |
| | Graphics | Draw orthographic projections of Planes & Solids |

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| | | Draw sections and development of solids including cylinders, cones, prisms and pyramids. |
|--------|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| _ | | Draw isometric views of Planes and Solids, Drawing using AUTOCAD. |
| | | Use hand and power tools for different manufacturing processes |
| | | Operate machine tools while preparing any component |
| BT-106 | Manufacturi | Select the appropriate tools required for specific operation. |
| | ng Practices | Comprehend the safety measures required to be taken while using the tools. |
| | | Prepare Foundry, Fitting, Carpentry, Welding and smithy Job. |
| | | Demonstrate the application of knowledge and skill sets acquired from the course and workplace in the assigned job function/s |
| | Internship-I | Solve real life challenges in the workplace by analysing work environment and conditions and selecting appropriate skill sets acquired from the course |
| BT-107 | Duration) at the Institute | Exhibit critical thinking and problem solving skills by analysing underlying issue/s t challenges |
| | level | Demonstrate appreciation and respect for diverse groups of professionals by engagin harmoniously with different company stakeholders |
| | | Exhibit professional ethics by displaying positive disposition during internship |
| | | This course is to sensitize students about the socio-cultural aspects of the rural areas parochia to their colleges. |
| | Swachh Bharat Summer | Students are expected to observe, investigate and learn about the following aspects of the rural region: i. Demographics, Literacy, Geographical parameters of the Village; ii. Scheme of government of India and State of Madhya Pradesh in operation in the villages. |
| BT-108 | Unnat Bharat | To enhance critical thinking by making them participate in social activities and imbit human values among them. |
| | Abhiyan (100Hrs)/ | Rural Swachh Bharat Abhiyan is to promote cleanliness and develop healthy habits in peoplin villages. |
| | Rural Outreach | Unnat Bharat Abhiyan: To build an understanding of the development agenda within institutes of Higher Education and an institutional capacity and training relevant to national needs, especially those of rural India. |
| | Energy & Environmen tal Engineering | Get the knowledge of energy carriers, energy technologies, energy challenges and energy system integration and environment sustainability. |
| | | Learn about the different types of ecosystems present in environment, ecological succession and energy flow in the ecosystem. |
| ES-301 | | Understand the value of biodiversity to human societies, threats to biodiversity, In-situ ar Ex-situ conservation of biodiversity. |
| | | Acquire knowledge of different types of environmental pollution, its effects on life and i remedies |
| | | Aware about the social issue related to the environment, environment ethics, protection ar conservation acts for the environment. |
| IT-302 | Discrete Structure | Students will be able to understand the notion of mathematical thinking and algorithm thinking and be able to apply them in problem solving such as formula specification verifications and basic concepts of set theory. |
| 11-502 | | Understand the basic principle of boolean algebra, logica and set theory |

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| | A | equire ability to describe computing problems with the help of graph theory and Finite state nachines, also express its utility in solving and modeling real time problems. |
|--------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Ē | apply basic counting techniques to solve combinatorial problem. |
| | | To understand the concept of linear, non-linear data structures, the operations performed on hem and the applications of various data structures |
| | | Inderstand the arrays, searching and sorting algorithms |
| T-303 | Data | molement stacks, queues and its applications |
| | Structure | implement states, queue in its variations |
| | | The problem involving graphs, trees and heaps |
| - | | Solve problem involving graphic, and methods for give an objects |
| | Ohinst | Recognise attributes and also deal with operations applied for data structures |
| | Oriented | Define data types and also dear with openations of the |
| IT-304 | Programmin g & | Understand how to apply the major object-oriented concepts to implement object oriented programs in C++ encapsulation, inheritance and polymorphism |
| | Methodolog y | Classify inheritance with the understanding of early and late binding, usage of exception bandling generic programming. |
| | | Berform number hase conversion, use Boolean logic to create digital circuits |
| | Digital Circuits & System | Understand use of encoders, decoders, multiplexers and d-multiplexes in communication |
| IT-305 | | By learning design of combinational and sequential circuits students can understand its us in digital systems such as computers, communication systems and other modern technologie |
| | | Study of a ADC and DAC along with display devices with enable students to understan signal conversion and its display and their applications and digital devices |
| | | Understand fundamentals of programming such as variables, conditional and iterativ execution, methods etc |
| | JAVA | Understand fundamentals of object oriented programming in Java and be familiar with important concepts like class, inheritance and multithreading, AWT and JDBC |
| IT-306 | Programmin | The different data types, design structures, loops, functions to design Java programs |
| | gLao | Develop program using the Java collection API as well as the Java standard class library |
| | | Develop Java Applet |
| | Evaluation of Internship-I completed a I year level | To display the utility of information and talent units obtained from the path and place business withinside the assigned task function/s" |
| | | Solve actual existence demanding situations withinside the path via way of means analysing the area and choosing suitable ability units obtained from the path |
| BT-107 | | Exhibit important questioning and hassle fixing talents via way of means of analysis underlying issue/s to challenges |
| | | t Demonstrate the capacity to harness assets with the aid of using analysing demandi situations and thinking about opportunities |
| | | Articulate profession alternatives via way of means of thinking about possibilities company sector, industry, expert and academic advancement |
| BT-307 | 90 h | rs Demonstrate the application of knowledge and skill sets acquired from the course a workplace in the assigned job function/s |
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| | based on S | Solve real life challenges in the workplace by analysing work environment and conditions, and selecting appropriate skill sets acquired from the course |
|--------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | various softwares - | Exhibit critical thinking and problem solving skills by analysing underlying issue/s to challenges |
| | Internship - II | Demonstrate appreciation and respect for diverse groups of professionals by engaging parmoniously with different company stakeholders |
| | l fi | Exhibit professional ethics by displaying positive disposition during internship |
| - | | Understand mathematical tools for the Numerical Solutions algebraic and transcendental |
| | | Describe mathematical knowledge to understand Laplace transformation, Inverse Laplace transformation and Fourier Transform which are used in various branches of engineering. |
| 3T-401 | Mathematics | Work with mathematical tools available in Statistics needed in various field of science and |
| | - 111 | Fulfill the needs of engineers to understand applications of numerical analysis, transform calculus and statistical techniques in order to acquire mathematical knowledge |
| | | Solve wide range of practical problems appearing in different sections of science and engineering |
| | | Understand basic structure of computer system, arithmetic operations |
| | | Understand the arithmetic operations, study of hardwired and microprogrammed control units |
| T-402 | Computer | Develop the concepts of memory management, interleaving and mapping |
| | Architecture | Analyse the arithmetic and instructional pipelines |
| | | Explain the function of multi processing and techniques to achieve it |
| | | Implement sorting and searching algorithms |
| | | Experiment with techniques for obtaining maximum outputs with minimum efforts |
| IT 403 | Analysis and | Make use of dynamic program |
| 11-403 | Algorithm | Solve 8 queens problem and others of the kind for application in real world scenario |
| | | Distinguish between np hard and np complete problems and develop their solutions. |
| | | Differentiate Analog and Digital Signal and types of signals. |
| | Analog & Digital | Inderstand the communication of information over the communication channel. |
| IT-404 | | Understand how information signal of low frequency can be transmitted with the help of modulation techniques over a long distance. |
| | Communicat | Differentiate different modulation techniques such as AM, SSB, DSB and FM. |
| | ion | Explain using block diagrams, modulation and demodulation techniques for digital signa and determine bandwidth requirement. |
| | Data has | Compare file system and DBMS and explain how DBMS is better than traditional fil |
| IT-405 | Data base Managemen t System | processing systems |
| 11-405 | | Analyse the physical and togrean data base designs, database moderning, relational |



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Analyse and renovate an information model into a relational innovation schema and to use DDL, DML and DCL utilities to implement the schema using a DBMS. Formula data retrieval carries in SQL and relational algebra Demonstrate an understanding of functional dependencies, normalisation theory and apply such knowledge to the design of a database Demonstrate and explain terms like transaction processing, concurrency control, distributed database and big data Be acquainted with elements, tags and basic structure of HTML files Designing of web page-document layout, working with list, working with tables. Web Practice hyper linking, designing of webpage-working with frames, forms and controls. Introduction Prepare creating style sheet, CSS properties, background, text, font and styling etc. IT-406 to Design Practice the use of multimedia components in HTML documents. Understand the basic commands used in Linux operating system Open Source Learn the important LinX library functions and system calls Write, compiled and debug shell script and Linux environment Software IT-407 Lab (Linux Learn how to program in R and write R functions and R) Read data into R, access R packages hrs Exposure to Organizational skills and professional practices. 90 Efficiently completing tasks, fostering good relationship with seniors and subordinates Internship Improved Communication & interpersonal skills. based on Exposure to latest technology applications to the specific discipline. using **BT-408** various Identification of relevant problems in the industry and innovative solutions. software Internship Π Gain knowledge of history of operating systems and understand design issues associated with operating systems Identify the process management policies and analyze and compare scheduling of processes by CPU along with memory management. Understand concepts of memory management (including virtual memory), I/O and Operating IT-501 System concurrency control. Describe demand paging and operating system security Understand issues related to file system interfaces and implementation, disk management Outline and describe the fundamental concepts of computer network and functions of each layer in OSI and TCP/IP model. Data link layer issues in a corporate network by identifying functions of data link layer protocols, essential principles of a MAC sub layer and by comparing contention, limited contention and contention free protocols. Computer Classify the routing protocols to find shortest paths for network-layer packet delivery and IT-502 Network analyze how to assign the IP addresses for the given network using the concept of subnetting and Supernetting. 1 Science rand its Protocols. Describe the functions of Fransport la Principal

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| | Ŧ | Explain the functions of Application layer Protocols and Design a network infrastructure using various internetworking devices. |
|--------|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <u>e</u> | Convert between finite automata, regular grammar, and regular expression representation of |
| | | Play the pumping lemma for regular languages to determine if a language is regular |
| | Theory of | Convert between grammars and pushdown automata for context free languages |
| T-503 | Computatio n | Translate a context free grammar from one form to another and demonstrate is grammar is |
| | | Produce simple programmes for a touring machine and explain the concept of undecidability ability and its examples |
| | | Be familiar with terminology used in this area |
| | Artificial | Explain what constitutes artificial intelligence and how to identify systems with artificial intelligence |
| T-504 | Intelligence | Know how to build simple knowledge based systems |
| | | Have ability to apply knowledge representation, reasoning, and machine learning techniques to real-world problems |
| | | Learn to access database through Java programs, using Java Data Base Connectivity (JDBC) |
| | | Create dynamic web pages, using Servlets and JSP. |
| | Advanced | Make a reusable software component, using Java Bean. Invoke the remote methods in an application using Remote Method Invocation (RMI) |
| IT-505 | Java Lab | Understand the multi-tier architecture of web-based enterprise applications using Enterprise JavaBeans (EJB). |
| | | Develop Stateful, Stateless and Entity Beans. Use Struts frameworks, which gives the opportunity to reuse the codes for quick development. |
| | Soft Skills | To encourage the all round development of students by focusing on soft skills so it helps to bridge the gap between the skill requirements of the employer or industry and the competency of the students. |
| IT-506 | and Interpersona | To make the engineering students aware of the importance, the role and the content of soft skills through instruction, knowledge acquisition, demonstration and practice. |
| | l Communicat ion | To develop and nurture the soft skills of the students through individual and group activities |
| | | To improve the communication skills & amp; enrich personality development, and to enhance the employability of the students. |
| | Evaluation of Internship-II | To display the utility of information and talent units obtained from the path and place o business withinside the assigned task function/s" |
| IT-507 | | Solve actual existence demanding situations withinside the path via way of means o analysing the area and choosing suitable ability units obtained from the path |
| | | Exhibit important questioning and hassle fixing talents via way of means of analysing underlying issue/s to challenges |
| | | Demonstrate the capacity to harness assets with the aid of using analysing demandin situations and thinking about opportunities |
| | | Articulate profession alternatives that way of means of thinking about possibilities i company, sector, industry, expert and assigning advancement |
| IT-508 | ^ | A fully engaged student shall be able to get exposure to undertake a short research project. |
| 11-500 | HOD | Principal Indore Institute of S |
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Saturday, December 21, 2024

| | h | To enable the students to develop comprehensive solution of identified problems. |
|--------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Minor Project- I | To inculcate the ability to synthesize the results of the detailed analytical studies conducted, ay down validity and design criteria, interpret the result for application to the problem, develop the concept and detailed design solution |
| | | Inderstand the core concepts of computer graphics |
| T-601 | Computer Graphics & Multimedia | implement various shapes drawing algorithms |
| | | Apply geometric transformation on graphics-based objects and also implement clipping, shading and colour models |
| | | Understand multimedia system architecture, multimedia components and use various multimedia tools |
| | | Perform activities involved in design, development and testing of modelling, rendering, shading and animation |
| | | Explain the basic concepts of wireless network and wireless generations |
| | Wireless and Mobile Computing | Demonstrate the different wireless technologies such as CDMA, GSM, GPRS etc |
| | | Explain the design considerations for deploying the wireless network infrastructure |
| ſ-602 | | A paraise the importance of adhoc networks such as MANET and wireless sensor networks |
| | | Differentiate and support to security measures, standards, services and Layer five security considerations |
| | | Demonstrate an understanding of the compilation phases. |
| | Compiler Design | Specify and analyze the lexical, syntactic and semantic structures of advanced language features. |
| T-603 | | Write a scanner, parser, and semantic analyser without the aid of automatic generators. |
| | | Describe techniques for intermediate code and machine code optimization. |
| | | Design the structures and support required for compiling advanced language features |
| | Software Engineering | Define various software application domains and remember different process models used i software development |
| | | Understand various measures of software and generate project schedule |
| IT-604 | | Describe functional and non-functional requirements of software and develop design mode of software |
| | | Investigate the reasons of bugs and apply the software testing techniques in commercial environment |
| | | Understand various activities to be perform for improving software quality and software maintenance |
| | | Install python and have knowledge of syntax of python |
| | Programmir g in Python | Describe the numbers, math functions, strings, list, tuples and dictionaries in python |
| IT 605 | | ¹ Express different decision making statements and functions |
| 11-605 | | Develop code in python using functions, loops etc |
| | | Design GUI applications in python and evaluate different database operations |
| | | Experiment on Integrated Development Environment for Android Application Development |
| IT-606 | Android Programmin | Design and Implement Uset-Interfaces and Layouts of Android App. |
| | | Lise Istents for activity and broadcasting data in Android App. |
| | 5 | Use mension activity adverter and the ladare in the part of the second s |
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| | | Design and Implement Database Application and Content Providers |
|--------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Experiment with camera and location-based service and develop android apps with security features |
| IT-607 | Internship- III | To show the application of statistics and expertise devices acquired from the route and place of job withinside the assigned challenge function/s" |
| | | Solve actual existence demanding situations withinside the path via way of means of analysing the area and choosing suitable ability units obtained from the path |
| | | Demonstrate the ability to harness property with the useful resource of the use of analysing annoying conditions and considering opportunities |
| | | Exhibit critical thinking and problem solving skills by analysing underlying issue/s to challenges |
| | | Articulate career options thru manner of method of considering opportunities in company sector, industry, professional and educational advancement |
| | Minor Project II | A fully engaged student shall be able to get exposure to undertake a short research project. |
| IT-608 | | To enable the students to develop comprehensive solution of identified problems. |
| | | To inculcate the ability to synthesize the results of the detailed analytical studies conducted lay down validity and design criteria, interpret the result for application to the problem develop the concept and detailed design solution |
| | | Understand concept of ANN and explain the XOR problem |
| | | Use supervise neural networks to classify given inputs |
| IT-701 | Soft Computing | Understand unsupervised neural networks for clustering data |
| | | understand fuzzy inference system using concepts of fuzzy logic |
| | | Obtain an optimal solution to a given problem using genetic algorithm |
| | Cloud Computing | Explain the core concepts of the cloud computing paradigm |
| | | Demonstrate knowledge of virtualization |
| IT-702 | | Explain the core issues of cloud computing such as security, privacy, and interoperability |
| | | Choose the appropriate technologies, algorithms, and approaches for the related issues |
| | | Identify problems, and explain, analyze, and evaluate various cloud computing solutions |
| | Internet of Things | Understand internet of things and its hardware and software components |
| | | Interface I/O devices, sensors and communication modules |
| IT-703 | | f Analyse data from various sources in real time and take necessary actions in an intelligent fashion |
| | | Remotely monitor data and control devices |
| | | Developed real life IOT-based projects |
| | Cloud Computing Lab | Configure various virtualization tools such as Virtualbox, VMware workstation |
| | | Design and deploy a web application in a PaaS environment |
| IT-704 | | Learn how to simulate a cloud environment to implement new schedulers. |
| | | Install and use a generic cloud environment that can be used as a private cloud. |
| | | Manipulate large data sets in a parallel environment. |
| IT-706 | | Demonstrate a sound technical knowledge of their selected project topic. |
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| | I | Indertake problem identification, formulation and solution. |
| N F | Maior | Design engineering solutions to complex problems utilising a system's approach |
| | Project-I | Communicate with engineers and the community at large in written and oral communicate |
| | Toject | Demonstrate the knowledge, skills and attitudes of a professional engineer. |
| | | Demonstrate awareness of the ethics involved in doing an internship. |
| r-607 | Evaluation of Internship -III | Describe, analyze, and synthesize their learning experience in the internant in and |
| | | form of an internance perpendicular the internship experience in the form of an oral presentation, |
| | | Articulate new learning designs the challenges carrying out an internship in a crosscultural |
| | | show understanding and use skills and in a short timeframe; |
| | | Gain meaningful and practical experience in their chosen field. |
| | Information | Understand key terms and concepts in information security and Cryptography and evaluate |
| | | Acquire knowledge to secure computer systems, protect personal data, and secure computer |
| | | networks in an organization Apply knowledge of various encryption algorithms and authentication mechanisms to secur |
| -801 | Security | information in computer systems and networks |
| | | Understand principles of web security to secure network by monitoring and a generative architecture for an organization. |
| | 1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1. | nature of attacks and design/develop security are interesting acquirity strategies and policies. |
| | | Design operational and strategic information security strategies |
| | | Recognize the characteristics of machine learning strategies. |
| | Machine Learning | Apply various supervised learning methods to appropriate proteins |
| | | Identify and integrate more than one technique to enhance the performance unknown pattern. |
| T-802 | | Create probabilistic and unsupervised learning models for handling unsteem p |
| | | Analyze the co-occurrence of data to find interesting frequent patients and the |
| | | data before applying to any real-world problem and can evaluate with parallel computi |
| | | To develop an understanding of various basic concepts associated |
| | | environments |
| | | Understand, appreciate and apply parallel and distributed programs |
| IT-803 | Parallel | Acquire skills to measure the performance of parallel hardware environm |
| | Computing | Design parallel programs to enhance machine performance my romments such as CUDA, Open |
| | | Design and implement parallel programs in modern environment |
| | | etc |
| | Machine Learning Lab | Recognize the characteristics of machine ready by appropriate problems. |
| | | Apply various supervised learning methods to enhance the performance of learning. |
| 17 90/ | | Identify and integrate more than one teening models for handling unknown pattern. |
| 11-804 | | Create probabilistic and unsupervised rearining moders |
| | | Analyze the co-occurrence of data to find increasing require its performance |
| | | data before applying to any real process models and software engine |
| IT-805 | 5 Major | Learn about different solution anability to apply them to software design of real life problems. |
| | Project- | principles and develop and service and the principal service and develop and service and the principal service and the pri |
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| Plan, analyze, design and implement a software project using programming languages like Java, ASP, PHP etc. |
| Gain confidence at having conceptualized, designed and implemented a working major project with their team. |
| Understand the fundamental principles of Software Project management & will also have a good knowledge of responsibilities of project manager and how to handle these. |
| Be familiar with the different methods and techniques used for project management. |

- 5. Department of Electronics and Communication Engineering
 - A. Vision of Electronics and Communication Engineering (UG)

To produce globally competent electronics & communication engineering students with knowledge of core as well as inter discipline domains.

B. Mission of Electronics and Communication Engineering (UG)

Educating the students in field of electronics and communication engineering to create competent professionals with moral values, social ethics and pursuing higher education.

Inculcating the understanding technical competence in the fields of electronics and communication engineering and implementation of theoretical concepts in practical multidiscipline scenarios.

C. Program Educational Objective (PEO's) of Electronics and Communication Engineering (UG)

PEO-1

To create the ability to demonstrate technical competence in the fields of electronics and communication engineering and to develop solutions to the problems in core as well as inter disciplinary areas.

PEO-2

To develop graduates with sound academic background and industrial exposure this gives them capability to make a productive contribution to society through lifelong learning.

PEO-3 HOD



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To develop competent professionals with moral values, ethics to build an efficient team with soft skill capabilities

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D. Program Specific Outcomes (PSO's) of Electronics and Communication Engineering

PSO1 :The ability to analyze, design and implement application specific electronic system for complex engineering problems for analog, digital domain, communications and signal processing applications by applying the knowledge of basic sciences, engineering mathematics and engineering fundamentals.

PSO2 :The ability to adapt for rapid changes in tools and technology with an understanding of societal and ecological issues relevant to professional engineering practice through life-long learning.

PSO3 :Excellent adaptability to function in multi-disciplinary work environment, good interpersonal skills as a leader in a team in appreciation of professional ethics and societal responsibilities.

E. Programme Outcomes (PO's) of Electronics and Communication Engineering (UG)

Upon successful completion of the programme, the students would have the following attributes.

Demonstrate knowledge of Differential and integral calculus, differential equations, linear algebra, vector calculus, complex variables, Laplace transforms, Fourier transforms, and probability and statistics,

Basic physics including mechanics, electricity and magnetism, and optics,

Basic chemistry and environmental science,

Basic computing,

Analog, digital circuit analysis and design techniques,

Architecture and applications of Electronics, Communications Engineering systems.

Identify, formulate and solve complex problems in the domains of analog/digital design, signal processing and communication, engineering, reaching substantiated conclusions using first principles of Mathematics and Engineering Sciences.

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Design/develop Microprocessor/Microcontroller based systems Communication and Networking systems

Algorithms for signal process

VLSI circuit components to meet desired specifications with realistic constraints such as manufacturability and sustainability.

Design and conduct experiments in analog/digital systems, signal processing and communication and networking systems, analyze and interpret data, and synthesize information to provide valid conclusions using simulation techniques and/or numerical methods, graphics.

Select and apply necessary modern electronic instruments like Digital Storage Oscilloscope, DSP and FPGA trainer kits, Microcontrollers and software tools such as Spice, MATLAB and HDL for Digital Signal Processing, Communication Engineering, Networking and VLSI engineering practices with an understanding of their limitations.

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

Demonstrate the knowledge of contemporary issues in the field of Electronics and Communication Engineering.

Commit to professional ethics and responsibilities and norms of engineering practice.

Work effectively as an individual, and also as a member or leader in multicultural and multidisciplinary teams.

Effectively communicate on their Electronics and Communication 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.

Manage projects by applying gained knowledge on Engineering and Management principles.

Adapt themselves wholly to the demand soft the Electronics and Communication related Engineering by life-long learning.

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F. Course Outcomes (CO's) of Electronics and Communication Engineering (UG)

| niv. ubject | Subject Name | CO Description |
|----------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| lode | | The Coursework is designed to provide students the opportunity to fear Roy |
| BT- | | Student will able to understand the knowledge of Wave optics i.e. interference |
| | Engineering | and diffraction. To introduce the idea of solids like semiconductors (P type and N Type semiconductors), Diodes and Hall effect. Students will also be able to understand |
| .01 | | the basic concept of superconductivity. To develop the understanding of Lasers, fiber optics and their applications in |
| | | field of engineering sciences. |
| | | To provide you to basic understanding of Electronic function of the provide you to basic understanding of Electronic function of the provide you to basic understanding of Electronic function of the provide you to basic understanding of Electronic function of the provide you to basic understanding of Electronic function of the provide you to basic understanding of Electronic function of the provide you to basic understanding of Electronic function of the provide you to basic understanding of Electronic function of the provide you to basic understanding of Electronic function of the provide you to basic understanding of Electronic function of the provide you to basic understanding of Electronic function of the provide you to basic understanding of Electronic function of the provide you to basic understanding of Electronic function of the provide you to basic understanding of the provide you to basic u |
| | | of analysis to Engineering problems. To introduce the idea of applying differential and integral calculus to notions of curvature and to improper integrals. Apart from some applications it gives a basic |
| BT- | Mathematics-I | introduction on Beta and Gamma function To develop the tool of power series and Fourier series for learning advanced |
| 102 | Mathematics | Engineering Mathematics. To familiarize the student with functions of several variables that is essential in |
| | | most branches of engineering To develop the essential tool of matrices and linear algebra in a comprehensive |
| | | manner. Understand the properties of material, stress strain. Properties of alloys and cast |
| | 1 | iron. Understand the concept measurement and machine tools their operations and |
| | Basic | their applications. Understand the concept of fluid flow, properties of fluid, Bernoulli's equation, |
| BT- 203 | Mechanical Engineering | Pascal's law. To Understand the concept of heat and temperature, law of thermodynamics, boilers and their mountings and accessories, basic Refrigeration cycles and its |
| | | applications. To Understand the working of different cycles and 4 strokes, 2 stroke engines |
| | | and their applications. Students will acquire the basic knowledge in different fields of civil engineering |
| | | and materials used in construction. Gain the ability to use modern survey equipment to measure angles and |
| DT | Basic Civ | il distances. |
| B1- | Engineering | Students will understand the basic of contour lines and map |
| 204 | Mechanics | Students will have the ability to identify, formulate and some engine |
| | | problems related to Engineering Mechanics: Statics |
| 1 | | Students will be able to analyse beam for shear force and bending indus |
| | | Able to understand the basic applications of computers in various heres, |
| BT- | Basic Comput | operating system, its role and functionalities and to apply concepts of the |
| 205 | Engineering | MS power point, MS Exect engenny. Principal |
| - | 2 | A hard Bringinghtitute O |
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| | () | Saturday, December 21 |
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| | | Discuss and apply simple algorithms for arithmetic and logical problems. |
|-----|------------------------------|-------------------------------------------------------------------------------------|
| | | |
| | | Translate the algorithms to programs applying object-oriented concepts in C++ |
| | | programming language. |
| | | Understand basics of computer networks, OSI layers and protocols, E commerce |
| | | applications, impact of security threats and attacks on networking systems and |
| | | also security measures |
| | | Understand the different method for representing and processing data and to get |
| | | awareness about the impact of cloud computing, its various type of services. |
| | | learners to develop good listening skills. |
| | | Encourages learner to talk freely and lose their shyness when talking in front of |
| | | the people |
| 3T- | Language Lab & | To develop the overall personality of the students by the practical activities |
| 206 | Seminars | Helps in confidence building, motivation to be more presentable and help in |
| | | removing the stage fright |
| | | Develops speaking, writing, reading, listening and presentation skills. |
| | | Differentiate hard and soft water: solve the related numerical problems on water |
| | | purification and its significance in industry and daily life. |
| | | Select the lubricant for various purposes based on the type of |
| | | Machines |
| | | Equipped with basic knowledge of polymer, methods of |
| 3T- | Engineering | polymerization and various industrial applications of polymers |
| 101 | Chemistry | Draw the Phase diagrams of one & amp; two component systems and causes, |
| | | consequences and methods to minimize corrosion to improve industrial designs. |
| | | Identify the structure of unknown/new compounds with the help of spectroscopy |
| | | and understand periodic properties such as ionization potential, oxidation states |
| | | and electro persetivity |
| | | To introduce affective mathematical tools for the solutions of ordinary and partial |
| | | differential equations that model physical processes. |
| | | The introduce the tools of differentiation and integration of functions of complex |
| BT- | Mathematics-II | To introduce the tools of differentiation and integration of random problems. |
| 202 | | Variable those are used in various teening tools available in vector calculus |
| | | To acquaint the student with mathematical tools a value of a |
| | | needed various field of science and engineering. |
| | _ | Effective use of verbal and non-verbal communication for eminine |
| BT- | English for Communication | beside enhanced reading comprehension as well |
| 103 | | Write the different kinds of fetters, reports and technical writing. |
| | | Apply basic fulles of grammar in both written as wen as oral communication |
| | | To introduce the concept of Basics of DC electrical retwork metading network |
| | 1 | theorems. |
| PT- | Basic Electrical | To introduce the concept of Basics of AC electrical Network(single phase & s |
| 104 | & Electronics | phase) |
| 104 | Engineering | To study of law of Electromagnetism, introduction of transformer. |
| | | To study of various electrical Machines. |
| | | To study Basic Concept Digital Electronics. |
| | | Draw various types of scales, and curves. |
| | | Draw orthographic projections of points & lines |
| BT- | Engineering | Draw orthographic projections of Planes & Solids |
| 105 | Graphics | Draw sections and development of solids including cylinders, cones, prisms and |
| 105 | | pyramids. |
| | | ALTOCAD |
| | 0 | Draw isometric views of Planes and Solids, Drawing using AUTOCAD. |

age 41 of 140

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and Technology, Indore Saturday, December 21, 2024



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| | | Use hand and power tools for different manufacturing processes |
|----------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | - | Oregate machine tools while preparing any component |
| T- | Manufacturing | Operate machine works while property of specific operation. |
| 1- | | Select the appropriate tools required to be taken while using the tools. |
| | Tractices | Comprehend the safety measures required and smithy Job. |
| | | Prepare Foundry, Fitting, Carpenary, Herding and skill sets acquired from the course |
| | | Demonstrate the application of knowledge and shift and |
| | | and workplace in the assigned job functions is solve real life challenges in the workplace by analysing work environment and Solve real life challenges in the workplace by analysing from the course |
| | Internship-1 (60 | conditions, and selecting appropriate skill sets acquired from the events |
| Γ-)7 | Hrs Duration) at the Institute | Exhibit critical thinking and problem solving skills by analysing underlying issue/s to challenges |
| | level | Demonstrate appreciation and respect for diverse groups of professionals by |
| |). • | engaging harmoniously with different company statistical disposition during internship |
| | | Exhibit professional ethics by displaying positive displaying aspects of the rural |
| | | This course is to sensitize students about the socio-curtain approximation |
| _ | | areas parochial to their colleges. |
| | | Students are expected to observe, investigate and rearr dependence parameters |
| | a 11 Direct | aspects of the rural region: 1. Demographics, Elicitacy, Occuping and State of Madhya Pradesh |
| | Swachh Bharat | of the Village; ii. Schemes of government of findia and state of the any a reason |
| | Summer | in operation in the villages. |
| BT- | Internship Unnat | To enhance critical thinking by making them participate in social activities and |
| 08 | Bharat Abhiyan | imbibe human values among them. |
| | (100Hrs)/ Rural | Rural Swachh Bharat Abhiyan is to promote cleaniness and develop neurop |
| | Outreach | habits in people in villages. |
| | | Unnat Bharat Abhiyan: To build an understanding of the development agenda |
| | | within institutes of Higher Education and an institutional capacity and training |
| | 1 | relevant to national needs, especially those of rural India. |
| | | To determine the root finding techniques which can be used to solve practical |
| | | angineering problems also demonstrate the use of interpolation methods to find |
| | | intermediate values in given graphical and/or tabulated data. |
| | | Apply the concept of numerical analysis to find the relative strengths and |
| | | weaknesses of each computation method and know which are most applicable |
| | | for given problem also will be able to approximate and analysis the errors |
| | | for given protein and solution of equations, ordinary, partial differential |
| | | obtained in the numerical equations as well. |
| BT301 | Mathematics-III | Equations and simulations equations of the express periodic function as a Fourier series |
| D1501 | | To apply the analytical technique transformation & amp; inverse Laplace |
| | | and acquire the concepts of Edgewer Partial Differential equation and Ordinary |
| | | Pransform with its property to conditions which is helpful in all |
| | | Differential Equation with groth country |
| | | engineering a amp, research work of a random variable, |
| | | Apply the concept of their application in |
| | | probability distribution and |
| | | diversified fields. |
| | | Students will able to understand the concept of measurements of bridges used for |
| | Electronic | Students will able to analyze and design different types of enager |
| EC302 | Measurement & | e measurement of Resistance inductance and capacitance. |
| 10000 | Instrumentation | Students will able to understand the operation of various instrumentation |
| | | transducers. |
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| | X | 121 ICAY 181 Indore Institute of |
| | XI | Principal |
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| | | MOORE |
| | \cup | Page 42 OF HULLER Saturday, December 21, |



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2023-2024 Students will able to understand the operation of various electronic instruments like CRO and Signal Generators. Students will able to understand the working of the digital measurement and instruments used in Instrumentation world. Design combinational circuit with the help of logic gates like adder subtractor and others. Design binary storage devices like flip-flops and other components. Digital EC303 Design sequential circuits like Register & counters Electronics Design logic families and semiconductor memories and converters. Students will able to understand the general insight about Semiconductor Material Properties, compound semiconductor materials. Students will able to understand the various type of different diodes such as: Tunnel diodes, Varactor diodes, Schottky diode, Photo diodes, Photodetector, Electronic LED, solar cell. Students will able to understand the Ideal and Practical diode, Clipper, Clamper. EC304 Devices Students will able to understand the current components and equations, CB, CE and CC configuration, input and output characteristics. Students will able to understand amplifier and JFET construction. Graduates will be able to understand the basic circuit elements, circuit variables and Kirchhoff laws. Graduates will be able to solve problems using mesh and node analysis. Graduates will be able to analyses circuits in Laplace domain Network EC305 Graduates will be able to understand the concept of two port networks Analysis Graduates can understand tuned circuits & resonance. Students will able to understand the concept of Measurement and error. Students will able to analyze and design different types of bridges used for measurement of Resistance, Inductance and capacitance. Students will able to understand the operation of various instrumentation Students will able to understand the operation of various electronic instruments EC306 EMI Lab like CRO and Signal Generators. Students will able to understand the working of the digital measurement and instruments used in Instrumentation world. Ability to be a multi-skilled engineer with good technical knowledge, management, leadership, social and environmental responsibility, and of Evaluation Internship-I entrepreneurship skills. Understand the usage of modern technologies & tools in the field of Electronics BT107 completed at I year level & Communication Engineering Get the knowledge of energy carriers, energy technologies, energy challenges and energy system integration and environment sustainability. Learn about the different types of ecosystems present in environment, ecological succession and energy flow in the ecosystem. Understand the value of biodiversity to human societies, threats to biodiversity, 8 Energy In-situ and Ex-situ conservation of biodiversity. Environmental ES401 Acquire knowledge of different types of environmental pollution, its effects on Engineering life and its remedies control to the environment, environment ethics, Aware about the social issue related to the environment, environment ethics, protection and conservation acts of the environment Principal IndoPrincipalute of Science HOD

and Technology, Indore Saturday, December 21, 2024



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| | | 2023-2024 discrete |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| | | Students will able to generate and characterize various continuous and discrete |
| | | time signals. |
| | F | Students will able to develop input output relationship for linear shift invariant |
| | | system and understand the convolution operator for continuous and discrete time |
| | Signals & | system |
| C402 | Systems | Students will able to analyze the spectral characteristics of signals using Fourier |
| | Dy official and | students win dole to thing it |
| | ŀ | Chudents will able to analyze DT systems & their realization using Z-transforms. |
| | - | Students will able to evaluate and analyse the reconstruction of signals. |
| | | Students will able to estimate the basic electronic communication process and use |
| | | Develop an understanding of electronics and communication engineering with signals |
| | - | it for the solution of electronical models for analog modulation schemes ie for AM |
| 20402 | Analog | Derive the mathematical models for analog modulation schemes ie for FM |
| 20403 | Communication | Derive the mathematical models for a g |
| - 1 | | Analyze and design transmitters to reconstruct wave modulation systems. |
| | 2 | Analyze the effects of holse in continuous during of the basic control system and |
| | | Students will able to develop an understanding uncertain engineering problems |
| | | use it for the solution of electronics and communication models for Time Response analysis |
| | | Students will able to derive the mathematical meters and |
| | | and time-domain stability analysis. |
| FC404 | Control System | Students will able to derive the manifematical modern of the |
| Letter | | analysis and Frequency-domain stability analysis. |
| | | Students will able to derive and analyze system design problem and controllability and |
| | | Students will able to analyze state space problem and comment |
| | | observability |
| | | Students will able to understand the application of received and vis of |
| | | Students will able to understand the basics of ICS and VEST noti- |
| | | Students will able to understand the basic applications of optimp |
| | | universally used. |
| EC405 | Analog Circuits | Students will able to understand the timer circuit and their re configurations and |
| | | multi-vibrators. |
| | | Students will able to understand the various regulation ICs and then appreaded |
| | | and comparisons |
| | | Design and simulate Basic Electronic circuits (examples recurrens, empletes) |
| | | clampers, diode, transistor characteristics etc). |
| | | Analyze Transient and steady state analysis of RL/ RC/ REC cheans and |
| DOM | Cimulation Lab | realization of network theorems. |
| EC406 | Simulation Lab | Study of virtual instruments built in the software. |
| | 12 July 12 Jul | Analyze circuit optimization |
| | | Analyze fabricated PCB. |
| | | Students will be able to know about 8086 microprocessor addressing modes and |
| | | pin description. |
| | | Students will be able to know about 8086 microprocessor instruction set and then |
| | | applications |
| | Microprocessor | Students will be able to know about 8155, 8255, Interfacings key boards, LED |
| EC 50 | 1 & 1 | ADC DAC and memory Interfacing |
| | Application | Students will be able to know about 8254 programmable interval timer, 8259A |
| | | Students will be able to building & 8257 DMA controller. |
| 1 | | programmable interruption about the microcontrollers (8051). |
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| | | 2023-2024 |
|--------|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| | | Students can able to differentiate various sampling methods and pulse |
| | | modulation schemes. |
| | | Students can able to understand mathematical model, spectrulin, advantages, |
| | | disadvantages and application various Analog to Digital conversion methods. |
| | Digital | Students can able to understand mathematical model, spectrum, advantages, |
| EC 502 | Communication | disadvantages and application of various digital modulation schemes. |
| | Communication | Students can able to understand probability of error and signal space |
| | | Students can able to understand producting of the able of the |
| | | representation of various digital modulation sciences. |
| | | Students can able to understand Information theory, Source coding and channel |
| | - C - C - C - C - C - C - C - C - C - C | coding. |
| | | Students will able to analyze and design different type of Symmetrical And |
| | Departmental | A symmetrical Network |
| | Elective (A) | Students will able to analyze and Design filter and Attenuators |
| | CNTI (B) | Students will able to analyze and besign interameters and various losses in |
| EC 502 | Mohile | Students will able to analyze the fine parameters and various restore |
| EC 303 | Communication | transmission lines. |
| | Communication | Students will able to apply smith chart for line parameter and impedance |
| | (C) Advanced | calculations |
| | Control system | Students will able to analyze and match Impedance |
| | | Students will be able to apply vector calculus to understanding the Coloumbs |
| | 2 | Students will be able to apply recent calculated Laplace and Poisson equation |
| | Open Elective | law, Gauss law, electrostatic potential, and Euprace and relation equation |
| | (A) EMT | boundary condition and be able to solve the electrostatic problem. |
| | (Electro | Students will be able to apply vector calculus to understand the biosavert law, |
| | Magnetic | Ampere circuital law, Lorentz force inductance and be able to solve the magneto |
| | (Theory) (B) | static problem. |
| EC 504 | Computer System Organisation (C) Process Control Instrumentation | Students will be able to analyze the Maxwell's equations for electromagnetic |
| | | fielde |
| | | Students will be able to derive Electromagnetic wave equation and apply the |
| | | Students will be able to derive Electionaghede wate equation in the |
| | | Poynting expression. |
| | | Students will be able to Understand the behavior of electromagnetic wave in |
| | | different medium. |
| | 100 | Students will able to analyze and design different type of Symmetrical And |
| | | Asymmetrical Network |
| | | Students will able to analyze and Design filter and Attenuators |
| | CNTL Lab | Students will able to analyze the line parameters and various losses in |
| EC 505 | | Students will able to analyze the fine parameters and |
| 10000 | | transmission lines. |
| | | Students will able to apply smith chart for the parameter and impedance |
| | | calculations |
| | | Students will able to analyze and match Impedance |
| | a second a s | Understand the different toolbox in the MATLAB like, communication toolbox, |
| DO COC | Matlab | control system toolbox, math toolbox, etc and also Understanding the |
| EC 506 | Programming | programming in MATLAB which is based on the mentioned toolbox. |
| | | programming in MATLAB when is based on the mendeline brief knowledge. |
| | | Ability to be a multi-skilled engineer with good technical kilowoodge |
| | Evolution of | management, leadership, social and environmental responsionity, and |
| EC 507 | Evaluation of | entrepreneurship skills. |
| | Internship-II | Understand the usage of modern technologies & tools in the field of Electronics |
| | | & Communication Engineering |
| | | Identify and find solution to trablems. |
| | | Identity and find solution mathematical using modern technologies, tools and |
| EC 508 | Minor Project 1 | Get awareness on design includiology using modern technologies, tools and |
| | 8/ | systems and implementation rear time |
| | 14 | ISI AT ISI Principal |
| T | 7 | 18 De 19 Principal |
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2023-2024

| | | Apply communication, writing skills & Presentation skills |
|--------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | - | Apply communication, undership skills with professional and ethical values. |
| | | Develop the team work and reacted by the characteristics of continuous time and |
| | | Students will able to understand and states |
| | | alsorete-time signals and systems: |
| | the second second second | Able to calculate Z-transforms for discrete time organistics, and stability. |
| EC- | Digital Signal | also understand the relationship between potes, zeros, |
| 01 | Processing | Analyze signals using the discrete Fourier Series and discrete Fourier Transform. |
| | | The students will understand the basics of Fast Fourier Hanstonnin |
| | | Able to design Digital IIR/ FIR filters from Analog mens using the |
| | | techniques. |
| | | Student will be able to get detailed knowledge of antenna theory to form the new |
| | | patterns. |
| | | Student will be able to relate transmission and reception of antenna signal |
| - 0 | Antenna & | parameters. |
| EC- | Wave | Student will be able to know the applications and various antenna types. |
| 502 | propagation | Student will be able to understand the antenna arrays and synthesis of array |
| | | pattern. |
| | | Student will be able to work with models of Radio wave propagation arecting |
| | | Communication Systems. |
| | | Students will able to understand all the terminologies related to bad |
| | Departmental | Communication. |
| | Elective (A) | Students will able to understand the Functions of each layer of OSI model and |
| | Data | TCP/IP model. |
| FC- | Communication | Students can understand the error correction and detection process at data in |
| 603 | (B) CMOS | and transport layer. They can solve numerical based on this. Framing an |
| 005 | Design (C) | accesses control methods are also known to them |
| | Satellite | Students can understand the frame size protocol details and architecture of ATM |
| | Communication | SONET, X.25, frame relay and many more |
| | | Comparatively study on Repeaters, Bridges and Gateways. |
| | Open Elective | Students will be able to know about 8051 interfacing. |
| | (A) Microcontroller & Embedded | Students will be able to know about 8096 microcontroller |
| | | Students will be able to know about basics of embedded system. |
| | | Students will be able to know about Embedded architecture. |
| EC- | system (B) Bio- | |
| 604 | medical | |
| | Electronics (C) | Students will be able to know about IO peripheral devices. |
| | Power | |
| | Electronics | The second |
| | | Multiplexing Techniques, Line Coding Techniques and Serial and param |
| | | transmissions will be known to students. |
| -0404032041- | Data | Various transmission media, their comparison and specifications will be know |
| EC- | Communication Lab | to students. |
| 605 | | NIC, RS-232 MODEM etc. networking hardware will be understood. |
| | | Various topologies, LAN architectures and integrated services digital netwo |
| | | will be known to students. |
| | Microcontroller | Students will be able to understand the communication between 8051 with PC |
| EC- | & Embedded | Students will be able to Study of various bit manipulation of 8051. |
| 606 | System Lah | Students will be able to do Programming of Timer and counter in 8051. |
| | System Lao | Chustering that we have a second se |

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| | | Students will be able to understand the Programming in 8051 for sensor and |
|-------|-------------------------------|-------------------------------------------------------------------------------------------------|
| | | actuator interfacing. |
| | | Students will be able to understand the Programming implementation of 8051 with LCD interfacing |
| | | Get awareness on design methodology using modern technologies, tools and |
| EC | Minor | systems and implementation real time. |
| 600 | Project-1 | Apply communication, writing skills & Presentation skills |
| | 1.2 | Develop the team work and leadership skills with professional and ethical values. |
| | | Students will able to demonstrate a clear understanding of CMOS fabrication |
| | | flow and technology scaling. |
| | | Students will able to design MOSFET based logic circuit |
| EC- | MICI Davia | Students will able to draw layout of a given logic circuit |
| 701 | VLSI Design | Students will able to demonstrate an understanding of working principle of |
| | | operation of different types of memories. |
| | | Students will able to demonstrate an understanding of working principles of |
| | | clocking, power reduction and Distribution. |
| | Departmental | Understand basic concepts and applications of microwave systems and Analyze |
| | Elective (A) | different waveguide structures. |
| | Microwave | Understand about Solid State Devices and Application of Various type of diodes, |
| EC- | Engg. (B) | Transferred Electron Devices and Avalanche transit time devices. |
| 702 | Information | Understand microwave measurement. |
| .02 | Theory & | Identify of various types of Microwave electronic components. |
| | Coding (C) | a Li |
| | Flactronics | Solving complex RF & Microwave communication network design problems 5. |
| | (A) Cellular | Understand in depth about Internet of things. |
| | Mobile | Establish secure communication for his network for his devices connected in |
| | Communication | IOT. |
| | (B) Internet of Things (C) | Store his data securely on cloud and access it when required |
| EC- | | Design web based application using various internet protocols and services |
| 703 | Probability | Use senser technology and REID and wireless networking for maintaining |
| | Theory & | use sensor technology and KFID and wheless networking for maintaining |
| | Stochastic | considerations |
| | Processor | |
| | | Understand basic concepts and applications of microwave systems and Analyze |
| | | different waveguide structures. |
| EC- | | Understand about Solid State Devices and Application of Various type of diodes, |
| 704 | Microwave Lab | Transferred Electron Devices and Avalanche transit time devices. |
| 10.20 | | Understand microwave measurement. |
| | | Identify of various types of inferowave electronic components. |
| | | Solving complex RF & Microwave continuncation network design problems 5. |
| | | Students will be able to know about connecting Arduino with FSP 8266 |
| EC- | LOTIA | Students will be able to know about Connecting Arduno with EST 0200. |
| 705 | 1.0.1. Lab | Students will be able to know about connecting various protocols |
| | | Students will be able to get and post request through HTTP protocols |
| | | Identify the complex engineering problems relevant to the society and industry |
| EC- | Major Project I | Apply modern recting provens rectant to the solid of Electronics & |
| 706 | Major Project-1 | Communication Engineering to analyze the identified problem |
| | | Drincinal |

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and Technology, Indore Saturday, December 21, 2024



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| 1 | | Design and implement a viable solution to the problem. |
|--------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Apply communication, writing skills & Presentation skills |
| | | Develop the team work and leadership skills with professional and ethical values. |
| EC- | Evaluation of | Ability to be a multi-skilled engineer with good technical knowledge, management, leadership, social and environmental responsibility, and entrepreneurship skills. |
| 707 | Internship -III | Understand the usage of modern technologies & tools in the field of Electronics & Communication Engineering |
| | | Understand Optical Fiber Communication System and its parameters. |
| | | Analyze transmission characteristics of optical fiber |
| EC 801 | Optical Fibre | Understand the construction and operation of various optical sources and detectors |
| | Communication | Performance analysis of optical receivers and study of fiber joints |
| | _ | Brief introduction of optical fiber networks and amplifiers |
| | Departmental | Students will able to develop a basic understanding of AI building blocks |
| | Elective (A) AI & Signal | Students will able to choose an appropriate problem-solving method and |
| EC 802 | Processing (B) Wireless | Students will able to analyze the strength and weaknesses of AI approaches to knowledge-intensive problem-solving. |
| | Communication | Students will able to understand real time applications of Fourier transform. |
| | (C) 5G Technology | Students will able to describe discrete time systems in terms of difference |
| | | Understand the basic elements of digital image processing |
| | Open Elective | Develop and analyze the algorithm for discrete Fourier transformations. |
| 50.002 | (A) Wireless Network (B) | Understand the concept of Image enhancement by analyzing different filtering |
| EC 803 | Processing (C) Speech | Applying different models and techniques to understand the concept of image restoration |
| | | Analyze and implement different image encoding methods |
| | Tiocessing | Understand the microwave signal measurement using VSWR and frequency meter and practical implementation of Microwave Communication Systems. |
| EC 804 | Advanced Communication | Understand the design, application and practical implementation of various Digital Modulation techniques. |
| | Engg. Lab | Understand the various losses associated with OFC channel |
| | | Understand the characteristics of various antenna and its coverage area |
| | | Identify the complex engineering problems relevant to the society and industry |
| | | Apply modern technologies, tools and systems in the field of Electronics & |
| EC 805 | Major Project-II | Design and implement a viable solution to the problem. |
| 10000 | | Angle communication writing skills & Presentation skills |
| | | Apply communication, writing skins & recent and in a string of the second string of the second string of the second string skins with professional and ethical values. |
| | | Develop the team work and readership skins with professional and cancel values |





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G. Vision of Electronics and Communication Engineering (PG)

To produce globally competent electronics & communication engineering students with knowledge of core as well as inter discipline domains.

- H. Mission of Electronics and Communication Engineering (PG)
 - Educating the students in the field of electronics and communication engineering to create competent professionals with moral values, social ethics and pursuing higher education.
 - Inculcating understanding technical competence in the fields of electronics and communication engineering and implementation of theoretical concepts in practical multidiscipline scenarios.
- I. Program Educational Objective (PEO's) of Electronics and Communication Engineering (PG)

Graduates of M. E. in Digital Communication will be able to:

PEO 1: Analyze, evaluate, design and solve complex engineering problems in Electronic communication using modern tools.

PEO 2: Demonstrate the skills in the core areas like Applied Mathematics, Signal Processing, Networking and Wireless Communication.

PEO 3: Carry out research and innovation through lifelong learning adapting to technological changes

J. Program Specific Outcomes (PSO's) of Electronics and Communication Engineering (PG)

Graduates in M. E (Digital Communication) will be able to:

PSO 1: Analyze, design and implement emerging Digital communications systems using devices, sub-systems, propagation models, networking of Wireless and Wire line communication systems.

PSO 2: Exhibit Technical skills necessary to choose careers in the design, installation, testing, management and operation of Digital Communication.Programme Outcomes (PO's) of Electronics and Communication Engineering (PG)



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K. Course Outcomes (CO's) of Electronics and Communication Engineering (PG)

| MEDC 101 | Advanced Mathematics |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| mente | Students will able to demonstrate the understanding of fundamentals of partial differential |
| CO1 | equations by separation method, and finite difference methods. |
| | Students will able to solve problems on probability distributions, Binomial, Normal, Sampling |
| CO2 | & Poisson's distribution, Estimate & apply all these concepts in communication Engineering. |
| CO3 | Students will able to apply Markovian process and distinguish the utility of queuing models. |
| 000 | Students will able to understand the operation of fuzzy set using mathematical concept of set |
| CO4 | theory. |
| and the second se | Students will able to understand the reliability & estimate basic reliability functions from |
| CO5 | complete failure data. |
| MEDC 102 | MICRO CONTROLLER SYSTEM DESIGN |
| COL | Students will able to understand the basic concepts and building blocks for Embedded Systems. |
| <u>CO2</u> | Students will able to understand the single chip various microcontrollers. |
| 002 | Students will able to understand the software development modular approach and analysis of |
| CO3 | recursion and debugging. |
| | Students will able to understand the design and application of microcontroller in data |
| CO4 | acquisition, embedded controller and process control. |
| C05 | Students will able to understand the architecture DSP processor for real time application. |
| MEDC 103 | DSP APPLICATION |
| WILDC 105 | Students will able to understand the discrete time system and their representation in time and |
| CO1 | frequency domain. |
| CO2 | Students will able to apply the principles of z-transforms to finite difference equations. |
| 02 | Students will able to apply the principles of Fourier transform analysis to describe the frequency |
| CO3 | characteristics of discrete-time signals and systems |
| CO4 | Students will able to apply different design techniques for FIR and IIR filters. |
| C04 | Students will able to estimation of power spectral density of random process. |
| MEDC 104 | VI SI DESIGN |
| MEDC 104 | Students will able to understand the fundamental concepts of VLSI design process and CMOS |
| CO1 | fabrication process |
| 000 | Students will able to understand the CMOS circuits and logic design. |
| 002 | Students will able to understand the CMOS chip design, simulation and verification. |
| C03 | Students will able to understand the CMOS subsystem design, simulation and verification. |
| C04 | Students will able to understand CAD system and algorithm. |
| COS | Students will able to understand CAD System and B |
| MEDC 105 | DATA COMMUNICATION AND COM OTEX AD rode and switching techniques. |
| <u>CO1</u> | Students will able to understand data flow control in different layers. |
| CO2 | Students will able to understand data now control in enterent approximation and as design new routing |
| CO3 | Students will able to build the various fouring meenanisms us went us accept to |
| | algorithm. |
| CO4 | Students will able to identify the difference of the OSI model and TCP/IP. |
| CO5 | Students will able to enumerate the layers of the OSI model and remain |
| MEDC 106 | Lab-1 Part A |
| CO1 | Students will able to understand the basic concepts and building violes for Enfocuence Systems |
| CO2 | Students will able to understand the single crip various incroconductors. |
| CO3 | Students will able to understand the software development modular approach and undry of or |
| 005 | recursion and debugging. |
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| CO4 | Students will able to understand the design and application of microcontroller in data acquisition, embedded controller and process control. |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CO5 | Students will able to understand the architecture DSP processor for real time application. |
| MEDC 106 | Lab-I Part B |
| CO1 | Students will able to understand the discrete time system and their representation in time and frequency domain. |
| <u>CO2</u> | Students will able to apply the principles of z-transforms to finite difference equations. |
| CO3 | Students will able to apply the principles of Fourier transform analysis to describe the frequency characteristics of discrete-time signals and systems |
| CO4 | Students will able to apply different design techniques for FIR and IIR filters. |
| C04 | Students will able to estimation of power spectral density of random process. |
| MEDC 107 | Lab-II Part A |
| CO1 | Students will able to understand the fundamental concepts of VLSI design process and CMOS fabrication process. |
| CO2 | Students will able to understand the CMOS circuits and logic design. |
| CO3 | Students will able to understand the CMOS chip design, simulation and verification. |
| <u>CO4</u> | Students will able to understand the CMOS subsystem design, simulation and verification. |
| C05 | Students will able to understand CAD system and algorithm. |
| MEDC 107 | Lab-II Part B |
| CO1 | Students will able to understand various transmission mode and switching techniques. |
| <u>CO2</u> | Students will able to understand data flow control in different layers. |
| CO3 | Students will able to build the various routing mechanisms as well as design new routing algorithm |
| CO4 | Students will able to identify the different types of network topologies and protocols. |
| C05 | Students will able to enumerate the layers of the OSI model and TCP/IP. |
| MEDC 201 | System Programming |
| CO1 | Students will able to understand the fundamental of programming. |
| <u>CO2</u> | Students will able to understand the data types, array, pointer, stack, trees and its application |
| <u>CO3</u> | Students will able to perform the searching and sorting using various methods. |
| <u>CO4</u> | Students will able to understand the assembler, complier, editor and operating system. |
| MEDC 202 | Modelling and Simulation of Computer |
| CO1 | Students will able to understand the fundamental elements of discrete-event simulation including statistical models, random processes, random variables, and inputs to simulation |
| CO2 | Students will able to understand practical models in simulation like discrete, continuous, passion |
| 002 | Students will able to understand Characteristics of Queuing systems and their utility. |
| <u>CO1</u> | Students will able to understand properties of random number and its generation. |
| C04 | Students will able to understand the validation process of simulation models. |
| LUS | Network Design Technology |
| MEDC 203 | Students will able to understand the concepts of layering and layered models. |
| 001 | Students will able to understand the various types of Ethernet and IP's. |
| 002 | Students will able to understand various interior asteways protocols |
| 03 | Students will able to understand the lobal quitching and MPI S |
| 004 | Students will able to understand the concept of ATM |
| CO5 | Students will able to understand the concept of A TWL |
| MEDC 204 | Optical Network |
| CO1 | students will able to understand the importance of optical network, essential components and various parameters that governs their performance. |
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| CO2 | Students will able to understand the use of Optical components, transmission techniques and |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | network management concepts. |
| <u>CO3</u> | Students will able to understand the first generation of optical networks and its uppreasion |
| CO4 | Students will able to design a network topology for a given appreciation. |
| CO5 | Students will able to demonstrate an understanding of working principles of materials |
| 1 CDC 005 | hetworks and packet switching. |
| MEDC 205 | Mobile & Sateline Communication |
| CO1 | systems and their impact on networks capacity |
| CO2 | Students will able to understand how the various signal processing and coding techniques combat channel uncertainties. |
| CO3 | Students will able to expose Adaptive Equalization techniques. |
| CO4 | Students will able to understand various wireless systems and standards and their basic |
| 005 | Students will able to understand the Satellite system and mobile services provided |
| LU5 | Lab III (201) |
| MEDC 200 | Students will able to understand the fundamental of programming. |
| 001 | Students will able to understand the data types array pointer stack trees and its application |
| <u>CO2</u> | Students will able to understand the data types, and, pointer, student, uses and to approximately students will able to perform the searching and sorting using various methods. |
| <u>CO3</u> | Students will able to understand the assembler, complier, editor and operating system. |
| 004 | Students will able to understand the assembler, complete, editor and operating of stern |
| MEDC 207 | Lab-IV (202) |
| CO1 | including statistical models, random processes, random variables, and inputs to simulation |
| CO2 | Students will able to understand practical models in simulation like discrete, continuous, passion and empirical distribution. |
| CO3 | Students will able to understand Characteristics of Queuing systems and their utility. |
| CO4 | Students will able to understand properties of random number and its generation. |
| CO5 | Students will able to understand the validation process of simulation models. |
| MEDC 301(A) | Students will able to understand the validation process of simulation models. |
| CO1 | Students will be able to understand the concept of information and entropy |
| CO2 | Students will be able to design a lossless transmission system on the basis of channel capacity and source coding theorem |
| CO3 | Students will be able to analyze error correction and detection using linear block codes and systematic codes. |
| CO4 | Students will be able to analyze error correction and detection using cyclic codes |
| CO5 | Students will be able to implement encoding and decoding of BCH codes and convolution |
| MEDC 302(A) | Advanced Digital Communication |
| CO1 | Students will be able to analyze the properties of basic Modulation techniques and apply them to Digital system. |
| CO2 | Students will be able to understand Probability of error in detection PAM signals. |
| | Students will be able to understand inter symbol interference combat by various equalization |
| CO3 | techniques. |
| CO4 | Students will be able to describe and analyze the digital communication system with spread spectrum modulation. |
| ^{CO5} | Students will be able to familiarized flerent type of fading phenomena and overcome by |
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| Optical Instrumentation & Measurement |
|----------------------------------------------------------------------------------------------------------------------|
| Students will be able to understand various optical instrument and its application |
| Students will be able to understand the use of active and passive optical components in optical fiber communication. |
| Students will be able to understand various optical sensors. |
| Students will be able to understand various optical parameter measurement techniques. |
| Seminar |
| Develop and Analyze a thought process for presentation. |
| Enhance the language and communication Skill. |
| Conversant with the latest development in Digital Communication. |
| Dissertation part I |
| Identify and formulate problem, and design required setup to carry out a research |
| Search appropriate literature for conceptual basis of research |
| Enlist the research methodology tools for data collection and analysis. |
| Communicate the research summery, research gaps and research objectives through an effective report |
| Dissertation part II |
| Simulate the designs using modern tool sets and validate through experimental methods |
| Validate and Analyze the results using multiple case. |
| Deduce conclusions and draw inferences worthy of publication |
| |

6. Department of Civil Engineering

A. Vision of Civil Engineering (UG)

To impart high technical competency amongst the students and strive for excellence towards addressing civil engineering challenges.

B. Mission of Civil Engineering(UG)

To make the department as hub of excellence by offering good research oriented learning environment & producing Industry ready Engineers.

To promote innovative logical thinking among the students to face new challenges and real time problems in Civil engineering

To provide quality based consultancy services to the communities for the development of the region

To encourage students to pursue higher education, excel in competitive exams and various career enhancement programs

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C. Program Educational Objective (PEO's) of Civil Engineering (UG)

PEO 1: To prepare students by bridging the gaps between the curriculum and industries requirement.

PEO 2: To prepare learners to use modern tools effectively to solve real life problems

PEO 3: To encourage and motivate learners for Consultancy Services.

PEO 4: To prepare learners for successful career in Indian and multinational organizations and to excel in post graduate studies.

D. Program Specific Outcomes (PSO's) of Civil Engineering (UG)

PSO1: Students will be able to generate drawing of civil engineering projects.

PSO2: Students will be able to perform analysis and design of civil engineering projects.

PSO3: Students will be able to make abstract and estimates of civil engineering projects.

L. Programme Outcomes (PO's) of Civil Engineering

Upon successful completion of the program, the students would have the following attributes.

PO 1: Ability to apply the basic knowledge of mathematics, science, mechanics to the solution of complex civil engineering problems in manner to develop engineering skills of students in various disciplines viz. structural analysis and design, water resources engineering and hydraulics, transportation engineering, environmental engineering, geotechnical engineering, construction technology and management, building planning & architecture etc.

PO 2: Ability to identify, formulate and analyze complex problems related to civil engineering and construction management reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: An ability to design different components of civil engineering structures using different materials and methods that fulfill desired specifications and requirements for Foundation, public health engineering and sewerage structures, irrigation and water resources schemes, hydraulic structures rigid and flexible pavements, buildings and bridge





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PO 4: Conducting reconnaissance survey and investigate geotechnical features of soil through exploration for civil engineering projects.

PO 5: Create, select and apply appropriate technique, resources and modern engineering tools including prediction and modeling to complex civil engineering activities with an understanding of the limitations.

PO 6: Apply reasoning informed by contextual knowledge to assess social health safety, legal and culture issues and consequent responsibilities relevant to professional civil engineering practices.

PO 7: Broadly understand the impact of the civil engineering solutions in society and environmental contexts, and demonstrate awareness of contemporary issues and need for sustainable development.

PO 8: Apply ethical principles committed to professional ethics, responsibilities and norms of engineering practices and regulatory Building Bye Laws.

PO 9: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary setting.

PO 10: Communicate effectively on complex engineering activities with the civil engineering organizations and with society such as being able to write effective and detailed report of the civil engineering project and make effective presentations on their project.

PO 11: Demonstrate knowledge for understanding civil engineering and management principles to apply these to one's own civil engineering project work as a member and leader in a team to manage projects in multidisciplinary environments.

PO 12: Ability to engage in independent and lifelong learning & adapt to rapid changes in civil engineering and its allied areas.

E. Course Outcomes (CO's) of Civil Engineering (UG)

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| Subject | Subject Name | CO Description |
|------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BT- 201 | Engineering Physics | The Coursework is designed to provide students the opportunity to learn key concepts of Wave nature of particles and the Schrodinger equation. |
| | | Student will able to understand the knowledge of Wave optics i.e. interference and diffraction. |
| | | To introduce the idea of solids like semiconductors (P type and N Type semiconductors), Diodes and Hall effect. Students will also be able to understand the basic concept of superconductivity. |
| | | To develop the understanding of Lasers, fiber optics and their applications in field of engineering sciences. |
| | | To provide you to basic understanding of Electrostatics in vacuum. |
| | | To introduce the fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems. |
| 10170207 | | To introduce the idea of applying differential and integral calculus to notions of curvature and to improper integrals. Apart from some applications it gives a basic introduction on Beta and Gamma function |
| BT- 102 | Mathematics-I | To develop the tool of power series and Fourier series for learning advanced Engineering Mathematics. |
| | | To familiarize the student with functions of several variables that is essential |
| | | in most branches of engineering |
| | | To develop the essential tool of matrices and linear algebra in a |
| | | comprehensive manner. |
| | | Understand the properties of material, stress strain. Properties of alloys and |
| | Basic Mechanical Engineering | cast iron. |
| | | Understand the concept measurement and machine tools their operations and |
| | | their applications. |
| BT- | | equation Pascal's law |
| 203 | | To Understand the concept of heat and temperature, law of thermodynamics, |
| | | boilers and their mountings and accessories, basic Refrigeration cycles and |
| | | its applications. |
| | | To Understand the working of different cycles and 4 strokes, 2 stroke engines |
| | | and their applications. |
| | Basic Civil | Students will acquire the basic knowledge in different fields of civil |
| | | engineering and materials used in construction. |
| | | Gain the ability to use modern survey equipment to measure angles and |
| BT- | Engineering & | distances. |
| 204 | Mechanics | Students will understand the basic of contour lines and map |
| | | Students will have the ability to identify, formulate and solve engineering |
| | | Students will be able to analyse beam for shear force and hending moment |
| | | Able to understand the basic applications of computers in various fields. |
| | | describe operating system, its role and functionalities and to apply concepts |
| BT- | Basic Computer | of MS word, MS power point, MS Excelefficiently. |
| 205 | Engineering | Discuss and apply simple algorithms for arithmetic and logical problems. |
| | gintering | Translate the algorithms to programs applyingobject-oriented concepts in |
| | | C++ programming angueses |

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| | 1 1 | commerce applications, impact of securitythreats and attacks on networking |
|------------|------------------------------------------------|----------------------------------------------------------------------------------|
| | | evidents and also security measures |
| | - | Understand the different method for representing and processing data and to |
| | | orderstand the different include for representing its various type of |
| | | get awareness about the impact of cloud company, as a |
| | | services. |
| | | Tearners to develop good listening skins. |
| | | Encourages learner to talk freely and lose their sityliess when talking in norm |
| BT- | Language Lab | of the people |
| 206 | & Seminars | To develop the overall personanty of the students by the protected and help in |
| 200 | | Helps in confidence building, motivation to be more presentable and help in |
| | | removing the stage fright |
| | | Develops speaking, writing, reading, listening and presentation skins. |
| | | Differentiate hard and soft water; solve the related numerical problems on |
| | | water purification and its significance in industry and daily me. |
| | | Select the lubricant for various purposes based on the type of |
| | | Machines. |
| | | Equipped with basic knowledge of polymer, methods of |
| BT- | Engineering | polymerization and various industrial applications of polymers |
| 101 | Chemistry | Draw the Phase diagrams of one & amp; two component systems and causes, |
| | | consequences and methods to minimize corrosion to improve industrial |
| | | designs. |
| | | Identify the structure of unknown/new compounds with the help of |
| | | spectroscopy and understand periodic properties such as ionization potential, |
| | | oxidation states and electro negativity |
| | | To introduce effective mathematical tools for the solutions of ordinary and |
| | | partial differential equations that model physical processes. |
| 111111111 | | To introduce the tools of differentiation and integration of functions of |
| BT- | Mathematics-II English for Communication | complex variable those are used in various techniques dealing engineering |
| 202 | | problems. |
| | | To acquaint the student with mathematical tools available in vector calculus |
| | | needed various field of science and engineering. |
| | | Effective use of verbal and non-verbal communication for enhanced soft skill |
| BT- | | beside enhanced reading comprehension as well |
| 103 | | Write the different kinds of letters, reports and technical writing. |
| 105 | Communication | Apply basic rules of grammar in both written as well as oral communication. |
| | | To introduce the concept of Basics of DC electrical Network including |
| | | network theorems. |
| | Basic Electrical | To introduce the concept of Basics of AC electrical Network(single phase & |
| BT- | Pasic Electrical | 3 phase). |
| 104 | Engineering | To study of law of Electromagnetism, introduction of transformer. |
| | Lingineering | To study of various electrical Machines. |
| | | To study Basic Concept Digital Electronics. |
| | - | Draw various types of scales, and curves. |
| BT- 105 | | Draw orthographic projections of points & lines |
| | Ducingaling | Draw orthographic projections of Planes & Solids |
| | Engineering | Draw ordiographic projection of random solids including cylinders, cones, prisms |
| | Graphics | Draw sections and development of solids including of interesting |
| | | Drawing using AUTOCAD. |
| | | Draw isomethories of rianes and onlines, Drawing doing reference |

Indore Institute Saturday, December 21, 2024



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| 1 | | Use hand and power tools for different manufacturing processes |
|------------|--------------------------------------------------------|---------------------------------------------------------------------------------|
| BT- 106 | | Operate machine tools while preparing any component |
| | Manufacturing | Select the appropriate tools required for specific operation. |
| | Practices | Comprehend the safety measures required to be taken while using the tools. |
| | | Prepare Foundry, Fitting, Carpentry, Welding and smithy Job. |
| | | Demonstrate the application of knowledge and skill sets acquired from the |
| | | course and workplace in the assigned job function/s |
| | | Solve real life challenges in the workplace by analysing work environment |
| | T | and conditions and selecting appropriate skill sets acquired from the course |
| DIE | Internship-1 (00 | Exhibit critical thinking and problem solving skills by analysing underlying |
| BI- | Hrs Duration) at | issue/s to challenges |
| 107 | the Institute | Demonstrate appreciation and respect for diverse groups of professionals by |
| | level | preserving harmoniously with different company stakeholders |
| | | Exhibit professional ethics by displaying positive disposition during |
| | | Exhibit professional carles of anopulying p |
| | | This course is to sensitize students about the socio-cultural aspects of the |
| | | This course is to sensitize students door in sensitive sensitize |
| | | Fural areas parocinal to their consiger |
| | | students are expected to observe, incongraphics, Literacy, Geographical |
| | Swachh Bharat | aspects of the Village ii Schemes of government of India and State of |
| | Summer | Madhua Bradesh in operation in the villages. |
| BT- | Internship | To aphance critical thinking by making them participate in social activities |
| 108 | Unnat Bharat Abhiyan (100Hrs)/ Rural Outreach | and imbibe human values among them. |
| | | Burget Surgeth Bharat Abhivan is to promote cleanliness and develop healthy |
| | | Kurai Swachin Bhatat Abilyan is to promote creating at a |
| | | Hands in people in vinages. |
| | | Unnat Bharat Ability and To build an understand an institutional capacity and |
| | | agenda within institutes of higher Education whose of rural India. |
| | | The determine the root finding techniques which can be used to solve practical |
| | Mathematics- | and an area problems also demonstrate the use of interpolation methods to |
| | | find intermediate values in given graphical and/or tabulated data. |
| | | Apply the concept of numerical analysis to find the relative strengths and |
| | | wasknesses of each computation method and know which are most |
| | | applicable for given problem also will be able to approximate and analysis |
| | | the errors obtained in the numerical solution of equations, ordinary, partial |
| D/7201 | | differential equations and simultaneous equations as well. |
| B1301 | Ш | To apply the analytical technique to express periodic function as a Fourier |
| | | series and acquire the concepts of Laplace transformation & amp; inverse |
| | | Laplace Transform with its property to solve Partial Differential equation and |
| | | Ordinary Differential Equation with given boundary conditions which is |
| | | beloful in all engineering & amp; research work. |
| | | Apply the concept of a random variable, probability distribution and their |
| | | apply the concept of a failed. |
| | | Linderstand the characteristics occurrence, classification, uses of the various |
| | Construction | conventional building materials. |
| CE302 | Construction | Understand the characteristics, classification, uses and defects of the various |
| 02002 | Material | other useful building materials |
| | | other userul building and grittes. |



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2023-2024

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|--------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | HOD | and Technipalogy, hode |
| BT307 | 90 hrs. Internship based on using varjous | Demonstrate the application of knowledge and skill sets acquired from the course and workplace in the assigned job function/s Solve real life challenges in the workplace by analysing work environment and conditions, and second appropriate skill sets acquired from the course |
| BT107 | Evaluation of Internship-I completed at I Year Level | Able to do a different Engineering analysis Able to explain the analysis in front of audience Understand the importance of available tools and its lifelong learning process. |
| | Engineering | Able to Integrate theory and practice Able to generate experience on various advance system and software. |
| CE306 | Historical and Ancient Civil Engineering | engineering practices in ancient structures. Student will be able to understand study with respect to civil engineering practices of historical structures. |
| | Study of | Understand the determination of torsion on shafts and able to analyze the problems based on combined bending and torsion and also able to analyze unsymmetrical bending in beams. Student will be able to understand study the various aspects of civil |
| CE305 | Strength of Material | Understand the importance of slope and deflection in a beam and to analyze it for different scenarios. Analyze the behavior of columns and struts under different loading conditions. |
| | | Understand the stress and strain calculation and its importance for different materials. Understand the analysis of bending moments and stresses generated on a beam subject to different load conditions. |
| | . in contraction of | The students able to deals with the architectural design aspects. The students able to Representation of a building on Paper. |
| E304 | Building Planning and Architecture | The students able to deals with the building planning, orientation and drawing. The students able to understand and deals with building services. |
| _ | | To give the knowledge of the hydrographic survey and photographic survey. The students able to understand and to draw various building components. |
| | | To understand the different types of curves and setting out methods of surveying. |
| E303 | Surveying | advanced surveying instruments this makes the surveying ease and rapid. To understand the determination of heights, distances, angels and elevations with the help of latest surveying instruments and different methods of |
| | | To introduce the principle of surveying and also impart awareness on the various fields of surveying and types of instruments. |
| | - | types. Understand the characteristics, occurrence, classification, uses of the Miscellaneous building materials. |
| | | Understand basic concepts of different types of paints and varnishes including composition, application on the different type of surfaces and |
| | | Understand basic knowledge of types of floors and roofs and also the basic flooring and roofing material. Get the knowledge about the types of pipes using in sanitary works. |



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| * | software's – Internship -II | Exhibit critical thinking and problem solving skills by analysing underlying |
|-----------------------------------------|--------------------------------|---------------------------------------------------------------------------------|
| | | issue/s to challenges |
| | | Demonstrate appreciation and respect for diverse groups of professionals by |
| | | engaging harmoniously with different company stakeholders |
| | | Exhibit professional ethics by displaying positive disposition during |
| | | internship |
| | | The student will be able to understand the concept of energy, energy sources, |
| | | transformation, efficiency and storage. |
| | | The student will be able to understand the concept of ecosystem, its structure |
| | | and function |
| | Energy & | The students will able to understand the concept of biodiversity and its |
| ES401 | Environmental | The students will able to understand the concept of charactery |
| | Engineering | The students will able to understand the various types of environmental |
| | | The students will able to understand the various types of environmental |
| | | pollution, its effects and control measures. |
| | | The student will able to understand sustainable and unsustainable |
| | | development. |
| | | Student will be able to design features and construction methods of |
| | | foundations. |
| | | Students will be proficient in knowledge of pile foundations and design and |
| | | construction features of different types of formworks and temporary |
| | 103 | structures. |
| CE402 | Construction | Student will be able to design and construction of all types of walls and |
| CL402 | Technology | masonry and other technologies associated with them. |
| | 2 C | Students will know about materials and methods used for construction of |
| | | floors and roofs |
| | | noors and roots. |
| | | Students will gain knowledge about plaining and construction of cardiquake |
| | | resistant buildings. |
| | | Student will be able to design features and construction methods of |
| | | foundations. |
| | Structural Analysis-I | Understand the characteristics, classification, uses and defects of the various |
| | | other useful building materials. |
| | | Understand basic knowledge of types of floors and roofs and also the basic |
| 00400 | | flooring and roofing material. Get the knowledge about the types of pipes |
| CE403 | | using in sanitary works. |
| | | Understand basic concepts of different types of paints and varnishes |
| | | including composition, application on the different type of surfaces and |
| | | types. |
| | | Students will gain knowledge about planning and construction of earthquake |
| | | registant buildings |
| | | Understand the principles used in transportation and different transportation |
| | | onderstand the principles used in transportation and different components of |
| | | systems and their importance as wen as understand different components of |
| | | rallways. |
| 020000000000000000000000000000000000000 | Transportation | Understand the analysis and design of stations, yards as well as signals used |
| CE404 | Engineering | in railways. |
| | Lingineering | Understand the importance site selection criteria for bridge construction and |
| | | will able to plan construction of bridges and their loading conditions. |
| | | Will able to identify and choose foundations for different sites of bridges as |
| | | well as analyze for their strength and testing under load conditions. |

HOD

Indore Institute of So and Principalogy,



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| Bit definition Inderstand the Geology Concept in civil engineering. Students are able to understand the mineralogy and crystallography structure. Students are able to classify the various types of Rock and its formation method. CE405 Remote Understand the Ceology Concept in civil engineering. Geology & Remote Understand the Ceology report. Understand the Ceology report. Understand the Ceology report. Understand the Isole to understand CAD and Auto Cad Students will be able to understand CAD and Auto Cad Students will be able to draw the basic geometric shapes. Students will be able to understand 3-D Modelling with auto cad. Students will be able to understand 3-D Modelling with auto cad. Student will be able to Learn and practice Draw commands, Modify commands, Dimensioning, Annotating in AutoCAD and Drawing plan, section and elevation of 1 BHK house. 90 hrs Solve real life challenges in the workplace by analysing work environment and conditions, and selecting appropriate skill sets acquired from the course and workplace in the assigned job function's 90 hrs Solve real life challenges in the workplace by analysing work environment and conditions, and selecting appropriate skill sets acquired from the course and workplace in the assigned point skills by analysing underlying issue's to challenges in the workplace role ya analysing work environment and conditions, and selecting appropriate skill sets acquired from the course and workplace in the assigned po | | | Understand the types and methods of surveys and alignments for tunnels and |
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| BT408 Exhibit professional ethics by displaying positive disposition during internship Analyze and evaluate the cyber security needs of an organization. Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation. BT408 Cyber Security Measure the performance and troubleshoot cyber security systems. Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools. Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators Understand the basics of fluid flow and pressure in fluids at rest and also Analyze the condition of stability of a body in a fluid based on relative positions of its center of buoyancy and Meta Centre. Analyze the behavior of fluid at rest and in motion with concepts of fluid statics, kinematics and dynamics. S01 Mechanics I CE- Fluid S02 Engineering II S03 Engineering II S04 HOD | | Internship-II | engaging harmoniously with different company stakeholders |
| BT408 Cyber Security Analyze and evaluate the cyber security needs of an organization. BT408 Cyber Security Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation. BT408 Cyber Security Measure the performance and troubleshoot cyber security systems. Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools. Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators Understand the basics of fluid flow and pressure in fluids at rest and also Analyze the condition of stability of a body in a fluid based on relative positions of its center of buoyancy and Meta Centre. Analyze the behavior of fluid at rest and in motion with concepts of fluid statics, kinematics and dynamics. S01 Mechanics I Apply Bernoulli's equation to fluid flow problems involving venturimeter, orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. Analyze the flow through pipes and the major and minor energy losses. Understand basic concepts of model study are also developed along with laws of similarity and similitude. CE- Transportation S02 Engineering II S04 Understand the basics of Highway alignment, able to find out the Stopping Sight distance, for this man Sight Distance and Extra Widening at curves. HOD HOD | | * | Exhibit professional ethics by displaying positive disposition during |
| BT408 Cyber Security Analyze and evaluate the cyber security needs of an organization. Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation. Measure the performance and troubleshoot cyber security systems. Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools. Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators CE- 501 Understand the basics of fluid flow and pressure in fluids at rest and also Analyze the condition of stability of a body in a fluid based on relative positions of its center of buoyancy and Meta Centre. Analyze the behavior of fluid at rest and in motion with concepts of fluid statics, kinematics and dynamics. Apply Bernoulli's equation to fluid flow problems involving venturimeter, orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. Analyze the flow through pipes and the major and minor energy losses. Understand basic concepts of model study are also developed along with laws of similarity and similitude. CE- 501 Transportation Engineering II Understand the basics of Highway alignment, able to find out the Stopping Sight distance, Gvalidang Sight Distance and Extra Widening at curves. HOD Engineering Sight distance, Gvalidang Sight Distance and Extra Widening at curves. | | | internship |
| BT408 Cyber Security Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation. BT408 Cyber Security Measure the performance and troubleshoot cyber security systems. Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools. Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators Understand the basics of fluid flow and pressure in fluids at rest and also Analyze the condition of stability of a body in a fluid based on relative positions of its center of buoyaney and Meta Centre. Analyze the behavior of fluid at rest and in motion with concepts of fluid statics, kinematics and dynamics. Sol1 Mechanics I CE- 501 Mechanics I CE- 501 Transportation Engineering II CE- 502 Transportation Engineering II HOD Engineering Sight distance of Highway alignment, able to find out the Stopping Sight distance of Sight Cale | | | Analyze and evaluate the cyber security needs of an organization. |
| BT408 Cyber Security reduce the risk of exploitation. Measure the performance and troubleshoot cyber security systems. Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools. Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators CE- 501 Understand the basics of fluid flow and pressure in fluids at rest and also Analyze the condition of stability of a body in a fluid based on relative positions of its center of buoyancy and Meta Centre. Analyze the behavior of fluid at rest and in motion with concepts of fluid statics, kinematics and dynamics. CE- 501 Fluid Mechanics I Apply Bernoulli's equation to fluid flow problems involving venturimeter, orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. Analyze the flow through pipes and the major and minor energy losses. Understand basic concepts of model study are also developed along with laws of similarity and similitude. CE- 502 Transportation Engineering II Understand the basics of Highway alignment, able to find out the Stopping Sight distance, Gwellenge Sight Distance and Extra Widening at curves. HOD HOD HOD HOD | | | Determine and analyze software vulnerabilities and security solutions to |
| BT408 Cyber Security Measure the performance and troubleshoot cyber security systems. Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools. Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators CE- 501 Understand the basics of fluid flow and pressure in fluids at rest and also Analyze the condition of stability of a body in a fluid based on relative positions of its center of buoyancy and Meta Centre. Analyze the behavior of fluid at rest and in motion with concepts of fluid statics, kinematics and dynamics. CE- 501 Mechanics I Apply Bernoulli's equation to fluid flow problems involving venturimeter, orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. Analyze the flow through pipes and the major and minor energy losses. Understand basic concepts of model study are also developed along with laws of similarity and similitude. CE- 502 Transportation Engineering II Understand the basics of Highway alignment, able to find out the Stopping Sight distance, Gwelling Sight Distance and Extra Widening at curves. HOD HOD HOD | | | reduce the risk of exploitation. |
| B1408 Cyber Security Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools. Comprehend and execute risk management processes, risk treatment methods, and key risk and performance indicators Understand the basics of fluid flow and pressure in fluids at rest and also Analyze the condition of stability of a body in a fluid based on relative positions of its center of buoyancy and Meta Centre. CE- Fluid Analyze the behavior of fluid at rest and in motion with concepts of fluid statics, kinematics and dynamics. CE- Mechanics I Apply Bernoulli's equation to fluid flow problems involving venturimeter, orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. Analyze the flow through pipes and the major and minor energy losses. Understand basic concepts of model study are also developed along with laws of similarity and similitude. CE- Transportation Understand the basics of Highway alignment, able to find out the Stopping Sight distance, the study of Highway alignment, able to find out the Stopping Sight distance, the study of t | | | Measure the performance and troubleshoot cyber security systems. |
| CE- Fluid S01 Mechanics I CE- Fluid Mechanics I Analyze the behavior of fluid at rest and dynamics. Analyze the behavior of fluid flow problems involving venturimeter, orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. Analyze the flow through pipes and the major and minor energy losses. Understand the basics of Highway alignment, able to find out the Stopping Sight distance, Gwertlang, Sight Distance and Extra Widening at curves. HOD HOD | B1408 | Cyber Security | Implement cyber security solutions and use of cyber security, information |
| CE- Fluid CE- Transportation HOD HOD Ce- HOD CE- HOD CE- HOD CE- HOD CE- HOD CE- HOD CE- HOD CE- HOD CE- HOD CE- HOD CE- HOD CE- CE- HOD CC- HOD CC- CC- HOD CC- CC- CC- CC- CC- CC- CC- CC | | | assurance, and cyber/computer forensics software/tools. |
| CE- Fluid Analyze the condition of stability of a body in a fluid based on relative positions of its center of buoyancy and Meta Centre. S01 Mechanics I Analyze the behavior of fluid at rest and in motion with concepts of fluid statics, kinematics and dynamics. S01 Mechanics I Apply Bernoulli's equation to fluid flow problems involving venturimeter, orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. Analyze the flow through pipes and the major and minor energy losses. Understand basic concepts of model study are also developed along with laws of similarity and similitude. CE- Transportation Understand the basics of Highway alignment, able to find out the Stopping Sight distance, Gweitlame Sight Distance and Extra Widening at curves. HOD HOD | | | Comprehend and execute risk management processes, risk treatment |
| CE- Fluid Mechanics I CE- Transportation HOD HOD Understand the basics of fluid flow and pressure in fluids at rest and also Analyze the condition of stability of a body in a fluid based on relative positions of its center of buoyancy and Meta Centre. Analyze the behavior of fluid at rest and in motion with concepts of fluid statics, kinematics and dynamics. Apply Bernoulli's equation to fluid flow problems involving venturimeter, orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. Analyze the flow through pipes and the major and minor energy losses. Understand basic concepts of model study are also developed along with laws of similarity and similitude. Note the basics of Highway alignment, able to find out the Stopping Sight distance, Gventilaring Sight Distance and Extra Widening at curves. HOD | | | methods, and key risk and performance indicators |
| CE- Transportation 502 HOD HOD HOD HOD HOD HOD HOD HOD | | | Understand the basics of fluid flow and pressure in fluids at rest and also |
| CE- 501 Fluid positions of its center of buoyancy and Meta Centre. Analyze the behavior of fluid at rest and in motion with concepts of fluid statics, kinematics and dynamics. Analyze the behavior of fluid flow problems involving venturimeter, orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. Analyze the flow through pipes and the major and minor energy losses. Understand basic concepts of model study are also developed along with laws of similarity and similitude. CE- 502 Transportation Engineering II Understand the basics of Highway alignment, able to find out the Stopping Sight distance, Gventiating Sight Distance and Extra Widening at curves. HOD HOD | | | Analyze the condition of stability of a body in a fluid based on relative |
| CE- Transportation HOD HOD HOD HOD Fluid Analyze the behavior of fluid at rest and in motion with concepts of fluid statics, kinematics and dynamics. Apply Bernoulli's equation to fluid flow problems involving venturimeter, orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. Analyze the flow through pipes and the major and minor energy losses. Understand basic concepts of model study are also developed along with laws of similarity and similitude. Principal Indore InBtinejal | | | positions of its center of buoyancy and Meta Centre. |
| CE- 501 Fluid Mechanics I statics, kinematics and dynamics. Apply Bernoulli's equation to fluid flow problems involving venturimeter, orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. Analyze the flow through pipes and the major and minor energy losses. Understand basic concepts of model study are also developed along with laws of similarity and similitude. CE- 502 Transportation Engineering II Understand the basics of Highway alignment, able to find out the Stopping Sight distance, Gventiding Sight Distance and Extra Widening at curves. HOD Engineering II Fluid Indore InBrincipal of Indore InBrincipal Ocean Indore InBrincipal Ocean Indore InBrincipal | | | Analyze the behavior of fluid at rest and in motion with concepts of fluid |
| 501 Mechanics I Apply Bernoulli's equation to fluid flow problems involving venturimeter, orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. 501 Analyze the flow through pipes and the major and minor energy losses. Analyze the flow through pipes and the major and minor energy losses. Understand basic concepts of model study are also developed along with laws of similarity and similitude. CE- Transportation S02 Engineering II Sight distance, Georgian Sight Distance and Extra Widening at curves. HOD Understand the basic of Highway alignment, able to find out the Stopping Sight Distance and Extra Widening at curves. | CE- | Fluid | statics, kinematics and dynamics. |
| Orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. Analyze the flow through pipes and the major and minor energy losses. Understand basic concepts of model study are also developed along with laws of similarity and similitude. CE- Transportation Sight distance, divertising Sight Distance and Extra Widening at curves. HOD | 501 | Mechanics I | Apply Bernoulli's equation to fluid flow problems involving venturimeter. |
| CE- Transportation Sight distance, Giventiating Sight Distance and Extra Widening at curves. HOD | | | orifice meter, pitot tube, orifices, mouthpieces, notches and weirs. |
| CE- 502 Transportation Engineering II Understand basic concepts of model study are also developed along with laws of similarity and similitude. CE- 502 Transportation Engineering II Understand the basics of Highway alignment, able to find out the Stopping Sight distance, Gwohldwarg Sight Distance and Extra Widening at curves. HOD HOD HOD | | | Analyze the flow through pipes and the major and minor energy losses. |
| CE- Transportation 502 Engineering II Sight distance, Gweildung Sight Distance and Extra Widening at curves. HOD HOD | | | Understand basic concepts of model study are also developed along with laws |
| CE- Transportation Engineering II Understand the basics of Highway alignment, able to find out the Stopping Sight distance, Gweillang Sight Distance and Extra Widening at curves. HOD Principal Indore InBrincipal | | | of similarity and similitude. |
| 502 Engineering II Sight distance, Overliking Sight Distance and Extra Widening at curves. 502 Engineering II Sight distance, Overliking Sight Distance and Extra Widening at curves. HOD Fincipal Indore InBrincipal | CE- | Transportation | Understand the basics of Highway alignment, able to find out the Stopping |
| HOD HOD Indore InPrincipal | 502 | Engineering II | Sight distance, Gyodiana Sight Distance and Extra Widening at curves. |
| HOD HOD IN LOAC | 1 | _ Engineering II | Children and the state of the s |
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and Technology, Indore Saturday, December 27, 2024

Indore Institute of Science & Technology

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| | | Understand the Seal Coal, Take Coal, Summer |
|-------------|----------------------------------------|----------------------------------------------------------------------------------|
| | | Understand the Channelized and un-channelized intersection, rotary design |
| | | elements and traffic lights design. |
| | | Analyze the Runway Orientation, read the Wind Rose diagram, able to apply |
| | | the runway length correction. |
| | | Understand the threshold lighting, taxiway lighting, and traffic control |
| | | equipment like ILS- Instrument Landing System, PAR- Precision Approach |
| | | Radar |
| | | Students understood the purpose, importance and types of estimates. |
| | Departmental | Students are able to analyze the rates of various items of work. |
| | Elective - | Students learned to prepare the estimates of various types of construction |
| E - | Quantitative | works. |
| 03 | Surveying and | Students gained the knowledge of all the terms, rules and regulations of |
| | Costing | estimating. |
| | | Students understood the purpose, importance and methods of valuation. |
| | | Students will be able to understand planning process of an urban area to |
| | | surveys conducted for urban development and designing in relation that |
| | | spatial organization, utility, demand of the area and supply considering return |
| | | growth of an urban area. |
| | | Students shall know about Urban Planning agencies and their functions. This |
| | | public participation in planning, development control regulations, |
| | Onon Elective- | sustainability, components of sustainable urban and regional development |
| CE - | Urban Town | and emerging concepts for city. |
| 504 | ord Planning | Students will gain complete knowledge about town and could y planning det, |
| | and Planning | building bye-laws, elements of city planning, landscaping and urbail planning |
| | | standards. |
| | | Students shall know about traffic transportation systems and management for |
| | | urban roads considering Legal issues in planning and professional plactice |
| | | for preparation of DPR. |
| | | Students will be able to understand types of development plans and water |
| | | Supply & sanitation for urban areas, planning agencies and then purpose. |
| | | Students are able to prepare detailed estimates of buildings. |
| | Quantity surveying & Costing Lab | Students are able to prepare the detailed estimate for services of planoing |
| OF | | and water supply or Electrification work |
| CE - | | Students are able to prepare the detailed estimate for earlier work for the road |
| 505 | | construction or arched culvert. |
| | | Students are able to learn the analysis of rates of various items of work |
| | | Students are able to learn preparation of DPR of Civil Englicering Floreet |
| | | Students able to apply and understand the significance of various type of |
| | 1 | Cement Test |
| | | Students able to apply and understand the significance of various type of |
| CE - 506 | A | Aggregate Test |
| | - Material | Students able to apply and understand the significance of various type of |
| | Testing Lab | workability Test of Concrete |
| | | Students able to apply the Mix Design of Concrete |
| | | Students able to apply and understand the significance of various type of |
| | | Concrete Test Science Princip |
| | 5 | Able to Integrate theory and graatice of Civil Engineering |
| | | |
| | J | lat with a |

Saturday, December 21, 2024

Science



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2023-2024

| | 1 | |
|------------|-----------------------------------------------------------|---------------------------------------------------------------------------------|
| | | Able to generate experience on various advance system and software of Civ |
| | | Engineering |
| CE- 507 | Evaluation of | Able to do a different Civil Engineering analysis |
| | Internship-II | Able to explain the analysis in front of audience |
| | | Understand the importance of available tools and its lifelong learning |
| | | process. |
| | | Introspect & develop a planned approach towards his career & life in genera |
| | | Have clarity on his career exploration process and to match his skills ar |
| CF - | Field Visit, | interests with a chosen career path. |
| 508 | Case Study and | Explain the use of functional and chronological resume. |
| 200 | Seminar | Develop thinking ability and polish his expression in group discussions. |
| | | Be prepared for the personal interview through mock interviews while bein |
| | | aware of the various kinds of interviews |
| | | Students understood the purpose, importance of design and Basic Principle |
| | Structural | of Structural Design. |
| CE601 | Design and | Students are understood that how to analyze and Design the Beams. |
| CLOUI | Design and | Students understood that how to analyze and Design the slab. |
| | Drawing | Students understood that how to analyze and Design the column and footing |
| | | Students understood that how to Design the Staircases. |
| | | Students will be able to understand Estimation of Water Quality and |
| | | Population forecasting. |
| | | Students shall know about design of Sewer for waste-water. |
| | E | Students will gain complete knowledge Quality of water and Wastewater ar |
| CE 602 | Environmental | its analysis. |
| | Engineering I | Students shall know about Treatment methods and design of water treatment |
| | | units |
| | | Students will be able to understand Wastewater Treatment Technologies an |
| | | waste water treatment units |
| | | The student will be able to understand the concept of irrigation along with |
| | | different types of irrigation schemes. The concepts of soil water plat |
| | | relationship along with crop water requirement are also developed. |
| | | The student will be able to understand the concept of ground water and we |
| | Departmental Elective-Water Resource Engineering | irrigation. |
| CE 603 | | The students will able to do assessment of available water and hydrologi |
| | | analysis including precipitation analysis, rainfall Runoff process, and desig |
| | | flood estimation along with hydrograph analysis |
| | | The students will able to do detailed design of canal and other cana |
| | | structures |
| | | The student will able to estimate the flood by various methods |
| | | Understand the basic concept of turbulent flow, could be able to design nin |
| | | network and analyze the problems based on pine flow |
| | 1.00 | Analyze the behavior of fluid in open channel during Uniform flow and als |
| - | Open Elective- | able to design open channel for such condition |
| CE 604 | Fluid | Analyze the behavior of fluid in open channel during Non Uniform flow |
| | Mechanics-II | and also able to design open channel for such condition |
| | Weenanies-II | Analyze the various immersed badies |
| | | Understand kneisen and Eluid merking and deriver to the |
| | | turbines and design, characteristics of turbines and design, characteristics of |
| TE 605 | F | Students and permiss. |
| E 005 | 1/ | Students apre to understand the various Advance Surveying Tools |
| A | 1 | Principal |
| (4) | HOD | Principalente of |
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| | | Students able to analyse leveling work |
|-------------|--------------------------|---------------------------------------------------------------------------------|
| | Advance surveying lab | Students able to survey a field by Traversing |
| | | Students understand the significance of surveying |
| | | Students able to work on a surveying instrument on construction site |
| | | Student will be able to examine the Soundness and Strength of Structura |
| 00 000 | Non | components by study of Rebound Hammer Test. |
| CE 606 | Destructive | Student will be able to examine the Compactness, homogeneity and air voids |
| | Testing Lab | of an existing structure by study of UPV Test. |
| | | Able to Integrate theory and practice of Civil Engineering |
| | | Able to generate experience on various advance system and software of Civil |
| 00 007 | Terrest in TT | Able to do a different Civil Engineering analysis |
| CE 607 | Internship-III | Able to do a different Civil Eligineering analysis |
| | | Able to explain the analysis in noni of audience |
| | | Understand the importance of available tools and its melong learning |
| | | process. |
| | | Introspect & develop a planned approach towards his career & file in Civil |
| | | Engineering. |
| | | Have clarify on his career exploration process and to match his skins and |
| CE 608 | Minor Project II | Interests with a chosen career path. |
| | | Explain the use of functional and chronological resumes. |
| | | Develop thinking ability and polish his expression in group discussions. |
| | | Be prepared for the personal interview through mock interviews while being |
| | | aware of Civil Engineering |
| | | Understand the soil formation, terminologies of soil properties and there |
| | | relation. Able to classify the type of soil. |
| | | Able to determine the coefficient of permeability and permeability of layered |
| | | soil. Understand the application of flow net, quick condition and Laplace |
| | | equation for two dimensional flow |
| CE - | Geotechnical | Understand the Boussinesqs and Westergards theory, Newmarks influence |
| 701 | Engineering | chart for irregular areas. Understand the factors affecting the compaction of |
| | | soil |
| | | Understand the type of Consolidation of soil, Terzaghi's One Dimensional |
| | | Consolidation theory and method of finding coefficient of consolidation |
| | | Understand the type of Shear Stress test i.e., Direct Shear test, Iriaxial test |
| | | and Vane Shear test. Able to understand the monr colomb shear strength |
| | | envelope and failure envelope. Understand the soil stabilization |
| | | Students will be able to understand theory and design of preliminary |
| | | treatment units of waste-water treatment. |
| | | Students shall know about methods, theory and design of Biologica |
| | Departmental | Treatment of waste-water treatment. |
| CE - 702 | Elective- | Students will gain complete knowledge about Advanced Waste-water |
| | Environmental | treatment methods. |
| | Engineering-II | Students shall know about Air pollution its classification and characterization |
| | | and effects. |
| | | Students will be able to understand meteorological aspects of Air pollution |
| | | chemistry. |
| CE - | Open Elective- | Understand applect characteristics and various stages of a project. |
| 703 | Project | Understand the conceptual cause about project organization and reastoring |
| | Management | analyses Avlarket, Technical uspancial and Economic. |
| ~ |)/ | Indore Institut |

and Technology, Indore



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| 1 | 1 | Analyze the learning and understand techniques for Project planning, |
|----------------|-----------------|--------------------------------------------------------------------------------|
| | Ļ | scheduling and Execution Control |
| | | Understand the contract management, Project Production and production |
| | | Understand the Documentation and Control are practiced in the industry |
| | | Students able to fabricate caste and test prestressed concrete beam and test |
| | Prestressed | for strength and deflection behaviour. |
| CE - | Concrete | Students able to fabricate caste and test presidence concrete court and the |
| /04 | Structures Lab | with different layout of cable for strength and defection benutrour. |
| | | students are able to fabricate the different presuressed structure |
| | | Explain what Internet of Things is. |
| | | Describe key technologies in Internet of Things and RFID. |
| 1.1 | t | Understand Principles for Web Connectivity and Communication Protocols |
| CE 705 | IoT Lab | Explain Wireless Sensor Network Technology and Sensor data |
| | | Communication Protocols. |
| 1 | | Understand smart city streetlights control & monitoring and Business models |
| | | for the Internet of Things |
| | | Introspect & develop a planned approach towards his career & life in Civil |
| | | Engineering. |
| | | Have clarity on his career exploration process and to match his skills and |
| CE - | | interests with a chosen career path. |
| 706 | Major Project-I | Explain the use of functional and chronological resumes. |
| /00 | | Develop thinking ability and polish his expression in group discussions. |
| | | Be prepared for the personal interview through mock interviews while being |
| | | aware of Civil Engineering |
| | | Able to Integrate theory and practice of Civil Engineering |
| | | Able to generate experience on various advance system and software of Civil |
| | | Engineering |
| CE - | Evaluation of | Able to do a different Civil Engineering analysis |
| 707 | Internship -III | Able to explain the analysis in front of audience |
| | | Understand the importance of available tools and its lifelong learning |
| | 9 | process |
| | | Student are able to understand the Structural Design and Connection Design |
| | | Students are able to design Compression and Tension member |
| CE- | Design of Steel | Students are able to design Flexural member |
| 801 | Structures | Students are able to design Column and Column Bases |
| | | Students are able to Design Industrial Buildings |
| | | Students are able to understand Selection of foundation and Sub-soi |
| | | exploration/investigation |
| | D () 1 | Students shall know about design and analysis of Shallow Foundation. |
| | Departmental | Students shall know dood doog for design and analysis of Pile |
| CE - | Elective- | foundations |
| 802 | Foundation | Students shall know about Foundations on problematic soil & Introduction |
| | Engineering | to Geo synthetics methods and technique. |
| | | Students will be able to understand various earth pressure theories. |
| CE - 803 | | By Comilier with terminology used in this area |
| | Open Elective- | Be familiar with terminology used in this area |
| | Artificial | Explain what constitutes Artificial Intelligence and a stifficial Intelligence |
| | Intelligence | With Artificial Internet Strawledge-based systems |
| | | Know now to build support and vicego based systems Principa |
| | 11 | 15/ hard institute o |
| K | // | Indore instructor |
| (\mathbf{n}) | HOD | is iolans is and technology, |
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| | | Page 05 of USS Saturday, December |

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| | | Have ability to apply knowledge representation, reasoning, and machine learning techniques to realworld problems |
|-------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| CE - 804 | Earthquake Resistant Structures | The students will be able to evaluate seismic forces for various structures as per relevant Indian standards |
| | | The students will be able to design and ductile detailing of structures for seismic resistance as per Indian standards |
| | | The students will be able to apply concepts of repair and rehabilitation of earthquake affected structures |
| CE 805 | Major Project- II | Introspect & develop a planned approach towards his career & life in Civil Engineering. |
| | | Have clarity on his career exploration process and to match his skills and interests with a chosen career path. |
| | | Explain the use of functional and chronological resumes. |
| | | Develop thinking ability and polish his expression in group discussions. |
| | | Be prepared for the personal interview through mock interviews while being aware of Civil Engineering |

HOD



Principal

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Page 66 of 140



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7. Department of Chemical Engineering

A. Vision of Chemical Engineering (UG)

To be one of the outstanding departments for its education and research in the field of Chemical Engineering and strive for holistic development of the students.

B. Mission of Chemical Engineering (UG)

Strive for academic excellence in Chemical Engineering through well designed course curriculum, effective classroom pedagogy, in-depth knowledge of laboratory work and computing technologies.

Incubate, apply and spread innovative ideas by collaborating with relevant industries through focused research groups and transforming the Chemical Engineering Department as a leader in imparting Quality Education and Research.

Transform undergraduate engineering students into technically competent, socially responsible and ethical professionals through continuous team work by a group of committed faculty members.

C. Program Educational Objective (PEO's) of Chemical Engineering (UG)

Impart broad technical knowledge in chemical engineering discipline with research attitude, problem solving techniques and hands on skill.

Provide a successful career with professional ethics and responsibilities as a leading or participating role in chemical engineering, R & D organization, academia, and other fields orto pursue higher studies.

Identify and solve engineering problems using a scientific research approach with their sound engineering base (Engineering Basics) and with the knowledge of contemporary global issues.

D. Program Specific Outcomes (PSO's) of Chemical Engineering (UG)

A graduate of the Chemical Engineering Program will demonstrate:

PSO1

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Ability to analyze different physical, chemical and biological systems/processes by applying the knowledge of unit operations and unit processes.

PSO2

Ability to automate and control processes/systems by designing an environment friendly system for effective reaction, separation and purification and other operations in various processes with proper safety measures using modern engineering tools and simulators

PSO3

Ability to acquire high end industry centric skills in the field of Chemical Engineering with professional ethics for the benefit of society.

E. Programme Outcomes (PO's) of Chemical Engineering (UG)

PO 1: Engineering Knowledge: An ability to understand and solve real chemical engineering problems by establishing the relationship between mathematics, basic sciences , engineering sciences and aptitude.

PO 2: Problem Analysis: An Ability to identify, analyze and resolve chemical engineering problem by deep knowledge of laboratory work, latest software tools & computing technologies, self-study, participation and professional development courses.

PO 3: Design/ Development of Solution: An ability to identify and resolve the problems relevant with design of various component of industrial production process.

PO 4: Conduct Investigation of problem: An ability to use research based knowledge and by reviewing research literature reaching substantial conclusion by applying principle of mathematics, natural sciences and chemical engineering science.

PO 5: Modern Tool Usage: An Ability to select and apply appropriate method, resource, modern technique and engineering tools to complex chemical engineering activities.

PO 6: The Engineer and Society: An understanding of the ethical, societal, health, safety, legal and cultural issues and consequent responsibilities relevant to Chemical Engineering Technology practice.

PO 7: Environment and Sustainability: An Ability to take societal, environmental and economical considerations into account in professional activities.

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PO 8: Ethics: An Ability to apply ethical principles, professional ethics and responsibilities of the chemical engineering practice.

PO 9: Individual and team work: An Ability to conduct team work (within the discipline, inter-disciplinary, multidisciplinary)

PO 10: Communication: An ability to communicate verbally, in writing and audio-visually in industrial activities performance.

PO 11: Project Management and Finance: An Ability to conduct experiment, management task and do engineering design for multidisciplinary project.

PO 12: Life Long Learning: An ability to engage in independent and life-long learning in specialized technologies and contemporary issues.

| Univ. Subject Code | Subject Name | CO Description |
|--------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BT- 201 | Engineering Physics | The Coursework is designed to provide students the opportunity to learn key concepts of Wave nature of particles and the Schrodinger equation. Student will able to understand the knowledge of Wave optics i.e. |
| | | interference and diffraction. To introduce the idea of solids like semiconductors (P type and N Type semiconductors), Diodes and Hall effect. Students will also be able to understand the basic concept of superconductivity. |
| | | To develop the understanding of Lasers, fiber optics and their applications in field of engineering sciences. |
| | | To provide you to basic understanding of Electrostatics in vacuum. |
| BT- 102 | Mathematics-I | To introduce the fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems. |
| | | To introduce the idea of applying differential and integral calculus to notions of curvature and to improper integrals. Apart from some applications it gives a basic introduction on Beta and Gamma function |
| | | To develop the tool of power series and Fourier series for learning advanced Engineering Mathematics. |
| | | To familiarize the student with functions of several variables that is essential in most branches of engineering |
| | | To develop the essential tool of matrices and linear algebra in a comprehensive manner. |
| BT- 203 | Basic Mechanical Engineering | Understand the properties of material, stress strain. Properties of alloys |
| | | and cast iron. Understand the concept measurement and machine tools their operations and their applications |
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F. Course Outcomes (CO's) of Chemical Engineering (UG)



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| | | Understand the concept of fluid flow, properties of fluid, Bernoull's |
|------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | To Understand the concept of heat and temperature, law of thermodynamics, boilers and their mountings and accessories, basic Refrigeration cycles and its applications. |
| | | To Understand the working of different cycles and 4 strokes, 2 stroke engines and their applications. |
| BT- 204 | Basic Civil Engineering & | Students will acquire the basic knowledge in different fields of civil engineering and materials used in construction. |
| | Mechanics | Gain the ability to use modern survey equipment to measure angles and distances. |
| | | Students will understand the basic of contour lines and map |
| | | problems related to Engineering Mechanics: Statics |
| | | Students will be able to analyse beam for shear force and bending moment. |
| BT- | Basic Computer | Able to understand the basic applications of computers in various fields, |
| 205 | Engineering | describe operating system, its role and functionalities and to apply |
| | | concepts of MS word, MS power point, MS Excelefficiently. |
| | | Discuss and apply simple algorithms for arithmetic and logical problems. |
| | | Translate the algorithms to programs applyingobject-oriented concepts in |
| | | C++ programming language. |
| | | Understand basics of computer networks, OSI layers and protocols, E |
| | | networking systems and also security measures |
| | | Understand the different method for representing and processing data and |
| | | to get awareness about the impact of cloud computing, its various type of services. |
| BT- | Language Lab & | learners to develop good listening skills. |
| 206 | Seminars | Encourages learner to talk freely and lose their shyness when talking in front of the people |
| | a | To develop the overall personality of the students by the practical activities |
| | | Helps in confidence building, motivation to be more presentable and help in removing the stage fright |
| | | Develops speaking, writing, reading, listening and presentation skills. |
| BT- 101 | Engineering Chemistry | Differentiate hard and soft water; solve the related numerical problems on water purification and its significance in industry and daily life. |
| | | Select the lubricant for various purposes based on the type of Machines. |
| | | Equipped with basic knowledge of polymer, methods of polymerization and various industrial applications of polymers |
| | | Draw the Phase diagrams of one & amp; two component systems and causes, consequences and methods to minimize corrosion to improve inductial decisions. |
| | | Identify the structure of unknown/new compounds with the help of spectroscopy and understand periodic properties such as ionization potential, oxidation states and electro negativity |
| BT- | Mathematics-II | To introduce effective mathematical tools for the solutions of ordinary and |
| 202 | | partial differential aquations that model physical processes |

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| | | To introduce the tools of differentiation and integration of functions of complex variable those are used in various techniques dealing engineering problems. To acquaint the student with mathematical tools available in vector |
|------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | calculus needed various field of science and engineering. |
| BT- 103 | English for Communication | Effective use of verbal and non-verbal communication for enhanced soft skill beside enhanced reading comprehension as well |
| | | Write the different kinds of letters, reports and technical writing. |
| | | Apply basic rules of grammar in both written as well as oral communication. |
| BT- | Basic Electrical & | To introduce the concept of Basics of DC electrical Network including |
| 104 | Electronics | network theorems. |
| | Engineering | To introduce the concept of Basics of AC electrical Network(single phase & 3 phase). |
| | | To study of law of Electromagnetism, introduction of transformer. |
| | | To study of various electrical Machines. |
| | | To study Basic Concept Digital Electronics. |
| BT- | Engineering | Draw various types of scales, and curves. |
| 105 | Graphics | Draw orthographic projections of points & lines |
| | | Draw orthographic projections of Planes & Solids |
| | | Draw sections and development of solids including cylinders, cones, |
| | | prisms and pyramids. |
| | | Draw isometric views of Planes and Solids, Drawing using AUTOCAD. |
| BT- | Manufacturing | Use hand and power tools for different manufacturing processes |
| 106 | Practices | Operate machine tools while preparing any component |
| | | Select the appropriate tools required for specific operation. |
| | | Comprehend the safety measures required to be taken while using the tools. |
| | | Prepare Foundry, Fitting, Carpentry, Welding and smithy Job. |
| BT- | Internship-I (60 | Demonstrate the application of knowledge and skill sets acquired from the |
| 107 | Hrs Duration) at | course and workplace in the assigned job function/s |
| | the Institute level | Solve real life challenges in the workplace by analysing work environment and conditions, and selecting appropriate skill sets acquired from the |
| | | course |
| | | Exhibit critical thinking and problem solving skills by analysing |
| | | underlying issue/s to challenges |
| | | Demonstrate appreciation and respect for diverse groups of professionals |
| | 1 | by engaging harmoniously with different company stakeholders |
| | | Exhibit professional ethics by displaying positive disposition during |
| | | internship |
| BT- | Swachh Bharat | This course is to sensitize students about the socio-cultural aspects of the |
| 108 | Summer | rural areas parochial to their colleges. |
| | Internship Unnat | Students are expected to observe, investigate and learn about the following |
| | Bharat Abhiyan | aspects of the rural region: i. Demographics, Literacy, Geographical |
| | (100Hrs)/ Rural | parameters of the Village; ii. Schemes of government of India and State |
| | Outreach | of Madhya Pradesh in operation in the villages. |
| | | To enhance critical thinking by making them participate in social activities |
| | | and imbibe human values among them. |

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| | | 2023-2024 |
|-------|-------------------|-----------------------------------------------------------------------------------|
| 1 | 1 | Rural Swachh Bharat Abhiyan is to promote cleanliness and develop |
| | | healthy habits in people in villages. |
| - 1 | | Unnat Bharat Abhiyan: To build an understanding of the development |
| - | | agenda within institutes of Higher Education and an institutional capacity |
| | | and training relevant to national needs, especially those of rural India. |
| | | and training recertain the root finding techniques which can be used to solve |
| ſ- | Mathematics- III | To determine the root mixing teening the use of interpolation |
| 1 | | practical engineering problems also demonstrate graphical and/or tabulated |
| | | methods to find intermediate values in given graphical |
| | | data. |
| | | Apply the concept of numerical analysis to find the relative shell get |
| | | weaknesses of each computation method and know which are insisted |
| - | | applicable for given problem also will be able to approximate and analysis |
| | | the errors obtained in the numerical solution of equations, ordinary, partial |
| | | differential equations and simultaneous equations as well. |
| | | To apply the analytical technique to express periodic function as a Fourier |
| | | series and acquire the concepts of Laplace transformation; inverse |
| | | Laplace Transform with its property to solve Partial Differential equation |
| | | and Ordinary Differential Equation with given boundary conditions which |
| | | and Ordinary Directential Equations of work. |
| | | is helpful in an engineering, research probability distribution and their |
| | | Apply the concept of a random variable, proceeding |
| | | application in diversified fields. |
| CM- | Chemical | To understand simple steady and unsteady states, entended |
| 02 | Engineering | combination of open, closed and isolated systems. |
| 10000 | Thermodynamics | To acquire knowledge about PV1 behaviour of fluids and using furthe to |
| | | determine process variables. |
| | | To understand Carnot cycle, efficiency of closed loop process and |
| | | calculation of entropy. |
| | | To apply third law in determining feasibility of reaction and energy |
| | | correlation with types of reaction/process. |
| | | To calculate output in single and multi-stage process in physical process |
| | | using fluids |
| | | A bility to familiarize with ceramics and its processing |
| CM- | Advance | Ability to ranimatize what concept of general manufacturing techniques of |
| 303 | Engineering | Ability to understand concept of general and of |
| | Chemistry | refractory |
| | | Ability to understand concept of processing of glass and fats |
| | | Ability to understand the processing of ons and rats. |
| | | Ability to understand the reaction rate mechanism |
| CM- | Material & Energy | Ability to familiarize with different unit systems and different unit systems and |
| 304 | Balance | Ability to understand concept of ideal gas, real gas, vapor pressure and |
| 304 | Datance | humidity. |
| | | Ability to solve material balance problems involving recycle, bypass and |
| | | purge without chemical reaction. |
| | | Ability to solve material balance problems involving recycle, bypass and |
| | | Ability to solve material reaction |
| | | purge, with chemical reaction. |
| | | Ability to calculate energy balance using enables |
| | | energy balance involving chemical reactions |
| | | 1 Students can understanging use of instrumentations, generations, |
| CM- | Chemical | A start and their remedies. |

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Inplancipal stitute of Science and Technology, Indore Saturday, December 21, 2024


| | | 2023-2024 |
|------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | 2. Students able to understand characteristics and working principle of different instruments used to measure temperature and humidity. |
| | | 3. Students able to understand characteristics and working principle of instruments used for pressure measurement and control. |
| | | 4. Students able to analyze different types of flow meters and instruments for the measurement of density and viscosity. |
| | | 5. Students able to design process and instrumentation diagrams (P&ID) for process equipments such as distillation column, heat exchanger and storage tanks. |
| CM- | Computer | Understand and Experiment with Java Database Connectivity (JDBC) |
| 306 | Programming-I | Illustrate and Create dynamic web pages, using Servlets and JSP |
| | (JAVA) | Develop reusable Java Bean |
| | | Interpret and Dissect the Remote Method Invocation (RMI) to invoke the remote methods in a variety of applications. |
| | | Demonstrate the multi-tier architecture of Enterprise JavaBeans (EJB) and Struts Framework to Build web-based enterprise applications |
| BT- 107 | Evaluation of Internship-I | Demonstrate the application of knowledge and skill sets acquired from the course and workplace in the assigned job function/s |
| | completed at I year level | Solve real life challenges in the workplace by analysing work environment and conditions, and selecting appropriate skill sets acquired from the course |
| | | Exhibit critical thinking and problem solving skills by analysing underlying issue/s to challenges |
| | | Demonstrate appreciation and respect for diverse groups of professionals by engaging harmoniously with different company stakeholders |
| | | Exhibit professional ethics by displaying positive disposition during internship |
| BT- | 90 hrs Internship | Exposure to Organizational skills and professional practices. |
| 307 | based on using various softwares | Efficiently completing tasks, fostering good relationship with seniors and subordinates |
| | -Internship -II | Improved Communication & interpersonal skills. |
| | | Exposure to latest technology applications to the specific discipline. Identification of relevant problems in the industry and innovative |
| ES-401 | Energy & Environmental | Get the knowledge of energy carriers, energy technologies, energy challenges and energy system integration and environment systemiability. |
| | Engineering | Learn about the different types of ecosystems present in environment, ecological succession and energy flow in the ecosystem |
| | | Understand the value of biodiversity to human societies, threats to biodiversity, In-situ and Ex-situ conservation of biodiversity. |
| | | Acquire knowledge of different types of environmental pollution, its effects on life and its remedies |
| | | Aware about the social issue related to the environment, environment ethics, protection and conservation acts for the environment |
| CM- | Fluid Particle | Ability to evaluate size, surface and population of particles, & screen |
| 402 | Mechanics | analysis of solids. |
| | | Ability to understand principle of size reduction, crushing, grinding, pulverizing and mutationing, |
| | e | Ability of the sign mixing equipment and calculate power requirements. |
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and Technology, Indore Saturday, December 21, 2024



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| | | Ability to understand principle of separation techniques for system |
|-----|--------------------|-----------------------------------------------------------------------------|
| | | involving solids, liquid sand gases, sedimentation and intration. |
| | | Ability to understand particulate and aggregative indization, pressure |
| | | drop through fluidized bed. |
| CM- | Fluid Mechanics | Ability to understand basic concept of hund static, viscosity, prostant of |
| 03 | | vapor pressure and different types of flow streamlines & continuity |
| | | Ability to understand different types of now, streamines of commence |
| | | equation. |
| | | Ability to understand Euler's equation of motion, Demount of p |
| | | Ability to understand working of pump, fan blowers, compressor and |
| | | Ability to understand working of particip, and end of a |
| | | A bility to understand concept of Reynolds number and friction factor |
| ~ (| I Des soor | Ability to familiarize process flow diagram of salts and sodium |
| CM- | Inorganic Process | compounds soda ash caustic soda. |
| 404 | Technology | 2. Understand the process flow diagram of hydrochloric acid, sulphur and |
| | | sulphuric acid phosphoric acid and phosphate. |
| | | 3 Comprehend the process flow diagram of nitrogenous industries, |
| | | ammonia and nitric acid, nitrogenous fertilizer. |
| | | 4 Ability to interpret process flow diagram of cement industries and |
| | | industrial gases. |
| | | 5. Able to understand the process flow diagram of bromine, iodine, |
| | l | Fluorine, soaps and detergents, glass, ceramic and inorganic pigments. |
| CM- | Fuel Technology | Ability to give the overview of coal Classifications and Washing of coal, |
| 405 | | mechanism of low and high temperature carbonization. |
| 100 | | Ability to enhance the knowledge of petroleum processing like cracking, |
| | | reforming, distillation and isomerization. |
| | | Ability to familiar with properties and testing of petroleum products. |
| | | Ability to know composition and properties of gaseous fuels and fuel cells. |
| | | Ability to understand renewable energy sources. |
| CM- | Computer | To perform basic operations using functions/commands of excel. |
| 406 | Programming-II | Ability to analyze and solve complex problems |
| | (Excel) | To solve chemical engineering based problems using excel |
| BT- | 90 hrs Internship | Exposure to Organizational skills and professional practices. |
| 407 | based on using | Efficiently completing tasks, fostering good relationship with seniors and |
| | various software's | subordinates |
| | -Internship -II | Improved Communication & interpersonal skills. |
| | | Exposure to latest technology applications to the specific discipline. |
| | | Identification of relevant problems in the industry and innovative |
| | | solutions. |
| BT- | Cyber Security | Analyze and evaluate the cyber security needs of an organization. |
| 408 | | Determine and analyze software vulnerabilities and security solutions to |
| | | reduce the risk of exploitation. |
| | | Measure the performance and troubleshoot cyber security systems. |
| | | Implement cyber security solutions and use of cyber security, mornation |
| | | assurance, and cyberroomputer forensics software tools. |
| | | Comprehend and execute ass management processes, lisk dealling |
| 1 | | methods, and rest risk and performance indicators |



Saturday, December 21, 2024

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|-----|------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| CM- | Mass Transfer-I | To understand the knowledge of mass transfer by applying principles of diffusion interphase mass transfer and different theories. |
| 501 | - | diffusion, interphase mass denoted are operation of various types of gas liquid |
| | | To understand the concept and operation and analyse mass transfer coefficient. |
| | 1 - | Ability to understand the concept of vapour liquid equilibrium, relative |
| | | Ability to understand the concept of superior super- |
| | | Volatinity and distillation column |
| | | Able to design distribution condition |
| | | To understand the concept and determine refer, refer, and the |
| | | of packed bed used for absorption |
| CM- | Heat Transfer | Understands the mechanisms of convection overall and individual heat |
| 502 | | Understands the mechanisms of convection, overall and many |
| | | transfer coefficient. |
| | | Understands the mechanisms of radiation. |
| | | Understands the mechanisms of radiation. |
| | | Ability to understand the reaction rate mechanism. Cos Analyzes the |
| | | performance of heat exchange equipments. |
| CM- | Computation | Ability to understand, examine and solve the engineering data by using |
| 503 | Methods in | various methods. |
| | Chemical | Ability to calculate errors occurred in engineering data. |
| | Engineering | Ability to solve differential equations for the conservation of mass in |
| | | chemical engineering problems |
| | | Ability to solve ODE by numerical methods for prediction of data at any |
| | | instant in chemical engineering problems. |
| | | To solve finite difference, linear & non-linear difference method and |
| | | optimization in chemical engineering related problems |
| CM- | A. Organic | 1. Ability to familiarize process flow diagram of pulp and paper |
| 504 | Process | manufacturing process. |
| _ | Technology | 2. Understand the process flow diagram of sugar and alcohol derivatives |
| | B. Fuel Cell | like acetic acid, acetic anhydride, vinyl acetate and ethylene giveo. |
| | Technology | 3. Comprehend the process flow diagram of intermediates for |
| | C. Energy | petrochemical like phenol, methanol, propylene, benzene, totuene etc. |
| | Management | 4. Ability to interpret process flow diagram of dyes, insecticides, |
| | 1000 | pesticides, and nitrating agents. |
| | | Able to understand the process flow diagram of manmade fibers. |
| CM- | Chemical Process | Understanding uses and initializing Matlab. |
| 505 | Plant Simulation | Ability to perform simple mathematical calculation. |
| | Lab-I | Ability to solve and analyse advance mathematics based problems. |
| CM- | Organic Process | 1. Ability to determine the iodine value of the given sample of on and |
| 506 | Technology Lab | chloride in a given H2O sample by argentrometric method. |
| 000 | | 2. Ability to prepare of urea formaldehyde resin and oxalic acid from care |
| | - / STS | sugar. |
| | | 3. Ability to determine the concentration of sugar by using polarimeter. |
| | | 4. Ability to draw process flow diagrams PFD on AutoCAD P&ID. |
| CM- | Evaluation of | Demonstrate the application of knowledge and skill sets acquired from the |
| 507 | Internship-II | course and workplace in the assigned job function/s |
| 507 | memory | Solve real life challenges in the workplace by analysing work environment |
| | | and conditions, and selecting appropriate skill sets acquired from the |
| | | course Science |
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| | | Exhibit critical thinking and problem solving skills by analysing underlying issue/s to challenges |
|-----|-------------------|----------------------------------------------------------------------------------------------------|
| | | Demonstrate appreciation and respect for diverse groups of professionals |
| | | by engaging harmoniously with different company stakeholders |
| | | Exhibit professional ethics by displaying positive disposition during |
| | | internship |
| CM- | Minor Project- I | Identify problem in area of Chemical Engineering which requires further |
| 508 | | investigation. |
| | | Identify the methods and materials required for the project work. |
| | | Manage the work with team members. |
| | | Formulate and implement innovative ideas for social and environmental |
| | | benefits. |
| | | Analyze the results to come out with solutions related to the project work. |
| CM- | Mass Transfer -II | The concept of Equilibrium in adsorption separation operations should be |
| 601 | | clear. |
| | - | To study the concept Humidification and Dehumidification operations. |
| | | To introduce the concept of drying and drying equipment's. |
| | | To study the principal of leaching and crystallization. |
| | | To introduce liquid-liquid extraction. |
| CM- | Chemical | To understand the reaction kinetics and method of analysis. |
| 602 | Reaction | To analyze and design chemical reacting system. |
| | Engineering | To understand beterogeneous reacting system and non-ideal reactor |
| | | analysis |
| | | To study different catalytic reactor |
| | | To study different Models and Regime for reacting system |
| CM- | A Process | To understand the concept of stress and strain analysis and able to design |
| 603 | Equipment Design | different vessel roof |
| 005 | I I | To design pressers vessel under different different operating conditions |
| | B Polymer | To understand the design concent of tall vessel and their supporting |
| | Technology | structure |
| | C. Nano | To design different types of flanges and understand different types of |
| | Technology | equipment testing methods |
| CM- | A Chemical | To understand the knowledge of controlling processes and controllers. |
| 604 | Process Control | To investigate control and instrumentation of chemical engineering |
| | B. Process | equipment's |
| | Optimization | Ability to solve complex equation using laplace tan formations. |
| | Techniques | To understand interacting and poninteracting process and their responses |
| | C. Fertilizer | To know about stability concept and techniques to solve problems on it. |
| | Technology | |
| CM- | Chemical Process | Student will able to simulate of process in "DWSIM" |
| 605 | Plant Simulation | Student will able to simulate Shortcut Distillation, Rigorous Distillation |
| | Lab-II | on DWSIM |
| | | Student will able to simulate double pipe Heat Exchanger in DWSIM |
| | | Student will able to simulate CSTR in DWSIM |
| CM- | Chemical Process | To understand the knowledge of thermocouple and Dead weight Pressure |
| 606 | Control Lab | Gauge. |
| | | To understand Characteristics of Control valve and PID Controller. |
| | | Ability to preasurement of liquid level by Air purge method. |
| | | To understand a standard non-interacting process and their responses |
| | | 1.0 Underspand interacting 2010 non-interacting process and their responses. |

IndoPrincipalute of Science

and Technology, Indore Saturday, December 21, 2024



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| CM- | Internship-III | Exposure to Organizational skills and professional practices. |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 507 | and the second se | Efficiently completing tasks, fostering good relationship with seniors and subordinates |
| | | Improved Communication & interpersonal skills. |
| | | Exposure to latest technology applications to the specific discipline. |
| | | Identification of relevant problems in the industry and innovative solutions. |
| CM- | Minor Project II | Identify problem in area of Chemical Engineering which requires further investigation. |
| 508 | | Identify the methods and materials required for the project work. |
| | | Manage the work with team members. |
| | | Formulate and implement innovative ideas for social and environmental benefits |
| | | Analyze the results to come out with solutions related to the project work. |
| 014 | Desease | Ability to design different types of heat exchangers like double pipe heat |
| СМ- 701 | Equipment Design-II | exchanger, shell and tube heat exchanger used in chemical industries and to understand the role of heat transfer coefficient and pressure drop in design |
| | | Ability to design multiple effect evaporators with boiling point rise and without boiling point rise condition |
| | | Ability to design mass exchange equipment like plate and packed column for distillation and absorption column used in chemical refineries |
| | | Ability to design Flash drum, Kettle reboiler, condenser, cooling tower, |
| CM | A Transport | Ability to understand origin composition & classification of petroleum. |
| 702 | Phenomena | Ability to understand origin, composition process & to understand the Ability to understand crude oil distillation processes |
| | B Bio Process | concept of catalytic cracking and reionning processes. |
| | Technology | Ability to discuss alkylation, isomerization, polymerization processes. |
| | Refining | Ability to understand the manufacture of hubicating on & to know |
| | Engineering | Ability to enhance the knowledge of petroleum products, their properties and characterization and discuss about LPG and hydrogen recovery. |
| CM- | A. Environmental | Ability to understand characteristics & effect of pollution on living and |
| 703 | B. Process | Ability to understand the effect of climate changes, atmospheric |
| | C. Non- | Ability to understand effect of water pollution and working principles of |
| | energy Sources | Analyze the hazardous and nonhazardous solid wastes and select the |
| | 2.4-1 | To analyse the pollution caused by different Chemical Process (case |
| | | studies) |
| CM- | Energy Lab | 1. Student will able to identify various forms of renewable energy |
| 704 | | 2. Student will able to understand biogas plant, gasifier and production of |
| | [| 3. Student will able to understand production process of biodiesel, bio- |
| | | fuels |
| | e | 4. Student will able to understand solar drying system, solar distination and solar Bona |
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Saturday, December 21, 2024



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2023-2024

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| | | 5. Student will able to determine of exhaust gas analysis by using Orsat |
| | | apparatus. |
| CM- | Environmental | Student able to determine oxygen demand required to decompose organics |
| 05 | Engineering Lab | in polluted water |
| | | Student able to determine pH, acidity and alkalinity present in ponuted |
| | | water |
| | | Student able to determine hardness and turbidity of given water sample |
| | | Student able to determine Total Dissolved Solids in water. |
| CM- | Major Project-I | Identify problem in area of Chemical Engineering which requires further |
| '06 | | investigation. |
| | | Identify the methods and materials required for the project work. |
| | | Manage the work with team members. |
| | | Formulate and implement innovative ideas for social and environmental |
| | | benefits. |
| _ | | Analyze the results to come out with solutions related to the project work. |
| CM- | Evaluation of | Demonstrate the application of knowledge and skill sets acquired from the |
| 507 | Internship -III | course and workplace in the assigned job functions |
| | | Solve real life challenges in the workplace by analysing work environment |
| | | and conditions, and selecting appropriate skill sets acquired from the |
| | | course |
| | | Exhibit critical thinking and problem solving skins by analysing |
| | | underlying issue/s to challenges |
| | | Demonstrate appreciation and respect for diverse groups of professionals |
| | | by engaging harmoniously with different company stakeholders |
| | | Exhibit professional ethics by displaying positive disposition during |
| | | internship |
| CM- | Chemical Process | 1. Gaining the knowledge of basics of modeling and simulation. |
| 801 | Modeling & | 2. Ability to model the different static and dynamic models. |
| | Simulation | 3. Understanding the concept of the treatment of experimental data. |
| | | 4. Understanding of dynamic modeling of simple processes. |
| | 31 | 5. Understanding of computer programming of various iterative |
| | | convergence methods such as Newton- Raphson, faise position etc. |
| CM- | A. Process Piping | Able to select piping system components. |
| 802 | Design | Understand the rheological and time dependent behavior of fund |
| | B. Process safety | To be able to calculate power losses for Compressible and incompressible |
| | & Hazards | fluids in vertical flow |
| | Management | To be able to calculate power losses for Compressible and moompressible |
| | C. Fertilizer | fluids in horizontal flow |
| | Technology | Understand the importance of software and piping system in chemica |
| | | Industry |
| CM- | A Process Plant | 1. To study the concepts of chemical process plant design |
| 803 | Economics & | 2. To understand the economics of plant establishment. |
| | Management | 3. To understand the cost analysis of products |
| | B Petrochemical | 4. To study the process to check the financial feasibility of plant. |
| | Technology | 5. To study the overall network design of process plant. |
| | C IPR (Intellectual | |
| | Property Right) | 11.11. A Rein Composition & alacsification of netroleum |
| | 1 | Ability to understance origin, composition & classification of perforeant. |
| | V | Principal ~ |
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| (| У _{нор} | Indore Indore Indore Indore Indore |
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Saturday, December 21, 2024



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| CM- 804 | Petrochemical Technology Lab | Ability to understand crude oil distillation process & to understand the concept of catalytic cracking and reforming processes. Ability to discuss alkylation, isomerization, polymerization processes. Ability to understand the manufacture of lubricating oil & to know sweetening and desulphurization processes. Ability to enhance the knowledge of petroleum products, their properties and characterization and discuss about LPG and hydrogen recovery. |
|------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CM- 805 | Major Project-II | Identify the complex engineering problems relevant to the every industry Apply modern technologies, tools and systems in the field of Chemical Engineering to analyze the identified problem Design and implement a viable solution to the problem. Apply communication, writing skills & Presentation skills Develop the team work and leadership skills with professional and ethical values. |

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Saturday, December 21, 2024



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- 8. Department of Mechanical Engineering
 - A. Vision of Mechanical Engineering (UG)

To be nationally recognized department for imparting mechanical engineering education, leading to competent engineers, capable of contributing to society through innovation, entrepreneurial and leadership.

B. Mission of Mechanical Engineering (UG)

Imparting quality education to the students and enhancing their skills to make them globally competitive mechanical engineers.

Ability to work as a member of interdisciplinary teams, capable of adapting to changing environments of engineering, technology and society with ethical and moral values.

Inculcate critical thinking abilities among students and develop entrepreneurial skills, leadership qualities and innovative ideas.

C. Program Educational Objective (PEO's) of Mechanical Engineering (UG)

The graduating students from Mechanical Engineering should have a comprehensive background of physical sciences, mathematics and foundations of Mechanical Engineering to be able to solve application level problems related to core Mechanical Engineering and interdisciplinary areas.

The graduating students from Mechanical Engineering needs to develop expertise and acumen in core areas like Mechanical design, thermal engineering, materials and manufacturing science to a satisfaction of employers.

The program orients its graduating students towards contemporary areas of sociotechnological issues like energy crisis, pollution, formal practices of human resources and industrial relations in order to achieve the professional development of the student.

D. Program Specific Outcomes (PSO's) of Mechanical Engineering (UG)

PSO1: Apply the fundamentals of mathematics, science and engineering knowledge to identify, formulate, design, investigate and solve complex engineering problems of

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machines & mechanisms, kinematics and dynamics, mechanical components & systems to manufacturing facilities having computer-based design, analysis, simulation and fabrication with best quality practices.

PSO2: Design mechanical systems in various fields such as machine elements, thermal, manufacturing, industrial and inter-disciplinary fields by using various engineering/technological tools to meet the mercurial needs of the industry and society at large.

PSO3: The ability to grasp the latest development, methodologies of mechanical engineering and possess competent knowledge of design process, practical proficiency, skills and knowledge of programme and developing ideas towards innovation & research.

E. Programme Outcomes (PO's) of Mechanical Engineering (UG)

Upon successful completion of the program, the students would have the following attributes.

Apply the fundamental knowledge of mathematics, science and engineering in the solution of complex Mechanical engineering problems.

Identify, formulate, analyze and solve complex mechanical engineering problems

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

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.

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

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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Indore Institute of Science Principal and Technology, Indore

Saturday, December 21, 2024



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

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

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

Communicate effectively on complex engineering activities with the engineering community and with the 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.

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.

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.

| Univ. Subje ct Code | Subject Name | CO Description |
|------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BT- 201 | Engineering physics | The Coursework is designed to provide students the opportunity to learn key concepts of Wave nature of particles and the Schrodinger equation. Student will able to understand the knowledge of Wave optics i.e. |
| | | To introduce the idea of solids like semiconductors (P type and N Type semiconductors), Diodes and Hall effect. STudents will also be able to understand the basic concept of superconductivity. |
| | | To develop the understanding of Lasers, fiber optics and their applications in field of engineering sciences. |
| | | To provide you to basic understanding of Electrostatics in vacuum. |
| BT- 102 | Mathematics-I | To introduce the fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems. |

F. Course Outcomes (CO's) of Mechanical Engineering (UG)

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| | | To introduce the idea of applying differential and integral calculus to notions of curvature and to improper integrals. Apart from some applications it gives a basic introduction on Beta and Gamma function |
|-----|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | To develop the tool of power series and Fourier series for learning advanced |
| | | Engineering Mathematics. |
| | | To familiarize the student with functions of several variables that is |
| | | essential in most branches of engineering |
| | | To develop the essential tool of matrices and linear algebra in a |
| | | comprehensive manner. |
| BT- | Basic mechanical | Understand the properties of material, stress strain. Properties of alloys and |
| 203 | engineering | cast iron. |
| | | Understand the concept measurement and machine tools their operations and their applications. |
| | | Understand the concept of fluid flow, properties of fluid, Bernoulli's equation, Pascal's law. |
| | | To Understand the concept of heat and temperature, law of thermodynamics, boilers and their mountings and accessories, basic Refrigeration cycles and its applications. |
| | | To Understand the working of different cycles and 4 strokes, 2 stroke engines and their applications. |
| BT- | Basic civil | Students will acquire the basic knowledge in different fields of civil |
| 204 | engineering & | engineering and materials used in construction. |
| | mechanics | Gain the ability to use modern survey equipment to measure angles and distances. |
| | | Students will understand the basic of contour lines and map |
| | | Students will have the ability to identify, formulate and solve engineering |
| | | problems related to Engineering Mechanics: Statics |
| | | Students will be able to analyse beam for shear force and bending moment. |
| BT- | Basic computer | Able to understand the basic applications of computers in various fields. |
| 205 | engineering | describe operating system, its role and functionalities and to apply concepts of MS word MS power point MS Excelefficiently. |
| | | Discuss and apply simple algorithms for arithmetic and logical problems. |
| | | Translate the algorithms to programs applyingobject-oriented concepts in |
| | | C++ programming language. |
| | | Understand basics of computer networks, OSI layers and protocols, E commerce applications, impact of securitythreats and attacks on networking systems and also security measures |
| | | Understand the different method for representing and processing data and |
| | | to get awareness about the impact of cloud computing, its various type of |
| BT- | Language Jab & | learners to develop good listening skills |
| 206 | seminars | Encourages learner to talk freely and lose their shyness when talking in front of the people |
| | | To develop the overall personality of the students by the practical activities |
| | | Helps in confidence building motivation to be more presentable and help |
| | | in removing the stage fright |
| | | Develops speaking, writing, reading, listening and presentation skills. |
| BT- | Engineering | Differentiate bard and soft water: solve the related numerical problems on |
| 101 | chemister | water purification and its significance in industry and dail pifecinal |

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| | | Select the lubricant for various purposes based on the type of Machines. |
| | | Equipped with basic knowledge of polymer, methods of polymerization and various industrial applications of polymers |
| | | Draw the Phase diagrams of one & amp; two component systems and |
| | | causes, consequences and methods to minimize corrosion to improve |
| | | industrial designs. |
| | | Identify the structure of unknown/new compounds with the help of |
| | | spectroscopy and understand periodic properties such as ionization |
| | | potential, oxidation states and electro negativity |
| BT- 202 | Mathematics-II | To introduce effective mathematical tools for the solutions of ordinary and partial differential equations that model physical processes. |
| | | To introduce the tools of differentiation and integration of functions of |
| | | complex variable those are used in various techniques dealing engineering problems. |
| | | To acquaint the student with mathematical tools available in vector calculus |
| | | needed various field of science and engineering. |
| BT- | English for | Effective use of verbal and non-verbal communication for enhanced soft |
| 103 | Communication | skill beside enhanced reading comprehension as well |
| 105 | | Write the different kinds of letters, reports and technical writing. |
| | | Apply basic rules of grammar in both written as well as oral |
| | | communication. |
| BT- | Basic electrical & | To introduce the concept of Basics of DC electrical Network including |
| 104 | electronics | network theorems. |
| | engineering | To introduce the concept of Basics of AC electrical Network(single phase |
| | | & 3 phase) |
| | | To study of law of Electromagnetism, introduction of transformer. |
| | | To study of various electrical Machines. |
| | | To study Basic Concept Digital Electronics. |
| BT- | Engineering | Draw various types of scales, and curves. |
| 105 | graphics | Draw orthographic projections of points & lines |
| | 0. | Draw orthographic projections of Planes & Solids |
| | | Draw sections and development of solids including cylinders, cones, prisms |
| | | and pyramids. |
| | | Draw isometric views of Planes and Solids, Drawing using AUTOCAD. |
| BT- | Manufacturing | Use hand and power tools for different manufacturing processes |
| 106 | practices | Operate machine tools while preparing any component |
| | | Select the appropriate tools required for specific operation. |
| | | Comprehend the safety measures required to be taken while using the tools. |
| | | Prepare Foundry, Fitting, Carpentry, Welding and smithy Job. |
| BT- | Internship-I (60 | Demonstrate the application of knowledge and skill sets acquired from the |
| 107 | Hrs Duration) at | course and workplace in the assigned job function/s |
| | the Institute level | Solve real life challenges in the workplace by analysing work environment |
| | | and conditions, and selecting appropriate skill sets acquired from the course |
| | | Exhibit critical thinking and problem solving skills by analysing underlying |
| | | issue/s to challenges |
| | | Demonstrate appreciation and respect for diverse groups of professionals |
| | | by engaging harmoniously with different company stakeholders |

30



Indore Institute of Science and Technology, Huber 21, 2024



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| | _ | Exhibit professional ethics by displaying positive disposition during |
|------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BT- | Swachh bharat | This course is to sensitize students about the socio-cultural aspects of the |
| 108 | unnet bhorot | Students areas parocinial to their colleges. |
| | abbiyon (100hm)/ | Students are expected to observe, investigate and learn about the following |
| | autroach | aspects of the rural region: 1. Demographics, Literacy, Geographica |
| | rurai outreach | parameters of the Village; ii. Schemes of government of India and State o |
| | | Madhya Pradesh in operation in the villages. |
| | | To enhance critical thinking by making them participate in social activities |
| | | and imbibe human values among them. |
| | | Rural Swachh Bharat Abhiyan is to promote cleanliness and develop |
| | | healthy habits in people in villages. |
| | | Unnat Bharat Abhiyan: To build an understanding of the development |
| | | agenda within institutes of Higher Education and an institutional capacity |
| | | and training relevant to national needs, especially those of rural India. |
| BT | Mathematics-III | To determine the root finding techniques which can be used to solve |
| 301 | | practical engineering problems also demonstrate the use of interpolation |
| | | methods to find intermediate values in given graphical and/or tabulated |
| | | data. |
| | | Apply the concept of numerical analysis to find the relative strengths and |
| | | weaknesses of each computation method and know which are most |
| | | applicable for given problem also will be able to approximate and analysis |
| | | the errors obtained in the numerical solution of equations, ordinary partial |
| | | differential equations and simultaneous equations as well |
| | | To apply the analytical technique to express periodic function as a Fourier |
| | | series and acquire the concents of Laplace transformation & inverse |
| | | Laplace Transform with its property |
| | | To solve Partial Differential equation and Ordinary Differential Equation |
| | | with given boundary conditions which is helpful in all engineering for |
| | | research work |
| | | Apply the concept of a random variable matchility distillation of a |
| | | application in diversified fields |
| ME30 | Thermodynamics | Apply conservation principles (mass and energy) to avaluate the |
| 2 | | performance of simple engineering systems and eveles |
| ~ | | Evaluate thermodynamic properties of simple homogonoous substances |
| | | Analyze processes and evalue using the second law of thermodynamics |
| | | Analyze processes and cycles using the second law of thermodynamics to |
| | | Discuss the physical relations of the purposed where for the station of the |
| | | specific angineering methods |
| | | Critically avaluate the solidity of the solidi |
| | | endingering problems |
| ME20 | Matariala | Understand the second stand s |
| 2 | tachnology | Understand the crystal structure and classification of materials. |
| 5 | technology | Understand methods of determining mechanical properties and their |
| | | suitability for applications. |
| | | Understand Mechanical behavior of metals and alloys, Tensile & |
| - 1 | | compressive stress-strain |
| | | Understand Iron carbon diagram, time temperature transformation etc. |
| | | Understand Non destructive testing, alloty study with heat treatment |
| | 0 | process. Science |
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| ME30 | Strength of | To define direct normal stress and direct shear stress and compute their |
|-------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4 | Material | values. |
| | | able to calculate shear stress distribution in solid and hollow round |
| | | members under Torsional loading conditions. |
| | | Able to calculate bending stress and shear stress at any location along the |
| | | beam. Calculate maximum bending stress and maximum shear stress. |
| | | Able to use different theories of failure in different loading condition |
| | | able to develop an understanding of analytic methods used in connection with the structural design of columns, long mechanical members under |
| | | compression. |
| ME30 | Manufacturing | Students will be able to understand concepts of casting recimology. |
| , | process | Students will be able to understand mechanical working of metals. |
| | | Students will be able to understand concepts of weiding process |
| | | Students will be able to understand concept of forging methods |
| | | Students will be able to understand press working. |
| ME30 | Thermal engg lab | To study the working of different types of high pressure boilers. |
| 5 | | To calculate different performance parameters of boilers. |
| | | To determine volumetric and isothermal efficiencies of a reciprocating air compressor. |
| | 0 | To study the working of different types of steam condensors. |
| | | To analyse the exhaust gas using ORSAT apparatus. |
| BT10 | Evaluation of | Demonstrate the application of knowledge and skill sets acquired from the |
| 7 | Internship-I | course and workplace in the assigned job function/s |
| | Completed at First | Solve real life challenges in the workplace by analysing work environment |
| | Year Level | and conditions, and selecting appropriate skill sets acquired from the course |
| | | Exhibit critical thinking and problem solving skills by analysing underlying |
| | | issue/s to challenges |
| | | Demonstrate appreciation and respect for diverse groups of professionals |
| | | by engaging harmoniously with different company stakeholders |
| | | Exhibit professional ethics by displaying positive disposition during |
| | | internship |
| ES40 | Energy & | To learn about various types of energy resources. |
| L I | environmental | To learn about Ecosystem. |
| | engineering | To learn about Biodiversity and its conservation. |
| | | To learn about Causes, Effects and Control of Environmental Pollution. |
| | | To learn about various social issues w.r.t. environment. |
| ME40 | Instrumentation & | To learn about different types of Instrument Systems & Measurement |
| 2 | control | Techniques. |
| | | To know about various characteristics of measuring instrument. |
| | | To learn about measurement of different physical quantities like |
| | | Temperature, Flow, Velocity & Pressure |
| | | To learn about different mechanical measurement devices. |
| | | To know about different types of control systems. |
| ME40 | Theory of | To introduce the approaches used in kinematic and dynamic analysis of |
| NIL TO | machines | machinery |
| | Indennies | To understand the various four bar mechanisms and applications. |
| | | To understand various types of gear and gear trains |
| | | To understand Cam & folloers working |
| | | To give basic knowledge on mechanical vibrations |
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| ME40 | Fluid mechanics | To understand the Newton's law of viscosity and able to explain the |
| 4 | | mechanics of fluids at rest and in motion by observing the fluid phenomena. |
| | | Compute force of buoyancy on a partially or fully submerged body and able |
| | | to analyze the stability of a floating body. |
| | | To understand Euler's Equation of motion and Deduce Bernoulli's |
| | | equation. |
| | | To find energy losses in pipe transitions and to draw energy gradient lines. |
| | | Evaluate pressure drop in pipe flow using Hagen-Poiseume's equation for |
| | | laminar flow in a pipe and distinguish the types of flows and Determine |
| | | sonic velocity in a fluid. |
| ME40 | Manufacturing | Upon completion of this course, the students will be able to understand and |
| 5 | technology | compare the functions and applications of different metal cutting tools |
| | | Understand the basic concepts of gear machining |
| | | Understand the basic concepts of plastics and molding method |
| | | Understand the basic concepts of NTM |
| | | The student will be able to write the programming to control and operate |
| | | NC machines |
| ME40 | Software lab | To introduce different drawing softwares to students. |
| 6 | | To learn about Surface modelling its design & implemination in |
| | | engineering applications. |
| | | To know about current developments in CAD. |
| | | To learn about Solid modeling & its applications. |
| | | To know about strategic plan of CAD system design. |
| ME40 | 90 hrs Internship | Exposure to Organizational skills and professional practices. |
| 7 | based on using | Efficiently completing tasks, fostering good relationship with seniors and |
| | various software's | subordinates |
| | -Internship -II | Improved Communication & interpersonal skills. |
| | | Exposure to latest technology applications to the specific discipline. |
| | | Identification of relevant problems in the industry and innovative solutions. |
| ME | Internal | To understand different types, parts and working of IC Engines. |
| 501 | combustion | To learn in details the combustion process in Petrol Engines. |
| | engines | To learn in details the combustion process in DieselEngines. |
| | | To learn about different types of fuels and their properties used in IC |
| | | Engines. |
| | | To know about the concepts of Supercarging & Turbocharging of IC |
| | | Engines |
| ME50 | Mechanical | Understand the causes and effects of vibration in mechanical systems. |
| 2 | vibrations | Develop schematic models for physical systems and formulate governing |
| | | equations of motion. |
| | | Understand the role of damping, stiffness and inertia in mechanical systems |
| | 5. C | Analyze rotating and reciprocating systems and compute critical speeds. |
| | | Analyze and design machine supporting structures, vibration isolators and |
| | | absorbers. |
| ME50 | Dynamics of | To design and analyze the fundamental knowledge of dynamics of |
| 3(B) | Machines | machines so that student can appreciate solve problems of dynamic force |
| | | balance and transmissibility of forces. |
| | | To calculate the balancing grass with analytical and graphical methods for |
| | P | rotary and reoprocating masses |
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| | | | The developt understanding of governor mechanism and its significance on |
|---------|----------------|-----|------------------------------------------------------------------------------|
| | | - 1 | To develop understanding of governor meenanism and its sterior |
| | | F | engineering design. |
| | | | To develop understanding of dynamic baraneing, ny wheel analysis, |
| | | ŀ | gyroscopic forces and moments. |
| | | | To Draw Turning moment diagram for different internal combustion engine |
| | | | and able to design |
| ME50 | Industrial | | Able to use the Charts to record the activities of the people, materials and |
| 4 (A) | engineering | & | equipment to find alternative methods which minimize waste and to |
| | ergonomics | | implement the best method. |
| | | t | Able to apply the knowledge to eliminate unproductive activities under the |
| | | | control of the management, supervisor, worker and the design of products |
| | | | and processes |
| | | Ì | Able to implement &use the various job evaluation and incentive scheme |
| | | | for the smooth working of the workforce in industry. |
| | | | To Apply ergonomic concept to improve working conditions in various |
| | | | industrial environments |
| | | | To actimate information associated with control display systems using |
| | | | To estimate information associated with collaboration approximate audio, |
| | | - 1 | information processing theory. Students will be usite to endland |
| | | | visual and factile displays. |
| ME50 | FEM / CFD | | Understand the concepts benind formulation methods in PEAN. |
| 5 | | | Identify the application and characteristics of FEA elements |
| | | | To develop an understanding for the major theories, approaches and |
| | | 1 | methodologies used in CFD |
| | | | Develop element characteristic equation and generation of global equation. |
| | 2 | 1 | Able to apply suitable boundary conditions to a global equation for bars, |
| | | | trusses, beams, |
| | | | circular shafts, heat transfer, fluid flow, axi symmetric and dynamic |
| | | | problems and solve them |
| | | | displacements, stress and strains induced. |
| ME50 | Python | | Basic understanding of python and installation |
| 6 | 1 y lion | | understand the concept of control statement |
| U | | | Understanding of searching algorithm |
| | | | Understading of sorting algorithm |
| | | | Understading of file handling |
| 1 00 50 | E. I. day | - 6 | Demonstrate the application of knowledge and skill sets acquired from the |
| ME50 | Evaluation | 01 | Demonstrate the application of knowledge and skill sets acquire and |
| 7 | Internship II | | course and workplace in the assigned job random s |
| | | | Solve real life challenges in the workplace by analysing work environment |
| | | | and conditions, and selecting appropriate skill sets acquired non-the course |
| | | | Exhibit critical thinking and problem solving skills by analysing underlying |
| | | | issue/s to challenges |
| | | | Demonstrate appreciation and respect for diverse groups of professionals |
| | | | by engaging harmoniously with different company stakeholders |
| | | | Exhibit professional ethics by displaying positive disposition during |
| | | | internship |
| ME50 | Minor project | | Identify a topic in advanced areas of Mechanical Engineering. |
| 8 | Willor project | | Review literature to identify gaps and define objectives & scope of the |
| 0 | | | work |
| | | | Generate and interferent into failing ideas for social benefit. |
| | | | Delection and Alexandre |
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| | | Develop a prototypes/models, experimental set-up and software systems |
|------|-------------------|-------------------------------------------------------------------------------|
| | | necessary to meet the objectives. |
| | | Analyze the rushts and evaluate the performance. |
| ME60 | Thermal | To understand the working of high pressure boiler. |
| 1 | engineering and | To understand the vapour power cycles applied on thermal power plant. |
| | gas dynamics | To understand the concepts of gas dynamics. |
| | | To understand the working of reciprocating air compressor. |
| | | Analyze the flow through varing area ducts with friction and heat transfer. |
| ME60 | Machine | Able to explain the theory behind the different phases of design process. |
| 2 | component design | Apply knowledge to design basic elements shaft, keys and couplings. |
| - | ton Postor B | Apply knowledge to design springs and power screws. |
| 1 1 | | Design clutches and brakes depending on need. |
| | | Design and analyze rolling contact or journal bearing. |
| ME60 | Department | Apply thermodynamic concepts to analyze turbo machines |
| 3(A) | elective (turbo- | Analyze impulse and reaction steam turbo machines for energy transfer. |
| 5(A) | machinery) | Analyze hydro turbo machines for energy transfer. |
| | machineryy | Analyze different types of fans blowers and compressors for energy |
| | | transfer. |
| | | General theory and working of different power transmitting turbo machines. |
| ME60 | Open elective | To explain in detail about solar energy & its utilization. |
| 4(C) | (renewable energy | To explain in detail about wind energy & its utilization. |
| | technology) | To learn about production and application of Biomass. |
| | 0.7 | To understand different types, parts and working of Hydro Power Systems. |
| | | To explain in detail about geo thermal energy & its utilization. |
| ME60 | CAD lab | Understand geometric transformation techniques in CAD. |
| 5 | | Develop models to represent curves and surfaces. |
| | | Develop programs to manufacture industrial components |
| | | Devlopment of 3d part nd part |
| | | Simulation study |
| ME60 | RDBMS | To learn about normalization and its different forms. |
| 6 | | To learn about query processing & optimization technique. |
| U. | | To understand the usage of backup recovery feature of database. |
| 14 | | Study and usage of object or object oriented relational database |
| | | management software (Oracle). |
| | | Creating and use web database in PHP |
| ME60 | Internship iii | Exposure to Organizational skills and professional practices. |
| 7 | internet in p | Efficiently completing tasks, fostering good relationship with seniors and |
| | | subordinates |
| | - | Improved Communication & interpersonal skills. |
| | | Exposure to latest technology applications to the specific discipline. |
| | | Identification of relevant problems in the industry and innovative solutions. |
| ME60 | Minor project II | Identify problem in area of Mechanical Engineering which requires further |
| 8 | | investigation. |
| | | Identify the methods and materials required for the project work. |
| | | Manage the work with team members. |
| | | Formulate and implement innovative ideas for social and environmental |
| | | benefits. |
| | | Analyze the results to come out with solutions related to the project work. |

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Saturday, December 21, 2024



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2023-2024

| ME70 | Heat and Mass | Know about the basic concept of heat transfer and its modes. Mechanism |
|-------------|-----------------|------------------------------------------------------------------------------|
| 1 | Transfer | of Steady State Conduction. |
| | | Learn about the Transient Heat Conduction and its applications. |
| | | Learn about Convective Heat Transfer. |
| | | Understand the working principle and types of heat exchangers. And learn |
| | | about Boiling & Condensation. |
| | | Understand the concept of Radiative Heat Transfer, mass transfer. |
| 1E70 | Departmental | Understand the concept of belt, chain and rope drive and their design |
| D | elective | process |
| D | advance machine | Able to design spur and helical gears. |
| | design | Able to design of bevel gears. |
| | utongin | Able to design I C engine components such as pystion, cylinder and |
| | | connecting rod |
| | | Able to design componets like joints, couplings, pressure vessels and power |
| | | screw. |
| AE70 | Open Elective | Formulate and solve linear programming problems |
| A | Operation | Determine optimum solution to transportation problem |
| | Research and | Determine average queue length and walting times of queuing models. |
| | Supply Chain | Determine optimum inventory and cost in inventory models. |
| | | Understand the decision phases and apply competitive & supply chain |
| | | strategies |
| AE70 | CAD / CAM / | Students will be able to produce CAD drawings which communicate the |
| | CIM | appropriate manufacturing details, standards, and specifications |
| | | Students will be able to generate NC code using G-codes & M-codes to |
| | | machine parts to specifications. |
| | | Students will be able to set-up, program, and operate CNC milling and |
| | 2. | turning equipment |
| | | Students will be able to Design Flexible manufacturing cell after carrying |
| | | out Group technology study and finally creating FMS. |
| | | Students will be able to apply knowledge about Computer Aided Quality |
| | | control and Process Planning Control. |
| ME70 | MATLAB and R | To introduce MATLAB & R. |
| | Programming | Download & Installation of MATLAB & R. |
| | | In detail explanation of various MATLAB commands and functions. |
| | | In detail explanation of various R commands and functions. |
| | | Examples & Case Studies on MATLAB & R Programming. |
| ME70 | Major project-I | Identify problem in area of Mechanical Engineering which requires further |
| 5 | | investigation. |
| | | Identify the methods and materials required for the project work. |
| | | Manage the work with team members. |
| | | Formulate and implement innovative ideas for social and environmental |
| | | benefits. |
| | | Analyze the results to come out with solutions related to the project work. |
| AE60 | Evaluation of | Demonstrate the application of knowledge and skill sets acquired from the |
| 7 | Internshin -III | course and workplace in the assigned job function/s |
| | Internship -III | Solve real life challenges in the workplace by analysing work environment |
| | | and conditions and selecting appropriate skill sets acquired from the course |
| | | Exhibit critical thicking and problem solving skills by analysing underlying |
| | 0 | issuers to challenges |
| | 17 | Issue of the chancing of the |
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Saturday, December 21, 2024



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| | | Demonstrate appreciation and respect for diverse groups of professionals |
|------------|---------------------------|---------------------------------------------------------------------------------|
| | | by engaging harmoniously with different company stakeholders |
| | | Exhibit professional ethics by displaying positive disposition during |
| | | internship |
| ME80 | Refrigeration and | Illustrate the fundamental principles and applications of reingeration and |
| 1 | air conditioning | air conditioning system |
| | | Obtain cooling capacity and coefficient of performance by conducting test |
| | | on vapour compression retrigeration systems and ree plant |
| | | Present the properties, applications and environmental issues of anterent |
| | | refrigerants |
| | | Calculate cooling load for air conditioning systems used for various conditions |
| | | Operate and analyze the refrigeration and air conditioning systems. |
| MERO | Departmental | Explain in detail about Chassis systems of an Automobile. |
| ME80 | olective | Explain in detail about steeringsystems of an Automobile. |
| ZA | (automobile | Explain in detail about transmission systems of an Automobile. |
| | (automotine) | Explain in detail about suspension systems of an Automobile. |
| | cligineering) | Explain in detail about Electrical, control systems and emission standards |
| | | of an Automobile. |
| MEON | Onen elective | To learn about different system concepts. |
| MEOU 2C | (antrepreneurship | To learn about different management concepts. |
| 30 | & management concepts) | To learn about different marketing concepts. |
| | | To know about basics of productivity & operations. |
| | conceptoy | To explain in detail Entrepreneurship. |
| ME80 | Simulation & | To understand the concepts of modelling. |
| A | modeling lab | To understand the concepts of simulation. |
| - | modering nuo | To model mechanical components using CATIA. |
| | | To model mechanical components using ANSYS. |
| | _ | To analyze modelled component using ANSYS. |
| MESO | Major project II | Identify methods and materials to carry out experiments/develop code. |
| 5 | Wajor project fr | Reorganize the procedures with a concern for society, environment and |
| 5 | | ethics. |
| | | Analyze and discuss the results to draw valid conclusions. |
| | | Prepare a report as per recommended format and defend the work. |
| | | Explore the possibility of publishing papers in peer reviewed |
| | | journals/conference proceedings. |

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Saturday, December 21, 2024



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G. Vision of Mechanical Engineering (PG)

To be a nationally recognized department for imparting mechanical engineering education, leading to competent engineers, capable of contributing to society through innovation, entrepreneurial and leadership.

H. Mission of Mechanical Engineering (PG)

Imparting quality education to the students and enhancing their skills to make them globally competitive mechanical engineers.

Ability to work as a member of interdisciplinary teams, capable of adapting to changing environments of engineering, technology and society with ethical and moral values.

Inculcate critical thinking abilities among students and develop entrepreneurial skills, leadership qualities and innovative ideas.

I. Program Educational Objective (PEO's) of Mechanical Engineering (PG)

PEO 1 The graduating students from Mechanical Engineering should have a comprehensive background of physical sciences, mathematics and foundations of Mechanical Engineering to be able to solve application level problems related to core Mechanical Engineering and interdisciplinary areas.

PEO 2 The graduating students from Mechanical Engineering need to develop expertise and acumen in core areas like Mechanical design, thermal engineering, materials and manufacturing science to a satisfaction of employers.

PEO 3 The program orients its graduating students towards contemporary areas of sociotechnological issues like energy crisis, pollution, formal practices of human resources and industrial relations in order to achieve the professional development of the student.

J. Program Specific Outcomes (PSO's) of Mechanical Engineering (PG)

PSO1: Apply the fundamentals of mathematics, science and engineering knowledge to identify, formulate, design investigate and solve complex engineering problems of





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machines & mechanisms, kinematics and dynamics, mechanical components & systems to manufacturing facilities having computer-based design, analysis, simulation and fabrication with best quality practices.

PSO2: Design mechanical systems in various fields such as machine elements, thermal, manufacturing, industrial and inter-disciplinary fields by using various engineering/technological tools to meet the mercurial needs of the industry and society at large.

PSO3: The ability to grasp the latest development, methodologies of mechanical engineering and possess competent knowledge of design process, practical proficiency, skills and knowledge of programme and developing ideas towards innovation & research.

K. Programme Outcomes (PO's) of Mechanical Engineering (PG)

Upon successful completion of the program, the students would have the following attributes.

Apply the fundamental knowledge of mathematics, science and engineering in the solution of complex Mechanical engineering problems.

Identify, formulate, analyze and solve complex mechanical engineering problems

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

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.

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

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

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

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

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

Communicate effectively on complex engineering activities with the engineering community and with the 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.

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.

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.

L. Course Outcomes (CO's) of Mechanical Engineering (PG)

| SUBJECT CODE | SUBJECT NAME | CODETAILS |
|-----------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MMMD101 | Advance mathematics | Apply advanced algebraic techniques applied to diverse situations in physics, engineering and other mathematics. |
| | | Apply a range of techniques to solve first & second order partial differential equations |
| | | Apply the basic concepts of probability, probability distribution of random variables and identify central tendency. |
| | | Able to solve problems associated with continuous joint probability distribution, Markov chain using transition probability matrix and explain the concept of queuing theory. |
| | | Able to apply mathematical Techniques used in FEM analysis and solve the structural and thermal problems associated with mechanical systems. |
| MMMD102 | Theory of Electicity & | Apply advanced algebraic techniques applied to diverse situations in physics, engineering and other mathematics. |
| | Plasticity | Apply a range of techniques to solve first & second order partial differential equations |
| | 36 | Apply the basic concepts of probability, probability distribution of random variables and identify central tendency. |
| | | Able to solve problems associated with continuous joint probability distribution, Markov chain using transition probability matrix and explain the concept of queuing theory. |

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2023-2024 Able to apply mathematical Techniques used in FEM analysis and solve the structural and thermal problems associated with mechanical systems. Apply advanced algebraic techniques applied to diverse situations Material Science **MMMD103** in physics, engineering and other mathematics. Apply a range of techniques to solve first & second order partial differential equations Apply the basic concepts of probability, probability distribution of random variables and identify central tendency. Able to solve problems associated with continuous joint probability distribution, Markov chain using transition probability matrix and explain the concept of queuing theory. Able to apply mathematical Techniques used in FEM analysis and solve the structural and thermal problems associated with mechanical systems. Apply advanced algebraic techniques applied to diverse situations of MMMD104 Theory in physics, engineering and other mathematics. Vibration Apply a range of techniques to solve first & second order partial differential equations Apply the basic concepts of probability, probability distribution of random variables and identify central tendency. Able to solve problems associated with continuous joint probability distribution, Markov chain using transition probability matrix and explain the concept of queuing theory. Able to apply mathematical Techniques used in FEM analysis and solve the structural and thermal problems associated with mechanical systems. Apply advanced algebraic techniques applied to diverse situations Computer Aided MMMD105 in physics, engineering and other mathematics. & Design Apply a range of techniques to solve first & second order partial Drafting differential equations Apply the basic concepts of probability, probability distribution of random variables and identify central tendency. Able to solve problems associated with continuous joint probability distribution, Markov chain using transition probability matrix and explain the concept of queuing theory. Able to apply mathematical Techniques used in FEM analysis and solve the structural and thermal problems associated with mechanical systems. Apply advanced algebraic techniques applied to diverse situations MMMD201 Adv. Machine in physics, engineering and other mathematics. Design Apply a range of techniques to solve first & second order partial differential equations Apply the basic concepts of probability, probability distribution of random variables and identify central tendency. Able to solve problems associated with continuous joint probability distribution, Markov chain using transition probability matrix and explain the concept of queuing theory Indore Institute of Science Principalogy, Indore

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2023-2024 Able to apply mathematical Techniques used in FEM analysis and solve the structural and thermal problems associated with mechanical systems. Apply advanced algebraic techniques applied to diverse situations MMMD202 FINITE in physics, engineering and other mathematics. ELEMENT Apply a range of techniques to solve first & second order partial METHOD differential equations Apply the basic concepts of probability, probability distribution of random variables and identify central tendency. Able to solve problems associated with continuous joint probability distribution, Markov chain using transition probability matrix and explain the concept of queuing theory. Able to apply mathematical Techniques used in FEM analysis and solve the structural and thermal problems associated with mechanical systems. Apply advanced algebraic techniques applied to diverse situations MMMD203 Robotics in physics, engineering and other mathematics. Apply a range of techniques to solve first & second order partial differential equations Apply the basic concepts of probability, probability distribution of random variables and identify central tendency. Able to solve problems associated with continuous joint probability distribution, Markov chain using transition probability matrix and explain the concept of queuing theory. Able to apply mathematical Techniques used in FEM analysis and solve the structural and thermal problems associated with mechanical systems. Apply advanced algebraic techniques applied to diverse situations MMMD204 Industrial in physics, engineering and other mathematics. Tribology Apply a range of techniques to solve first & second order partial differential equations Apply the basic concepts of probability, probability distribution of random variables and identify central tendency. Able to solve problems associated with continuous joint probability distribution, Markov chain using transition probability matrix and explain the concept of queuing theory. Able to apply mathematical Techniques used in FEM analysis and solve the structural and thermal problems associated with mechanical systems. Apply advanced algebraic techniques applied to diverse situations Vibration & Noise MMMD205 in physics, engineering and other mathematics. Control Apply a range of techniques to solve first & second order partial differential equations Apply the basic concepts of probability, probability distribution of random variables and identify central tendency. Able to solve problems associated with continuous joint probability distribution. Markov chain using transition probability matrix and explain the concept of queuing theory.



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| | | Able to apply mathematical Techniques used in FEM analysis and solve the structural and thermal problems associated with mechanical systems. |
|------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MMMD301(B) | Experimental Stress Analysis | Apply advanced algebraic techniques applied to diverse situations in physics, engineering and other mathematics. Apply a range of techniques to solve first & second order partial differential equations Apply the basic concepts of probability, probability distribution of random variables and identify central tendency. Able to solve problems associated with continuous joint probability distribution, Markov chain using transition probability matrix and explain the concept of queuing theory. Able to apply mathematical Techniques used in FEM analysis and solve the structural and thermal problems associated with mechanical systems. |
| MMMD302(B) | Fluid Film Lubrication | Apply advanced algebraic techniques applied to diverse situations in physics, engineering and other mathematics. Apply a range of techniques to solve first & second order partial differential equations Apply the basic concepts of probability, probability distribution of random variables and identify central tendency. Able to solve problems associated with continuous joint probability distribution, Markov chain using transition probability matrix and explain the concept of queuing theory. Able to apply mathematical Techniques used in FEM analysis and solve the structural and thermal problems associated with mechanical systems. |

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- 9. Department of Artificial Intelligence and Machine Learning
 - A. Vision of Artificial Intelligence and machine learning (UG)

To achieve excellent standards of quality-education by using the latest tools, nurturing collaborative culture and disseminating customer oriented innovations to relevant areas of academia and industry towards serving the greater cause of society.

B. Mission of Artificial Intelligence and machine learning (UG)

To develop professionals who are skilled in the area of Artificial Intelligence and Machine Learning.

To impart quality and value based education and contribute towards the innovation of computing, expert system, Data Science to raise satisfaction level of all stakeholders.

Our effort is to apply new advancements in high performance computing hardware and software.

C. Program Educational Objective (PEO's) of Artificial Intelligence and Machine Learning (UG)

The Program Educational Objectives of the Artificial Intelligence and Machine Learning Undergraduate program are designed to produce knowledgeable Machine Learning engineers who are ready to contribute effectively to the advancement of Intelligent Computing systems. The graduates shall:

PEO1: Apply analysis, predictions, optimization, decision making and develop skills in order to formulate and solve complex intelligent computing and multidisciplinary problems.

PEO2: Take up higher studies, research & development and other creative efforts in the area of Machine Learning.

PEO3: Use their skills in an ethical & professional manner to raise the satisfaction level of stakeholders.

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Program Specific Outcomes (PSC

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Intelligence and machine learning



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PSO1: Apply the skills in the areas of Health Care, Education, Agriculture, Intelligent Transport, Environment, Smart Systems & in the multi-disciplinary area of Artificial Intelligence and Machine Learning.

PSO2: Demonstrate engineering practice learned through industry internship to solve live problems in various domains. Software applications for problem solving.

PSO 3: Professional Skills: The ability to apply the fundamentals of computer science in competitive research and to develop innovative products to meet the societal needs thereby evolving as an eminent researcher and entrepreneur.

D. Programme Outcomes (PO's) of Artificial Intelligence and Machine Learning (UG)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science and engineering fundamentals for the solution of AIML problems.

PO2: Problem analysis: Ability to identify, formulate and analyze complex engineering problems.

PO3: Design/development of solutions: Ability to design and develop AIML based systems to meet desired needs within realistic constraints such as public health and safety, environmental, agriculture, economic and societal considerations.

PO4: Conduct investigations of complex problems: Ability to demonstrate excellent programming, analytical, logical and problem-solving skills.

PO5: Modern tool usage: Ability to use the emerging technologies, skills, and modern software tools to design, develop, test and debug the programs or software.

PO6: The engineer and society: Ability to include and solve the social, cultural, ethical issues with AIML solutions.

PO7: Environment and sustainability: Ability to design and develop web based solutions with effective graphical user interface for the need of sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the AIML practices.

PO9: Individual and team work: Ability to work individually and as a member or leader in diverse teams to accomplish a commence.



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PO10: Communication: Ability to communicate effectively in both verbal and written forms with the engineering community and society.

PO11: Project management and finance: 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 the software and AIML based projects in multidisciplinary environments.

PO12: Life-long learning: Appreciation of technological change and the need for independent life-long learning.

| Univ. | Subject Name | CO Description |
|------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Code | | The Coursework is designed to provide students the opportunity to learn key |
| BT- 201 | Engineering Physics | concepts of Wave nature of particles and the Schrodinger equation. |
| | | and diffraction. |
| | | To introduce the idea of solids like solides will also be able to semiconductors), Diodes and Hall effect. STudents will also be able to |
| | | understand the basic concept of superconductivity. To develop the understanding of Lasers, fiber optics and their applications in |
| | 11 | field of engineering sciences. |
| | A diamation I | To introduce the fallouts of Rolle's Theorem that is fundamental to application |
| BT- 102 | Mathematics-1 | of analysis to Engineering problems. |
| | | To introduce the idea of apprying arrest approximation applications it gives a of curvature and to improper integrals. Apart from some applications it gives a |
| | | basic introduction on Beta and Gamma function To develop the tool of power series and Fourier series for learning advanced |
| | | Engineering Mathematics. |
| | | To familiarize the student with renormalized the student with reno |
| | | To develop the essential tool of matrices and linear algebra in a comprehension |
| | | manner. |
| BT- | Basic Mechanical Engineering | iron. |
| 203 | | Understand the concept measurement and machine tools then operating |
| | | their applications. |
| | | Pascal's law. Science Principal |
| | 0 | (Standard Plincpart |

E. Course Outcomes (CO's) of Artificial Intelligence and Machine Learning (UG)

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| App | proved by AICIE, | 2023-2024 Low of thermodynamics. |
|-----|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | 1 | To Understand the concept of heat and temperature, law of inemiodynamics |
| 1 | | holderstand their mountings and accessories, basic Reingeration of cleb and |
| | | Dollers and then more by a stocke engines |
| | - | applications. |
| 1 | | To Understand the working a |
| | | and their applications. |
| - | Basic Civil | Students will acquire the date on struction. |
| 4 | Engineering & | engineering and materials used in europey equipment to measure angles and |
| | Mechanics | Gain the ability to use modern survey at a |
| - 1 | | distances. |
| | | Students will understand the basic of contour formulate and solve engineering |
| | | Students will have the ability to identify, formation |
| | | problems related to Engineering Mechanics, our shear force and bending moment. |
| | | Students will be able to analyse beam for shear force and strong fields, |
| | Desis Computer | Able to understand the basic applications of compared to apply concepts of |
| T- | Basic Computer | describe operating system, its role and functionalities and to upper |
| 05 | Engineering | MS word, MS power point, MS Excelefficiently. |
| | | Discuss and apply simple algorithms for arithmetic and logical procepts in C++ |
| | | Translate the algorithms to programs applyingobject-oriented concepts and |
| | 1 | programming language. |
| | | Understand basics of computer networks, OSI layers and protocord |
| | | commerce applications, impact of securitythreats and attacks on networking |
| | | evidence applies security measures |
| | | Systems and the different method for representing and processing data and to |
| | | and awareness about the impact of cloud computing, its various type of services |
| | | get awareneds upper good listening skills. |
| BT- | Language Lat | Figure 1 to talk freely and lose their shyness when talking in none |
| 206 | & Seminars | Encourages teamer to the first structure in the structure is the structure in the structure is the structure |
| | | of the people |
| | | To develop the overall person presentable and help in |
| | | Helps in confidence building, |
| | | removing the stage ment |
| | | Develops speaking, writing vater: solve the related numerical problems on water |
| BT- | Engineering | Differentiate hard and soft cance in industry and daily life. |
| 101 | Chemistry | purification and its significance in various purposes based on the type of |
| | | Select the lubricant for various part |
| | | Machines. Machines knowledge of polymer, methods of |
| | | Equipped with basic knowledge |
| 8 | | polymerization and various industrial approximation polymerization and various industrial approximation polymerization and causes, |
| | | Draw the Phase diagrams of one early the corrosion to improve industrial |
| | | consequences and methods to initiatize consequences |
| | | designs. compounds with the help of |
| | 1.00 | Identify the structure of unknown/new competities such as ionization potential, |
| | | spectroscopy and understand periodic properties of |
| | | oxidation states and electro negativity |
| DT | Mothematics | -II To introduce effective mathematical tools for the solution |
| B1- | Mathematics | partial differential equations that model physical processes |
| 202 | | To introduce the tools of differentiation and integration of function problems. |
| | | variable those are used in various techniques dealing engineering prector calculus |
| | | To acquaint the student with mathematical tools available in vector early |
| | | needed various held of scionce and engineering. |
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| | 1 | IndoPencipality of |
| | CP HOD | S LORAC SI |
| | U non | and lectinoiosi |
| | 121 | Page 101 01/37 Saturday, December 2 |



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| BT- | English for | Effective use of verbal and non-verbal communication for enhanced soft skill |
|-------|------------------------|------------------------------------------------------------------------------------|
| 103 | Communication | beside enhanced reading comprehension as well |
| | | Write the different kinds of letters, reports and technical writing. |
| | | Apply basic rules of grammar in both written as well as oral communication. |
| BT- | Basic Electrical | To introduce the concept of Basics of DC electrical Network including network |
| 104 | & Electronics | theorems. |
| | Engineering | To introduce the concept of Basics of AC electrical Network(single phase & 3 |
| | | phase) |
| | | To study of law of Electromagnetism, introduction of transformer. |
| | | To study of various electrical Machines. |
| | | To study Basic Concept Digital Electronics. |
| BT- | Engineering | Draw various types of scales, and curves. |
| 105 | Graphics | Draw orthographic projections of points & lines |
| 100 | Grupines | Draw orthographic projections of Planes & Solids |
| | | Draw orthographic projections of r tailes to orthos |
| | | and pyramide |
| | | Drawing using AUTOCAD |
| DT | Marchart | Draw isometric views of Flanes and Sonds, Drawing using ACTOCAD. |
| B1- | Manufacturing | Use hand and power tools for different manufacturing processes |
| 106 | Practices | Operate machine tools while preparing any component |
| | | Select the appropriate tools required for specific operation. |
| | | Comprehend the safety measures required to be taken while using the tools. |
| | | Prepare Foundry, Fitting, Carpentry, Welding and smithy Job. |
| BT- | Internship-I (60 | Demonstrate the application of knowledge and skill sets acquired from the |
| 107 | Hrs Duration) at | course and workplace in the assigned job function/s |
| | the Institute level | Solve real life challenges in the workplace by analysing work environment and |
| | | conditions, and selecting appropriate skill sets acquired from the course |
| | | Exhibit critical thinking and problem solving skills by analysing underlying |
| | | issue/s to challenges |
| | | Demonstrate appreciation and respect for diverse groups of professionals by |
| | | engaging harmoniously with different company stakeholders |
| | | Exhibit professional ethics by displaying positive disposition during internship |
| BT- | Swachh Bharat | This course is to sensitize students about the socio-cultural aspects of the rural |
| 108 | Summer | areas parochial to their colleges. |
| 100 | Internship | Students are expected to observe investigate and learn about the following |
| | Unnat Bharat | aspects of the rural region; i Demographics, Literacy, Geographical parameters |
| | Abhiyan | of the Village: ii. Schemes of government of India and State of Madhya Pradesh |
| | (100Hrs)/ Rural | in operation in the villages |
| | Outreach | To enhance critical thinking by making them participate in social activities and |
| | oureach | imbibe human values among them |
| | | Pural Swachh Bharat Abhiyan is to promote cleanliness and develop healthy |
| | | habits in people in villages |
| | | I least Discret Abbivery To build an understanding of the development agenda |
| | | Unhat Bharat Abilityan. To build an understanding of the development agenda |
| | | within institutes of Higher Education and an institutional capacity and training |
| 11001 | 41 | relevant to national needs, especially those of rural India. |
| AI301 | AI 301 | Acquisition of technical communication's generic aspects like Reading |
| | Technical | Technical Material, Technical Writing, Listening, Thinking and using technical |
| | Communication | phrases in spoker. Knowing the parts of a technical documents like |
| | | screenshots, graphs, tabular data, data analysis, pictorial depiction. |

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Getting adapted with the technical generic formats/templates of technical writing of memos, technical report writing, technical presentations, technical proposal writing, minutes of meeting and the notes taking techniques. Accessing the reading material and developing the writing technical material with the use of technical concepts and tools like Vacaroo, Miscrosoft Visio, Notepad ++, Kinemaster, Powtoon, Split Page Technique, Diagram Technique. Learning the skill of proofreading and copy editing, paraphrasing and spinning using technical tools and manually using the knowledge of advance technical Learning the technical phrases and writing styles like descriptive, argumentative etc for developing good technical documents for presentations or disseminating technical documents. the course, the student will be able to: Upon completion of Apply the basic counting techniques (multiplication rule, combinations, 302 AI 302 AI permutations) to compute probability and work with discrete random variables (Probability and and demonstrate understanding what expectation, variance, covariance and Statistics) correlation mean and be able to compute and interpret them. Understand the properties and applications of some standard bivariate and continuous probability distributions for both discrete and continuous random Explain the concept of order statistics and solving problems related to it also will be using Binomial, Poisson, and Normal distributions to solve statistical Use scatter plots to visualize the relationship between two variables and apply the least square errors method numerically and algebraically to find the curve of best fit also will be having Knowledge about formulating and testing a hypothesis, using critical values to draw conclusions and determining probability of making errors in hypothesis tests. Get an idea of order statistics with its applications. Also about small sample tests based on Chi-square, t and F distributions to understand and analyze various methods of Non-parametric tests To understand the concept of linear, non-linear data structures, the operations 303 performed on them and the applications of various data structures. AI AI 303 Data Structure Understand the arrays, searching and sorting algorithms. Implement stacks, queues and its applications. Implement linked list and its variations. Solve problem involving graphs, trees and heaps. Demonstrate fundamental understanding of the history of artificial intelligence 304 AI AI 304 (AI) and its foundations Apply basic principles of AI in solutions that require problem solving, AI inference, perception, knowledge representation, and learning Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications of applications like NLP Demonstrate profeiency in applying method for forward and backward Demonstrate awareness and a fundamental understanding of various applications of Al vectorities in intelligent agents, expert systems, artificial neural networks and other machine learning models Principal



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AI 305 AI OOPM 305 Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects. Understand dynamic memory management techniques using pointers, constructors, destructors etc. Describe the concept of function overloading, operator overloading, virtual functions and polymorphism. Understand how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism. Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming.

| | | To understand about the need and objectives of an Operating System and |
|---------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| L-501 | Operating | ro understand about the Operating Systems. |
| | System | Cain a detailed knowledge about the functions of different modules of an |
| | | Gain a detailed knowledge process management, file system management, |
| | | Operating System, the ice management etc. |
| 1 | - | Memory managementation of various modules of Operating |
| | | Sustain and correlate the same with the actual implementation of these |
| | | System and contents and other contemporary Operating Systems. |
| | | He deretand the cocept of memory management. |
| | | Understand the cocept of management of operating systems |
| | | Explore input output management at various levels and compare and contrast |
| AL-502 | Database | Describe design of a database and below the base of th |
| | Management | traditional data processing Entity Relationship diagram and other design |
| | System | Design a database using children |
| | | techniques |
| | | Apply fundamentals of relational metal of a given domain. |
| | | Database Management System for a group concepts of transaction management. |
| | | Evaluate and optimize queries and uppy setting for real world problems |
| | | Explore relational database management sport |
| AL- | Deep Learning | Describe in-depth about theories, rundamentale, |
| 503(B) | | learning. It do and terminologies involved in deep neural |
| 505(2) | | To understand the methods and terminologies in |
| | | network |
| | | To impart knowledge on CNN and pletraned rectar rectar |
| | | To introduce RNN and Deep Generative model |
| | | To explore real world applications of Deep tearing |
| AL | AI in Health | To explore computer vision techniques for disease detection and imagining |
| AL- | Care | Understand different evaluation and hyper parameters to meeters |
| 504 (A) | Cure | Exploring use of AI in different medical applications |
| | 1.0 | Understanding different survival and Time Survival Models |
| | | Exploring Medical Treatment Effect Estimation |
| 17 | Natural | To learn the fundamentals of natural language processing |
| AL- | Natural | To learn the word level analysis methods |
| 504 (B) | Danguage | To explore the syntactic analysis concepts. |
| | Processing | To understand the semantics and pragmatics. |
| | | To understand realized applications of NLP |
| | | Describe coals and techniques in Deep learning. |
| AL- | Deep Learnin | g Describer on the retrained and back propagation |
| 505(B) | Lab | Implement alternative Prince |
| | 2V | Principal |
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| (| 9 | technological technological |
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| | | m to the CODI of a state and a sound a state also |
|----------|---------------------|------------------------------------------------------------------------------|
| | | To impart knowledge on CNN and pretrained neural networks |
| | | To implement RNN and Deep Generative model |
| | | To explore real world applications of Deep learning |
| | AI in Health | To explore computer vision techniques for disease detection and diagnosis |
| 2046 | Care Lab | Understand different evaluation and hyper parameters for medical imagining |
| AL- | | Exploring use of A1 in different medical applications |
| 506(A) | | Understanding different survival and Time Survival Models |
| | | Exploring Medical Treatment Effect Estimation |
| AL- | Natural | To learn the fundamentals of natural language processing |
| 606 (B) | Language | To learn the word level analysis methods |
| | Processing Lab | To explore the syntactic analysis concepts. |
| | | To understand the semantics and pragmatics. |
| | | To leTo understand real world applications of NLP |
| L-508 | Minor Project-1 | A fully engaged student shall be able to get exposure to undertake a shore |
| | | research project. |
| | | To enable the students to develop comprehensive solution of identified |
| | | To inculcate the ability to synthesize the results of the detailed analytica |
| = | | studies conducted lay down validity and design criteria interpret the result |
| | | for application to the problem, develop the concept and detailed design |
| | | for application to the problem, develop the concept and detailed design |
| Comostor | VI | Solution. |
| L-601 | Theory of | Explain the basic concepts of switching and finite automata theory and |
| L-001 | Computation | languages |
| | Computation | Relate practical problems to languages, automata the computability and |
| | | complexity |
| | | Complexity. |
| | | the languages |
| | | Analyza the arammer its types simplification and normal form |
| | | Analyze the graninal, its types, simplification and normal rollin. |
| | | Interpret rigorously format mathematical methods to prove properties of |
| | - | languages, grammars and automata. |
| AL-602 | Networks | Characterize and appreciate computer networks from the viewpoint of |
| 1 | | components and from the viewpoint of services. |
| | | Display good understanding of the flow of a protocol in general and a networ |
| | | protocol in particular. |
| | | Model a problem or situation in terms of layering consent and map it to th |
| | | TCP/IP stack. |
| | | Select the most suitable application layer protocol such as (H11P, S11P |
| | | SMTP, DNS bit torrent) and as per the requirements of the network |
| | | application and work with available tools to demonstrate the working of thes |
| | 20 | protocols. |
| | | Design a reliable data transfer protocol and incrementally and develop |
| | | solutions for the requirements of transport layer. |
| A-L603 | Image and | Understand images and videos representation in a detailed manner. |
| (A) | Video Processing | Apply ML techniques for image processing in different scenarios. |
| | | Apply various object detection and image segmentation algorithms |
| | | Understand concept of sport localization |
| | 0 | Apply various image restoration techniques and algorithm |
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and Technology, Indees Saturday, December 21, 2024



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| AL-604 | Cloud | Configure various virtualization tools such as virtual box, virtual |
|---------------|----------------------------------------|------------------------------------------------------------------------------------------|
| (A) | Computing | workstation. |
| | | Design and deploy a web appreciation ment to implement new schedulers. |
| | | Learn how to simulate a cloud environment that can be used as a private cloud. |
| | | Install and use a generic cloud environment. |
| | | Manipulate large data sets in a paranet of |
| A-L604 (C) | Intelligent Systems for Robotics | Understand robotics fundamentars |
| | | Explore various application of Arminoconte |
| | | Explore cocept of game playing |
| | | Understand robotes classifications in real world |
| | | Explore robotics and Al applications in reduction in a detailed manner. |
| A-L605 | Image and | Understand images and videos representation in different scenarios. |
| (A) | Video Processing Lab | Apply ML techniques for finage processing in unitation algorithms |
| | | Apply various object detection and image segmentation app |
| | | Understand concept of robotic localization |
| | | Apply various image restoration techniques and agorithm box. VMware |
| AL-606 | Cloud | Configure various virtualization tools such as virtual cons |
| (A) | Computing Lab | workstation. |
| | | Design and deploy a web application in a Paas environment, new schedulers. |
| | | Learn how to simulate a cloud environment to implement new series and a saprivate cloud. |
| | | Install and use a generic cloud environment that can be used as a private essential |
| | | Manipulate large data sets in a parallel environment. |
| A-I 606 | Intelligent | Understand robotics fundamentals |
| (C) | Systems for Robotics Lab | Explore various application of AI in robotics |
| | | Explore cocept of game playing |
| | | Understand robotes classification, specification and reresantation |
| | | Explore robotics and AI applications in real world |
| AL-607 | Internshin-III | To display the utility of information and talent units obtained from the path |
| | Internation in | and place of business withinside the assigned task functions. |
| | | Solve actual existence demanding situations withinside the pain via way of |
| | | means of analyzing the area and choosing suitable ability units obtained nom |
| | | the path. |
| | | Exhibit important questioning and hassle fixing talents via way of means of |
| | | analyzing underlying issue/s to challenges. |
| | | Demonstrate the capacity to harness assets with the aid of using analyzing |
| | | demanding situations and thinking about opportunities. |
| | | Articulate profession alternatives via way of means of uninking about |
| | | possibilities in company, sector, industry, expert and academic advancement |
| AL-603 | 8 Minor Project II | A fully engaged student shall be able to get exposure to undertake a short |
| | | research project. |
| | | To enable the students to develop comprehensive solution of identified |
| | | problems. |
| | | To inculcate the ability to synthesize the results of the detailed analytical |
| | | studies conducted, lay down validity and design criteria, interpret the result |
| | | for application to the problem, develop the concept and detailed design |
| | | solution. |
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- 10. Department of Computer Science and Engineering (Internet of Things and Cyber Security Including Blockchain Technology)
 - A. Vision of CSE (Internet of Things and Cyber Security Including Blockchain Technology) (UG)

To Achieve excellent standards of quality-education by using the latest tools, nurturing collaborative culture and disseminating customer-oriented innovations to relevant areas of academia and industry towards serving the greater cause of society.

B. Mission of CSE (Internet of Things and Cyber Security Including Blockchain Technology) (UG)

To develop professionals who are skilled in IOT, Cybersecurity and Blockchain.

To impart quality and value-based education and contribute towards the innovation of computing, networks, security to raise the satisfaction level of all stakeholders.

Our effort is to apply new advancements in high performance computing hardware and software.

C. Program Educational Objective (PEO's) of CSE (Internet of Things and Cyber Security Including Blockchain Technology) (UG)

The Program Educational Objectives of the CSE - IOT and blockchain using cyber security Undergraduate program are designed to produce knowledgeable IOT and block chain engineers who are ready to contribute effectively to the advancement of IoT and Cybersecurity systems. The graduates shall:

PEO1: Apply analysis, predictions, security, optimization, decision making and develop skills to formulate and solve complex Intelligent computing and multidisciplinary problems.

evelopment, and other creative efforts in the Scier PEO2: Take up higher studies area of IOT and Blockchain ier Indore Institute

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Saturday, December 21, 2024

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PEO3: Use their skills in an ethical & professional manner to raise the satisfaction level of stakeholders.

D. Program Specific Outcomes (PSO's) of CSE (Internet of Things and Cyber Security Including Blockchain Technology) (UG)

Understand engineering knowledge in the areas of IOT, blockchain, cyber security, artificial intelligence, full stack, web development, gaming, virtual reality, and augmented reality.

Design and integrate hardware and software systems in the areas of IOT, Blockchain and Cloud Computing with strong emphasis on lifelong learning to create feasible engineering solutions for the advancement of society.

E. Programme Outcomes (PO's) of CSE (Internet of Things and Cyber Security Including Blockchain Technology) (UG)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural science and engineering sciences.

PO3: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety and 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.

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.

HOD



Saturday, December 21, 2024


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PO6: The engineer and society: Apply reasoning informed by 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 professional engineering solutions in societal and environmental context 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 engineering practice.

PO9: Individual and teamwork: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication: Communicate effectively with the engineering community and with society at large. Be able to comprehend and write effective reports documentation. Make effective presentations and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team. Manage projects 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.

F. Course Outcomes (CO's) of CSE (Internet of Things and Cyber Security Including Blockchain Technology) (UG)

| Subject Code | Subject Name | CO Description |
|-----------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Differentiate hard and soft water; solve the related hamerical problem purification and its significance in industry and daily life. Select the lubricant for various purposes based on the type of |
| BT- 101 | Engineering Chemistry | Machines. Equipped with basic knowledge of polymer , methods of polymerization and various industrial applications of polymers Draw the Phase diagrams of one & amp; two component systems and causes, consequences an Suiethors to minimize corrosion to improve industrial designs. |
| | O HOD | Indore Institute of Science and Technology, Indore |
| | | Page 1997/140 Saturday, December 21, 202 |



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| | | Identify the structure of unknown/new compounds with the help of spectroscopy and |
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| | | understand periodic properties such as ionization potential, oxidation states and |
| | | electro negativity |
| | | To introduce the fallouts of Rolle's Theorem that is fundamental to appread on or |
| | | analysis to Engineering problems. |
| | | To introduce the idea of applying differential and integral calculus to notions of |
| | | curvature and to improper integrals. Apart from some applications it gives a basic |
| 0.00 | | introduction on Beta and Gamma function |
| BT- | Mathematics-I | To develop the tool of power series and Fourier series for learning advanced |
| 102 | | Engineering Mathematics. |
| | | To familiarize the student with functions of several variables that is essential in most |
| | | branches of engineering |
| | 1 | To develop the essential tool of matrices and linear algebra in a comprehensive |
| | | manner. |
| | | Effective use of verbal and non-verbal communication for enhanced soft skill beside |
| BT- | English for | enhanced reading comprehension as well |
| 103 | Communication | Write the different kinds of letters, reports and technical writing. |
| 105 | | Apply basic rules of grammar in both written as well as oral communication. |
| | | To introduce the concept of Basics of DC electrical Network including network |
| | | theorems. |
| | Basic Electrical & Electronics Engineering | To introduce the concept of Basics of AC electrical Network(single phase & 3 |
| BT- | | phase). |
| 104 | | To study of law of Electromagnetism, introduction of transformer. |
| | | To study of various electrical Machines. |
| | | To study Basic Concept Digital Electronics. |
| | | Draw various types of scales, and curves. |
| | | Draw orthographic projections of points & lines |
| DT | Engineering | Draw orthographic projections of Planes & Solids |
| BI- 105 | Graphics | Draw sections and development of solids including cylinders, cones, prisms and |
| 105 | Graphics | pyramids |
| | | Draw isometric views of Planes and Solids, Drawing using AUTOCAD. |
| | | Lise hand and power tools for different manufacturing processes |
| | | Operate machine tools while preparing any component |
| BT- | Manufacturing | Select the appropriate tools required for specific operation. |
| 106 | Practices | Comprehend the safety measures required to be taken while using the tools. |
| | | Demorra Foundry Fitting Corportry Welding and smithy Job. |
| | | Prepare Foundly, Fitting, Carpenny, Welding and skill sets acquired from the course |
| | | Demonstrate the application of knowledge and skin sets dequired from an |
| | | and workplace in the assigned job runcholace by analysing work environment and |
| | Internship-I (60 | Solve real life challenges in the workplace by analysing work environment and solve the course |
| BT- | Hrs Duration) at | conditions, and selecting appropriate skill sets acquired non-title could be |
| 107 | the Institute | Exhibit critical thinking and problem solving skins by analysing underlying topolo |
| 107 | level | to challenges |
| | | Demonstrate appreciation and respect for diverse groups of professionals of |
| | | engaging harmoniously with different company stateholders |
| | | Exhibit professional ethics by displaying positive disposition during internantp |
| BT- | Swachh Bharat | This course is to sensitize students about the socio-cultural aspects of the fund areas |
| 108 | Summer | parochial to their colleges |



Principal tute of Indore Institute of Science and Technology, Indore

Saturday, December 21, 2024



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| | Internship Unnat Bharat Abhiyan | Students are expected to observe, investigate and learn about the following aspects of the rural region: i. Demographics, Literacy, Geographical parameters of the Village; ii. Schemes of government of India and State of Madhya Pradesh in |
|------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | (100Hrs)/ Rural Outreach | operation in the villages. To enhance critical thinking by making them participate in social activities and |
| | | imbibe human values among them. Rural Swachh Bharat Abhiyan is to promote cleanliness and develop healthy habits |
| | | in people in villages. Unnat Bharat Abhiyan: To build an understanding of the development agenda within institutes of Higher Education and an institutional capacity and training relevant to |
| | | The Coursework is designed to provide students the opportunity to learn key |
| | | Student will able to understand the knowledge of Wave optics i.e. interference and |
| ВТ- 201 | Engineering Physics | To introduce the idea of solids like semiconductors (P type and N Type semiconductors), Diodes and Hall effect. STudents will also be able to understand the basic concept of superconductivity. |
| | | To develop the understanding of Lasers, fiber optics and their applications in field of engineering sciences. |
| | | To provide you to basic understanding of Electrostatics in vacuant. |
| | | differential equations that model physical processes. |
| BT- | | To introduce the tools of differentiation and integration of functions of complex |
| 202 | Mathematics-II | variable those are used in various techniques dealing engineering problems. |
| | | To acquaint the student with mathematical tools available in vector calculus needed |
| | | various field of science and engineering. |
| | | Understand the properties of material, successful and machine tools their operations and their |
| | | applications. |
| | Basic | Understand the concept of fluid flow, properties of fluid, Bernoulli's equation, |
| BT- | Mechanical | Pascal's law. |
| 203 | Engineering | To Understand the concept of heat and temperature, law of including annes, control |
| | | and their mountings and accessories, basic reengedurer of the strokes, 2 stroke engines and |
| | | their applications. |
| | | Students will acquire the basic knowledge in different fields of civil engineering and |
| | | materials used in construction. |
| DT | Basic Civi | Gain the ability to use modern survey equipment to measure angles and distances. |
| 204 | Engineering & | Students will understand the basic of contour lines and map |
| 204 | Mechanics | Students will have the ability to identify, formulate and borre engineering |
| | | Students will be able to analyse beam for shear force and bending moment. |
| | | Able to understand the basic applications of computers in various fields, describe |
| | | operating system, its role and functionalities and to apply concepts of MS word, MS |
| BT- | Basic Compute | r power point, MS Excelefficiently. |
| 205 | Engineering | Discuss and apply simple algorithms for arithmetic and logical problems. |
| | | Translate the algorithma solution applying offer entities and a |
| | | programming randouge |



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and Technology Ind Saturday, December 21, 2024

| | | Understand basics of computer networks, OSI layers and protocols, E commerce applications, impact of securitythreats and attacks on networking systems and also security measures Understand the different method for representing and processing data and to get |
|------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | awareness about the impact of cloud computing, its started of pro- learners to develop good listening skills. Encourages learner to talk freely and lose their shyness when talking in front of the people |
| BT- 206 | Language Lab & Seminars | To develop the overall personality of the students by the practical activities Helps in confidence building, motivation to be more presentable and help in removing the stage fright Develops speaking, writing, reading, listening and presentation skills. |

| Univ. Subject | Subject Name | CO Description |
|------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18302 | Discrete Structures | Students will be able to understand the notion of mathematical trinking and algorithmic thinking and be able to apply them in problem solving such as formula specifications, verifications and basic concepts of set theory. Understand the basic principle of boolean algebra, logic and set theory. Be able to construct simple mathematical proof and possess the ability to verify them. |
| | - | Acquire ability to describe computing problems with the help of graph theory and finite state machines, also express its utility in solving and modeling real time problems. |
| 18303 | Data Structures | Apply basic counting techniques to solve combinatorial problem. To understand the concept of linear, non-linear data structures, the operations performed on them and the applications of various data structures. |
| | | Implement stacks, queues and its applications. Implement linked list and its variations. Solve problem involving graphs, trees and heaps. |
| IS304 | Introduction to Information Security | Understand key terms and concepts in information security and Cryptography and evaluate the cyber security needs of an organization Acquire knowledge to secure computer systems, protect personal data, and secure computer networks in an organization Apply knowledge of various encryption algorithms and authentication mechanisms |
| | | to secure information in computer systems and networks Understand principles of web security to secure network by monitoring and analyzing the nature of attacks and design/develop security architecture for an organization. Design operational and strategic information security strategies and policies. |
| IS305 | Object Oriented Programming | Describe the procedural and object oriented paradigm with concepts of streams classes, functions, data and objects. Understand dynamic memory management techniques using pointers, constructors |
| | & Methodology | Describe the concept of function overloading, operator overloading, virtual function and polymorphism. Understand how to apply the major object-oriented concepts to implement object oriented programs of CH-conceptation, inheritance and polymorphism. |



| | | Classify inheritance with the understanding of early and late binding, usage of |
|---------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | · · · · · · · · · · · · · · · · · · · | exception handling, generic programming. |
| S306 | Computer | Understand the basic concepts scripting and the contributions of scripting language. |
| | Workshop: | Examine the core data structures like lists, dictionaries, tuples and sets in Fyulon to |
| | Introduction to | store, process and sort the data. |
| | Python | Identify the external modules and import specific methods form them. |
| | | Demonstrate proficiency in handling Strings and file systems. |
| 1.1 | | Explore python especially the object oriented concepts, and the built in objects of Python |
| 3T107 | Evaluation of | To display the utility of information and talent units obtained from the path and place of huminose withinside the assigned task functions. |
| | Internship | Solve actual existence demanding situations withinside the path via way of means of solve actual existence demanding situations withinside the path is obtained from the path. |
| | | exhibit important questioning and hassle fixing talents via way of means of analysing |
| | | underlying issue/s to challenges. |
| | | Demonstrate the capacity to harness assets with the aid of using analysing demanding |
| | | situations and thinking about opportunities. |
| | | Articulate profession alternatives via way of means of thinking about possibilities in |
| | | company, sector, industry, expert and academic advancement. |
| Univ. | Subject Name | CO Description |
| Subject | | |
| Code | | the |
| IS401 | Probability, | Understand the basic probability concepts and random variables that have numerous |
| | Statistics and | applications in computer science. |
| | Linear Algebra | Apply the concept of distribution functions in web data and traffic network modering |
| | | in computer science engineering. |
| | | Analyze statistics and its applications in simulation, data mining and reliability |
| | | theory. |
| | | Determine the process constructing linear and non-linear curves through the method |
| | | of least square and understand its usage in binary mixtures. |
| | | Identify the concept of statistical quality control in computer science and mechanical |
| | | engineering. |
| 10100 | T lucratele | Understand Internet of Things and its hardware and software components. |
| 18402 | Fundamentals | Interface I/O devices sensors & communication modules. |
| | 01 10 1 | Analyza data from various sources in real-time and take necessary actions in an |
| | | Analyze data from various sources in real unit and |
| | - | Remetely monitor data and control devices. |
| | | Develop real life for based projects |
| | | Develop real me for based projects. |
| IS403 | Operating | Explain the fole of operating system and re-manage |
| | Systems | Identify the process management poncies and analysis and p |
| | | processes by CPO along with memory management |
| | | Identify process synchronization and coordination management including virtual memory |
| | | Understand concepts of memory management mendang virtual memory disk |
| | | Understand issues related to the system interface and imperioritation, end |
| | | management and Summarize the introduction to network, manaprocessor and |
| | | distributed OS, and Maborate on one studies for the same. |
| IS404 | | Define the structure: function and encoacteristics of computer systems. |
| | 1./ | Design of the vances functional units and components of computers. |
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| | | Saturday, December 21/20 |
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| | Computer | Identify the elements of input output in computers. |
| | Organization | Explain the function of each element of a memory hierarchy. |
| | & Architecture | Understand the function of multi processing and techniques to achieve it. |
| IS405 | Computer | Characterise and appreciate computer networks from the viewpoint of components and from the viewpoint of services. |
| | INCLIVITIES | Display good understanding of the flow of a protocol in general and a network protocol in particular. |
| | | Model a problem or situation in terms of layering consent and map it to the TCP/IP |
| | | Select the most suitable application layer protocol such as (HTTP, STTP, SMTP, DNS bit torrent) and as per the requirements of the network application and work with available tools to demonstrate the working of these protocols. |
| | | Design a reliable data transfer protocol and incrementally and develop solutions for the requirements of transport layer. |
| IS406 | Java Lab | Understand Functions of operating system and its types and Unix system |
| | | Understand and make use of the basic commands of linux operating system and Work |
| | | confidently in Linux environment, |
| | | Onderstand me systems and musuate various me operations |
| | | Create shell scripts to automate different tasks as Entrax. |
| BT407 | Internship II: | To display the utility of information and talent units obtained from the path and place |
| | 90 hrs | of business withinside the assigned task functions. |
| | Internship | Solve actual existence demanding situations withinside the path via way of means of |
| | based on using | analysing the area and choosing suitable ability units obtained from the pain. |
| | various | Exhibit important questioning and hassie fixing talents via way of means of analysing |
| | softwares | underlying issue/s to challenges. |
| | | Demonstrate the capacity to harness assets with the aid of using analysing demanding |
| | | situations and thinking about opportunities. |
| | | Articulate profession alternatives via way of means of thinking about possibilities in |
| | | company, sector, industry, expert and academic advancement. |

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Indore Institute of Science and Technology, In-Saturday, December 21, 2024

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- 11. Department of Data Science
- A. Vision of Data Science (UG)

To deliver high-quality education in the field of Data Science and associated disciplines like Artificial Intelligence and Machine Learning as well as to conduct research that is tailored to address the evolving needs of various industries and the diverse demands of society.

B. Mission of Data Science (UG)

To offer high-quality and value-based education to students that equips students with the analytical skills, computational techniques, and domain knowledge needed to succeed in diverse professional environment.

To promote a collaborative and inclusive culture that values diverse perspectives and encourages interdisciplinary collaboration for learning, research, and innovation.

To create a centre of excellence in data science education that develops students' technical proficiency as well as their ethical values, creative thinking, and leadership abilities.

C. Program Educational Objective (PEO's) of Data Science (UG)

PEO1. Demonstrate technical competence in data science and develop solutions in core and interdisciplinary areas according to the needs of the society.

PEO2. Analyse, innovate and pursue research and development in the field of data science and Apply knowledge wisely for sustained employability.

PEO3. Communicate effectively, display leadership skills and demonstrate professionalism and ethical behaviour.

D. Program Specific Outcomes (PSO's) of Data Science (UG)

PSO 1: Demonstrate the understanding of computer science, computational mathematics, statistics, AI and data management techniques in the field of data science and showcase the global technical competence.

PSO 2: Design and develop effective solutions using data analytics, visualization, predictive modelling and machine learning techniques.

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PSO 3: Apply the knowledge of diverse data science methodologies across a range of application domains and dynamic research fields.

E. Programme Outcomes (PO's) of Data Science (UG)

PO 1: Apply the knowledge of mathematics, science, engineering fundamentals and engineering specialization for the solution of complex engineering problems.

PO 2: Identify, formulate and analyse challenging engineering problems using the basic concepts of mathematics and engineering sciences to achieve justified findings.

PO 3: Design and develop solutions/systems for challenging engineering problems that satisfy requirements while taking public health and safety, cultural, socioeconomic and environmental factors into account.

PO 4: To provide valid results and conclusions, use research-based methodologies including experiment design, data analysis and interpretation and information synthesis.

PO 5: Apply suitable methodologies and cutting-edge engineering and IT technologies, such as modelling and prediction for solving challenging engineering problems with the understanding of constraints and limitations.

PO 6: Analyse and solve social, cultural, ethical and health issues using knowledge acquired from the engineering domain.

PO 7: Understand how professional engineering solutions affect society and the environment and showcase the understanding of and commitment to sustainable development.

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

PO 9: Ability to function effectively as an individual, as a team member or leader and in multidisciplinary settings to achieve a common goal.

PO 10: Communicate effectively with the engineering community as well as the society about complex engineering problems. Communication includes generating effective reports and design documentation.

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Saturday, December 21, 2024



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PO 11: Exhibit an awareness and comprehension of engineering and management concepts and apply them to one's own work, as a team member and leader, in project management and in cross-disciplinary environments.

PO 12: Understand the importance of independent lifelong learning in the broader context of technological change and possess the necessary skills and knowledge to do so.

F. Course Outcomes (CO's) of Data Science (UG)

| Univer sity Subject Code | Subject Name | CO Description |
|-----------------------------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BT-101 | Engineering Chemistry | Differentiate hard and soft water; solve the related numerical problems on water purification and its significance in industry and daily life. Select the lubricant for various purposes based on the type of |
| | | Machines. Equipped with basic knowledge of polymer , methods of polymerization and various industrial applications of polymers Draw the Phase diagrams of one & amp; two component systems and causes, consequences and methods to minimize corrosion to improve industrial designs. |
| | | Identify the structure of unknown/new compounds with the help of spectroscopy and understand periodic properties such as ionization potential, oxidation states and electro negativity |
| BT-102 | Mathematics-I | To introduce the fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems. To introduce the idea of applying differential and integral calculus to notions of curvature and to improper integrals. Apart from some applications it gives a basic |
| | | To develop the tool of power series and Fourier series for learning advanced Engineering Mathematics. To familiarize the student with functions of several variables that is essential in most branches of engineering To develop the essential tool of matrices and linear algebra in a comprehensive |
| BT-103 | English for Communicatio n | Effective use of verbal and non-verbal communication for enhanced soft skill beside enhanced reading comprehension as well Write the different kinds of letters, reports and technical writing. |
| BT-104 | Basic Electrical & Electronics Engineering | To introduce the concept of Basics of DC electrical Network including network theorems. To introduce the concept of Basics of AC electrical Network(single phase & 3 phase) To study of law of Electromagnetism, introduction of transformer. To study of various electrical Machines. To study Basic Concept Digital Electronics. |
| BT-105 | . / | Draw various types of seates, and curves. |
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| | Engineering | Draw orthographic projections of points & lines |
| | Graphics | Draw orthographic projections of Planes & Solids Draw sections and development of solids including cylinders, cones, prisms and |
| | | pyramids. Draw isometric views of Planes and Solids, Drawing using AUTOCAD. |
| | Manufacturing | Use hand and power tools for different manufacturing processes |
| B1-106 | Draations | Operate machine tools while preparing any component |
| | Practices | Select the appropriate tools required for specific operation. |
| | | Comprehend the safety measures required to be taken while using the tools. |
| | | Deepera Foundry Fitting Carpentry, Welding and smithy Job. |
| BT-107 | Internship-I | Demonstrate the application of knowledge and skill sets acquired from the course and |
| | (60 Hrs Duration) at | Solve real life challenges in the workplace by analysing work environment and |
| | the Institute level | Exhibit critical thinking and problem solving skills by analysing underlying issue/s |
| | | to challenges Demonstrate appreciation and respect for diverse groups of professionals by engaging |
| | | harmoniously with difference displaying positive disposition during internship |
| BT-108 | Swachh | Exhibit professional ethics by displaying positive displaying aspects of the rural areas. This course is to sensitize students about the socio-cultural aspects of the rural areas |
| | Bharat Summer Internship Unnat Bharat | parochial to their colleges. Students are expected to observe, investigate and learn about the following aspects of the rural region: i. Demographics, Literacy, Geographical parameters of the Village ii. Schemes of government of India and State of Madhya Pradesh in operation in the |
| | Abhiyan (100Hrs)/ | villages. To enhance critical thinking by making them participate in social activities and |
| | Rural Outreach | Rural Swachh Bharat Abhiyan is to promote cleanliness and develop healthy habit |
| | | in people in villages. Unnat Bharat Abhiyan: To build an understanding of the development agenda within institutes of Higher Education and an institutional capacity and training relevant to national needs, especially those of rural India. |

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The Mission, Vision, PEO's, PSO's, PO's and CO's are published at

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B. Notice boards of Department



Vision, Mission, PEO's and PO's of Mechanical Engineering Department





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Vision, Mission, PEO's and PO's of AIML

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Vision, Mission, PEO's and PO's of CSE





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Vision, Mission, PEO's and PO's of IT





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Vision, Mission, PEO's and PO's of Chemical



Vision, Mission, PEO's and PO's of Civil

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Vision, Mission, PEO's, PSO's and PO's Proof on website for IT Department





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Vision, Mission, PEO's, PSO's, PO's and CO's Proof on website for AIML Department

C. Faculty rooms





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Display of PEO's, PO's and PSO's in faculty cabin

D. Various promote location in the Institute.



Vision, Mission of Institute



Institute Vision & Mission near Exam Section

Vision, Mission, PEO's, PO's near Classroom

HOD



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Saturday, December 21, 2024



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新生产新教会员。

E. Head of the Department's Office



Institute Vision & Mission near Exam Section

F. Library





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G. Lab Manual and Notice board of Lab



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H. Availability in departmental level documents.





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I. Institute Prospectus



FDP on Robotics under e-Yantra IIT Bombay Leaflet

Vision, Mission, PEO's, PO's, PSO's and CO's in Course file





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Course Outcome Shared through Google Classroom to the students

Apart from the above, these are also disseminated to all the stakeholders of the programs through faculty meetings, during student's workshops / seminar, student induction programs, and parent-teacher meetings etc.

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Indore Institute of Sci and Technology, Indore

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