



# SITYOG INSTITUTE OF TECHNOLOGY

Growth Center, Jasoiya More, Aurangabad (Bihar) – 824102

Approved By AICTE under Govt. of India (Ministry of HRD).

Affiliated to Aryabhata Knowledge University, Patna and Bihar Engineering University, Patna

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## List of course with topics of Professional Ethics, Gender, Human Values, Environment and Sustainability

Sl. NO	Program code	Program Name	Course Code	Name of the course	Name of the topics	Regulation of University
1	101	Civil Engineering	HSMC201	Humanities and Social Sciences including Management courses	Professional Ethics	2018
2	101	Civil Engineering	HSMC251	Humanities and Social Sciences including Management courses	Professional Ethics	2018
3	102	Mechanical Engineering	PCC-ME201	Thermodynamics	Professional Ethics	2018
4	102	Mechanical Engineering	PCC-ME202	Machine Drawing	Professional Ethics	2018
5	103	Electrical Engineering	MC	Environmental Science	Environmental and Sustainability	2018
6	105	Computer Science Engineering	HSMC 301	Humanities & Social Sciences including Management courses	Professional Ethics	2018
7	105	Computer Science Engineering	PCC CS 301	Data Structure & Algorithm	Professional Ethics	2018
8	102	Mechanical Engineering	MC	Environmental Science	Environmental and Sustainability	2018
9	105	Computer Science Engineering		Human Resource Development and Organizational Behavior	Environmental and Sustainability	2018
10	105	Computer Science Engineering	MC	Environmental Science	Environmental and Sustainability	2018
11	101	Civil Engineering		Environmental Engineering-II	Environmental and Sustainability	2018
12	101	Civil Engineering		Geotechnical Engineering-II	Environmental and Sustainability	2018
13	103	Electrical Engineering	HSMC 501	Professional skills Development	Professional Ethics	2018



Director

Publications, Reprint, 2010.

3. P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability Theory, Universal Book Stall, 2003 (Reprint).
4. S. Ross, A First Course in Probability, 6th Ed., Pearson Education India, 2002.

<b>HSMC201</b>	<b>Humanities – I (Effective Technical Communication)</b>	<b>3L:0T:0P</b>	<b>3 credits</b>
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**Module 1:** Information Design and Development- Different kinds of technical documents, Information development life cycle, Organization structures, factors affecting information and document design, Strategies for organization, Information design and writing for print and for online media.

**Module 2:** Technical Writing, Grammar and Editing- Technical writing process, forms of discourse, Writing drafts and revising, Collaborative writing, creating indexes, technical writing style and language. Basics of grammar, study of advanced grammar, editing strategies to achieve appropriate technical style. Introduction to advanced technical communication, Usability, Human factors, Managing technical communication projects, time estimation, Single sourcing, Localization.

**Module 3:** Self Development and Assessment- Self assessment, Awareness, Perception and Attitudes, Values and belief, Personal goal setting, career planning, Self-esteem. Managing Time; Personal memory, Rapid reading, Taking notes; Complex problem solving; Creativity

**Module 4:** Communication and Technical Writing- Public speaking, Group discussion, Oral; presentation, Interviews, Graphic presentation, Presentation aids, Personality Development. Writing reports, project proposals, brochures, newsletters, technical articles, manuals, official notes, business letters, memos, progress reports, minutes of meetings, event report.

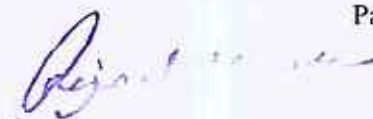
**Module 5:** Ethics- Business ethics, Etiquettes in social and office settings, Email etiquettes, Telephone Etiquettes, Engineering ethics, Managing time, Role and responsibility of engineer, Work culture in jobs, Personal memory, Rapid reading, Taking notes, Complex problem solving, Creativity.

**Text/Reference Books:**

1. David F. Beer and David McMurrey, Guide to writing as an Engineer, John Willey. New York, 2004
2. Diane Hacker, Pocket Style Manual, Bedford Publication, New York, 2003. (ISBN 0312406843)
3. Shiv Khera, You Can Win, Macmillan Books, New York, 2003.
4. Raman Sharma, Technical Communications, Oxford Publication, London, 2004.
5. Dale Jungk, Applied Writing for Technicians, McGraw Hill, New York, 2004. (ISBN: 07828357-4)
6. Sharma, R. and Mohan, K. Business Correspondence and Report Writing, TMH New Delhi 2002.
7. Xebec, Presentation Book, TMH New Delhi, 2000. (ISBN 0402213)

<b>HSMC251</b>	<b>Introduction to Civil Engineering</b>	<b>2L:0T:0P</b>	<b>2 credits</b>
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When the students enter the college to pursue a degree in Civil Engineering and as well pursue a career in Civil Engineering after graduation, they need to understand the breadth and depth available in this field for possible engagement. When many alternative disciplines of engineering appear to offer apparently more glamorous avenues for advancement, the Civil Engineering student should realize the solid foundations available in this



mother of all engineering disciplines. The students should understand the enormous possibilities available for creative and innovative works in this all pervasive field of engineering.

This course is designed to address the following:

- to give an understanding to the students of the vast breadth and numerous areas of engagement available in the overall field of Civil Engineering
- to motivate the student to pursue a career in one of the many areas of Civil Engineering with deep interest and keenness.
- To expose the students to the various avenues available for doing creative and innovative work in this field by showcasing the many monuments and inspiring projects of public utility.

### Proposed Syllabus

What is Civil Engineering/ Infrastructure, History of Civil Engineering, Overview of ancient & modern civil engineering marvels, current national planning for civil engineering/ infrastructure projects, scope of work involved in various branches of Civil Engineering – Architecture & Town planning, Surveying & Geomatics, Structural Engineering, Construction Management, Construction materials, Hydrology and Water Resources Engineering, Hydraulic Engineering, Environmental Engineering & Sustainability, Pavement Engineering and construction, Traffic & Transportation Engineering and Management, Geotechnical Engineering, Ocean Engineering, Building Energy Efficiency, Basics of

Contract Management, Professional Ethics, Avenues for entrepreneurial working, Creativity & Innovativeness in Civil Engineering,

### Modules

1. **Basic Understanding:** What is Civil Engineering/ Infrastructure? Basics of Engineering and Civil Engineering; Broad disciplines of Civil Engineering; Importance of Civil Engineering, Possible scopes for a career
2. **History of Civil engineering:** Early constructions and developments over time; Ancient monuments & Modern marvels; Development of various materials of construction and methods of construction; Works of Eminent civil engineers
3. **Overview of National Planning for Construction and Infrastructure Development;** Position of construction industry vis-à-vis other industries, five year plan outlays for construction; current budgets for infrastructure works;
4. **Fundamentals of Architecture & Town Planning:** Aesthetics in Civil Engineering, Examples of great architecture, fundamentals of architectural design & town planning; Building Systems (HVAC, Acoustics, Lighting, etc.); LEED ratings; Development of Smart cities
5. **Fundamentals of Building Materials:** Stones, bricks, mortars, Plain, Reinforced & Prestressed Concrete, Construction Chemicals; Structural Steel, High Tensile Steel, Carbon Composites; Plastics in Construction; 3D printing; Recycling of Construction & Demolition wastes
6. **Basics of Construction Management & Contracts Management:** Temporary Structures in Construction, Construction Methods for various types of Structures; Major Construction equipment; Automation & Robotics in Construction; Modern Project management Systems; Advent of Lean Construction; Importance of Contracts Management

*Rajesh Kumar*



7. **Environmental Engineering & Sustainability:** Water treatment systems; Effluent treatment systems; Solid waste management; Sustainability in Construction;
8. **Geotechnical Engineering:** Basics of soil mechanics, rock mechanics and geology; various types of foundations; basics of rock mechanics & tunnelling
9. **Hydraulics, Hydrology & Water Resources Engineering:** Fundamentals of fluid flow, basics of water supply systems; Underground Structures; Underground Structures Multipurpose reservoir projects
10. **Ocean Engineering:** Basics of Wave and Current Systems; Sediment transport systems; Ports & Harbours and other marine structures
11. **Power Plant Structures:** Chimneys, Natural & Induced Draught Colling towers, coal handling systems, ash handling systems; nuclear containment structures; hydro power projects
12. **Structural Engineering:** Types of buildings; tall structures; various types of bridges; Water retaining structures; Other structural systems; Experimental Stress Analysis; Wind tunnel studies;
13. **Surveying & Geomatics:** Traditional surveying techniques, Total Stations, Development of Digital Terrain Models; GPS, LIDAR;
14. **Traffic & Transportation Engineering:** Investments in transport infrastructure development in India for different modes of transport; Developments and challenges in integrated transport development in India: road, rail, port and harbour and airport sector; PPP in transport sector; Intelligent Transport Systems; Urban Public and Freight Transportation; Road Safety under heterogeneous traffic; Sustainable and resilient pavement materials, design, construction and management; Case studies and examples.
15. **Repairs & Rehabilitation of Structures:** Basics of corrosion phenomena and other structural distress mechanisms; some simple systems of rehabilitation of structures; NonDestructive testing systems; Use of carbon fibre wrapping and carbon composites in repairs.
16. **Computational Methods, IT, IoT in Civil Engineering:** Typical software used in Civil Engineering- Finite Element Method, Computational Fluid Dynamics; Computational Geotechnical Methods; highway design (MX), Building Information Modelling; Highlighting typical available software systems (SAP, STAAD, ABAQUS, MATLAB, ETAB, NASTRAN, NISA, MIKE 21, MODFLOW, REVIT, TEKLA, AUTOCAD,...GEOSTUDIO, EDUSHAKE, MSP, PRIMAVERA, ArcGIS, VisSIM, ...)
17. **Industrial lectures:** Case studies of large civil engineering projects by industry professionals, covering comprehensive planning to commissioning;
18. **Basics of Professionalism:** Professional Ethics, Entrepreneurial possibilities in Civil Engineering, Possibilities for creative & innovative working, Technical writing Skills enhancement; Facilities Management; Quality & HSE Systems in Construction

#### ORGANISATION OF COURSE (2-1-0)

S. No.	Module [No of Lectures within brackets]	Tutorials
1	Basic Understanding (1)	Develop a matrix of various disciplines and possible roles for engineers in each
2	History of Civil engineering (1)	Identify 10 ancient monuments and ten modern marvels and list the uniqueness of each
3	Overview of National planning for Construction and Infrastructure Development (1)	Develop a Strategic Plan for Civil Engineering works for next ten years based on past investments and identify one typical on-going mega project in each area



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4. Centre of mass and inertia tensor of mechanical systems.
5. Application of the vector theorems of mechanics and interpretation of their results.
6. Newton's laws of motion and conservation principles.

<b>PCC-ME 201</b>	<b>Thermodynamics</b>	<b>3L:1T:0P</b>	<b>4 credits</b>
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**Objectives:**

1. To learn about work and heat interactions, and balance of energy between system and its Surroundings
2. Surroundings
3. To learn about application of 1<sup>st</sup> law to various energy conversion devices
4. To evaluate the changes in properties of substances in various processes
5. To understand the difference between high grade and low grade energies and 2<sup>nd</sup> law limitations on energy conversion

**Contents:**

**Module 1:**

**(5 lectures)**

Fundamentals - System & Control volume; Property, State & Process; Exact & Inexact differentials; Work-Thermodynamic definition of work; examples; Displacement work; Path dependence of displacement work and illustrations for simple processes; electrical, magnetic, gravitational, spring and shaft work.

**Module 2:**

**(5 lectures)**

Temperature, Definition of thermal equilibrium and Zeroth law; Temperature scales; Various Thermometers- Definition of heat; examples of heat/work interaction in systems- First Law for Cyclic & Non-cyclic processes; Concept of total energy E; Demonstration that E is a property; Various modes of energy, Internal energy and Enthalpy.

**Module 3:**

**(8 lectures)**

Definition of Pure substance, Ideal Gases and ideal gas mixtures, Real gases and real gas mixtures, Compressibility charts- Properties of two phase systems - Const. temperature and Const. pressure heating of water; Definitions of saturated states; P-v-T surface; Use of steam tables; Saturation tables; Superheated tables; Identification of states & determination of properties, Mollier's chart.

**Module 4:**

**(5 lectures)**

First Law for Flow Processes - Derivation of general energy equation for a control volume; Steady state steady flow processes including throttling; Examples of steady flow devices; Unsteady processes; examples of steady and unsteady 1 law applications for system and control volume.



*Rejeesh Kumar*

**Module 5:****(5 lectures)**

Second law - Definitions of direct and reverse heat engines; Definitions of thermal efficiency and COP; Kelvin-Planck and Clausius statements; Definition of reversible process; Internal and external irreversibility; Carnot cycle; Absolute temperature scale.

**Module 6:****(8 lectures)**

Clausius inequality; Definition of entropy  $S$ ; Demonstration that entropy  $S$  is a property; Evaluation of Entropy for solids, liquids, ideal gases and ideal gas mixtures undergoing various processes; Determination of entropy from steam tables-Principle of increase of entropy; Illustration of processes in T-s coordinates; Definition of Isentropic efficiency for compressors, turbines and nozzles- Irreversibility and Availability, Availability function for systems and Control volumes undergoing different processes, Lost work. Second law analysis for a control volume. Exergy balance equation and Exergy analysis.

**Module 7:****(4 lectures)**

Properties of dry and wet air, use of psychometric chart, processes involving heating/cooling and humidification/dehumidification, dew point.

**Text Books:**

1. Sonntag, R. E, Borgnakke, C. and Van Wylen, G. J., 2003, 6th Edition, Fundamentals of Thermodynamics, John Wiley and Sons.
2. Jones, J. B. and Duggan, R. E., 1996, Engineering Thermodynamics, Prentice-Hall of India.
3. Moran, M. J. and Shapiro, H. N., 1999, Fundamentals of Engineering Thermodynamics, John Wiley and Sons.
4. Yunus A. Cengel; Michael A. Boles, Thermodynamics: An Engineering Approach, McGraw-Hill.
5. Nag, P.K, 1995, Engineering Thermodynamics, Tata McGraw-Hill Publishing Co. Ltd.

**Course Outcomes:**

1. After completing this course, the students will be able to apply energy balance to systems and control volumes, in situations involving heat and work interactions
2. Students can evaluate changes in thermodynamic properties of substances
3. The students will be able to evaluate the performance of energy conversion devices
4. The students will be able to differentiate between high grade and low grade energies.



PCC-ME202	Machine Drawing	0L:0T:4P	2 Credits
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**Objective:**

The student will acquire a knowledge of fastening arrangements such as welding, riveting the different styles of attachment for shaft. The student also is enabled to prepare the assembly of various machine or engine components and miscellaneous machine components.

**Module 1:** (2 Lectures)

Introduction to full section, half section, revolved-section off-set section.

**Module 2:** (3 Lectures)

Nut Bolts, Riveted joints, Thread profiles, Screw jack.

**Module3:** (3 Lectures)

Bushed bearing, pedestal, bearing, foot step bearing.

**Module 4:** (2 Lectures)

Flanged coupling, flexible coupling, solid coupling.

**Module5:** (2 Lectures)

Engine parts - Stuffing box, Connecting rod, Atomizer, spark plug, etc.

**Module 6:** (2 Lectures)

Eccentric.

**Module 7:** (2 Lectures)

Cross Head.

**Module 8:** (2 Lectures)

Assembly of dissembled parts. disassembly of assembly parts.

**Text Books:**

1. Dhawan, R.K., A Text Book of Machine Drawing, S. Chand & Company, 1996.
2. Ostrowsky, O., Engineering Drawing with CAD Applications, ELBS, 1995.
3. Engineering Drawing Practice for Schools and Colleges SP: 46- 19
4. Engineering Drawing by ND Bhatt

**Course Outcomes:**

On successful completion of the course, the student will be able to,

1. Identify the national and international standards pertaining to machine drawing.
2. Apply limits and tolerances to assemblies and choose appropriate fits.
3. Recognize machining and surface finish symbols.
4. Explain the functional and manufacturing datum.

*Rajesh Kumar*



Several Variables. Methods of Lagrange Multipliers. Taylor's and Maclaurin's Theorem with remainders of several variables.

**Module 3**

**Lecture: 8 hrs.**

**Vector Calculus:** Gradient, Divergence and Curl of a Vector and their Physical Interpretations, Vector Identities. Directional Derivatives. Line, Surface and Volume integrals, Application of Green's, Stokes and Gauss Divergence Theorem (Without Proof).

**Module 4**

**Lecture: 6 hrs.**

**First Order Ordinary Differential Equations:** Exact, Linear and Bernoulli's Equations, Euler's Equations, Equations not of First Degree: Equations Solvable for P, Equations Solvable for Y, Equations Solvable for X and Clairaut's Type.

**Module 5**

**Lecture: 8 hrs.**

**Ordinary Differential Equations of Higher Orders:** Second Order Linear Differential Equations with Variable Coefficients, Method of Variation of Parameters, Cauchy-Euler Equation; Power Series Solutions; Legendre Polynomials, Bessel Functions of the First Kind and their properties.

**Module 6**

**Lecture: 6 hrs.**

**Partial Differential Equations – First Order:** First Order Partial Differential Equations, Solutions of First Order Linear and Non-Linear PDEs.

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<b>HSMC 301</b>	<b>Technical Writing</b>	<b>3L:0T: 0P</b>	<b>3 credits</b>
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**Objectives of the course:**

1. To understand the variety of structure of technical documents
2. To convey clearly, cogently and correctly, through written media, the technical aspects of a practice to audiences.
3. To recognize and use of the verbal and technical elements necessary for the successful practice of scientific and technical communication
4. To work collaboratively and individually to research, to analyze, and to write about, public debates regarding the conduct of science and technology



*Prakash Kumar*

**Detail contents**



## Module 1

Lecture 10 hrs.

**Introduction:** Fundamentals of Technical Writing: Need for Clear and Concise Technical Writing, Attributes of Technical Writing, Types of Technical Writing, Benefits of Technical Writing, Technical, Managerial and General Readers, Expressing versus Impressing, Correct use of Noun, Pronoun, Verb, Adjective, Adverbs, Tense and Punctuation.

## Module 2

Lecture 10 hrs.

**Performing Technical Studies:** Types of Technical Studies, General Methodology- Proposing a Project, Gathering Background Information, Designing Test Plans, Performing Experiments, Reporting Results. **Writing Strategy:** Analysis of Readers, Scope of Writing, Purpose and Objective. **Document Options:** Document Hierarchy, Report Types and Selection. **Criteria for Good Technical Writing:** Technical Content, Presentation, Language Skills. **Writing Style:** Elements of Style, Examples of Writing Styles, Recommended Style, Learn to Prepare Effective Illustrations

## Module 3

Lecture 10 hrs.

**Formal Reports:** The Outline and Introduction (Outline, Title, Front Matter, Writing the Introduction), Writing the Body (Writing a Procedure, Describing Machines/Processes, Writing Test Results, Writing the Discussion Section), Closure (Conclusions, Recommendations, References, Abstract, Back Matter, Report Distribution, Saving Reports). **Informal Reports:** Elements of an Informal Report, Investigation Reports, Service Work, Action Letters and Proposals. Typical Memo Reports.

## Module 4

Lecture 10 hrs.

**Review and Editing:** Types of Review and Edit, Review and Editing Methodology, Examples of Reviews. **Oral Presentations:** Types of Oral Presentations, Preparation, Visual Aids, Impediments to Technical Writing, Maintaining Writing Skills, Measuring Report Results.

### Suggested books:

1. "Engineers' Guide to Technical Writing", Kenneth G. Budinski, ASM International.
2. "Handbook for Technical Writing", James H. Shelton, NTC Contemporary Press
3. "The Technical Writer's Handbook: Writing With Style and Clarity", Matt Young, University Science Books

### Suggested reference books:

1. "A Guide to Technical Writing", T. A. Rickard, Franklin Classics.
2. "Technical Writing", S. Jayprakash, Himalaya Publishing House Pvt. Ltd.
3. "Technical Writing", O. N. Pandey.

### Course outcomes



- logical connectives.
2. For a given a problem, derive the solution using deductive logic and prove the solution based on logical inference.
  3. For a given a mathematical problem, classify its algebraic structure
  4. Evaluate Boolean functions and simplify expressions using the properties of Boolean algebra
  5. Develop the given problem as graph networks and solve with techniques of graph theory.

### PCC-CS301: Data Structure & Algorithm

PCC-IT302	Data Structure & Algorithms	3L:0T: 4P	5 credits
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**Objectives of the course:**

1. To impart the basic concepts of data structures and algorithms.
2. To understand concepts about searching and sorting techniques
3. To understand basic concepts about stacks, queues, lists trees and graphs.
4. To enable them to write algorithms for solving problems with the help of fundamental data structures

**Detailed contents:**

**Module 1:**

**Lecture 4**

**Introduction:** Basic Terminologies: Elementary Data Organizations, Data Structure Operations: insertion, deletion, traversal etc.; Analysis of an Algorithm, Asymptotic Notations, Time-Space trade off.

**Module 2:**

**Lecture 10**

**Stacks and Queues:** ADT Stack and its operations: Algorithms and their complexity analysis, Applications of Stacks: Expression Conversion and evaluation – corresponding algorithms and complexity analysis. ADT queue, Types of Queue: Simple Queue, Circular Queue, Priority Queue; Operations on each Type of Queues: Algorithms and their analysis.

**Module 3:**

**Lecture 6**

**Linked Lists:** Singly linked lists: Representation in memory, Algorithms of several operations: Traversing, Searching, Insertion into, Deletion from linked list; Linked representation of Stack and Queue, Header nodes, doubly linked list: operations on it and algorithmic analysis; Circular Linked Lists: all operations their algorithms and the complexity analysis.

*Rejeesh Kumar*



**Module 4:****Lecture 12**

**Searching, Sorting and Hashing:** Linear Search and Binary Search Techniques and their complexity analysis. Objective and properties of different sorting algorithms: Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort; Performance and Comparison among all the methods, Hashing.

**Module 5:****Lecture 8**

**Trees:** Basic Tree Terminologies, Different types of Trees: Binary Tree, Threaded Binary Tree, Binary Search Tree, AVL Tree; Tree operations on each of the trees and their algorithms with complexity analysis. Applications of Binary Trees. B Tree, B+ Tree: definitions, algorithms and analysis.

**Graph:** Basic Terminologies and Representations, Graph search and traversal algorithms and complexity analysis.

**Suggested books:**

1. "Fundamentals of Data Structures", Illustrated Edition by Ellis Horowitz, Sartaj Sahni, Computer Science Press.

**Suggested reference books:**

4. Algorithms, Data Structures, and Problem Solving with C++", Illustrated Edition by Mark Allen Weiss, Addison-Wesley Publishing Company.
5. "How to Solve it by Computer", 2nd Impression by R.G. Dromey, Pearson Education.

**Course outcomes**

6. For a given algorithm student will be able to analyze the algorithms to determine the time and computation complexity and justify the correctness.
7. For a given Search problem (Linear Search and Binary Search) student will be able to implement it.
8. For a given problem of Stacks, Queues and linked list student will be able to implement it and analyze the same to determine the time and computation complexity.
9. Student will be able to write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in terms of Space and Time complexity.
10. Student will be able to implement Graph search and traversal algorithms and determine the time and computation complexity.



MC 401	Environmental Science	3L : 0T : 0P	0 Credits (Mandatory non-credit course)
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We as human being are not an entity separate from the environment around us rather we are a constituent seamlessly integrated and co-exist with the environment around us. We are not an entity so separate from the environment that we can think of mastering and controlling it rather we must understand that each and every action of ours reflects on the environment and vice versa. Ancient wisdom drawn from Vedas about environment and its sustenance reflects these ethos. There is a direct application of this wisdom even in modern times. Idea of an activity based course on environment protection is to sensitize the students on the above issues through following two type of activities:

**(a) Awareness Activities:**

- i) Small group meetings about water management, promotion of recycle use, generation of less waste, avoiding electricity waste
- ii) Slogan making events
- iii) Poster making events
- iv) Cycle rally
- v) Lectures from experts

**(b) Actual Activities:**

- i) Plantation
- ii) Gifting a tree to see its full growth
- iii) Cleanliness drive
- iv) Drive for segregation of waste
- v) To live some big environmentalist for a week or so to understand his work
- vi) To work in kitchen garden for mess
- vii) To know about the different varieties of plants
- viii) Shutting down the fans and ACs of the campus for an hour or so

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*Rajesh Kumar*



ESC 401P	Digital Electronics Lab
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Hands-on experiments related to the course contents of ESC 401.

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HSMC 401	Human Resource Development and Organizational Behavior	3L:0T:0P	3 Credits
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**Module 1**  
hrs.

**Lecture: 8**

**Introduction:** HR Role and Functions, Concept and Significance of HR, Changing role of HR managers - HR functions and Global Environment, role of a HR Manager. Human Resources Planning: HR Planning and Recruitment: Planning Process - planning at different levels - Job Analysis

**Module 2**  
8hrs.

**Lecture:**

**Recruitment and selection processes** - Restructuring strategies - Recruitment-Sources of Recruitment-Selection Process-Placement and Induction-Retention of Employees. Training and Development: need for skill upgradation - Assessment of training needs - Retraining and Redeployment methods and techniques of training employees and executives – performance appraisal systems.

**Module 3**  
8hrs.

**Lecture:**

**Performance Management System:** Definition, Concepts and Ethics-Different methods of Performance Appraisal- Rating Errors Competency management. Industrial Relations : Factors influencing industrial relations - State Interventions and Legal Framework - Role of Trade unions - Collective Bargaining - Workers; participation in management.

**Module 4**  
8hrs.

**Lecture:**

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Organizational Behaviour: Definition, Importance, Historical Background, Fundamental Concepts of OB, Challenges and Opportunities for OB. Personality and Attitudes: Meaning of personality, Personality Determinants and Traits, Development of Personality, Types of Attitudes, Job Satisfaction.

**Module 5**  
**8hrs.**

**Lecture:**

Leadership: Definition, Importance, Theories of Leadership Styles. Organizational Politics: Definition, Factors contributing to Political Behavior. Conflict Management: Traditional vis-a-vis Modern View of Conflict, Functional and Dysfunctional Conflict, Conflict Process, Negotiation - Bargaining Strategies, Negotiation Process.

**Suggested books:**

1. Gary Dessler, "Human Resource Management" - (8<sup>th</sup> ed.,) Pearson Education, Delhi.
2. Robbins, S.P., Judge & T.A., "Organizational Behavior", Pearson Education, 15th Edn.

**Suggested reference books:**

1. Decenzo & Robbins, Personnel Human Resource Management, 3rd ed., John Wiley & Sons (Pvt.) Ltd.
2. Biswajeet Patanayak, Human Resource Management, PHI, New Delhi
3. Luis R. Gomez, Mejia, Balkin and Cardy, Managing Human Resources PHI, New Delhi
4. Luthans, Fred: Organizational Behavior, McGraw Hill, 12th Edn.
5. Shukla, Madhukar: Understanding Organizations - Organizational Theory & Practice in India, PHI



*Rajesh Kumar*

MC 401	Environmental Science	3L : 0T : 0P	0 Credits (Mandatory non-credit course)
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We as human being are not an entity separate from the environment around us rather we are a constituent seamlessly integrated and co-exist with the environment around us. We are not an entity so separate from the environment that we can think of mastering and controlling it rather we must understand that each and every action of ours reflects on the environment and vice versa. Ancient wisdom drawn from Vedas about environment and its sustenance reflects these ethos. There is a direct application of this wisdom even in modern times. Idea of an activity based course on environment protection is to sensitize the students on the above issues through following two type of activities:

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- v) To live some big environmentalist for a week or so to understand his work
- vi) To work in kitchen garden for mess
- vii) To know about the different varieties of plants
- viii) Shutting down the fans and ACs of the campus for an hour or so

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*Praveen Kumar*



PCC-CE304	Geotechnical Engineering -II	3L:0T:0P	3 credits
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**Module 1:** Consolidation of Soil - Introduction, comparison between compaction and consolidation, initial, primary & secondary consolidation, spring analogy for primary consolidation, interpretation of consolidation test results, Terzaghi's theory of consolidation, final settlement of soil deposits, computation of consolidation settlement and secondary consolidation.

On completion of this module, the student must be able to:

- Understand the basic mechanism of consolidation of soil;
- Determine various consolidation parameters of soil through laboratory test;  Evaluate ground settlements against time.

**Module 2:** Shear Strength - Mohr circle and its characteristics, principal planes, relation between major and minor principal stresses, Mohr-Coulomb theory, types of shear tests: direct shear test, merits of direct shear test, triaxial compression tests, test behaviour of UU, CU and CD tests, pore-pressure measurement, computation of effective shear strength parameters unconfined compression test, vane shear test On completion of this module, the student must be able to:

- Determine graphically and analytically the stress state in any plane of the soil mass;  Perform various shear strength tests and appreciate the different field conditions which they simulate;
- Understand the significance of shear strength parameters in various geotechnical analyses;
- Evaluate the stiffness of soil using shear strength parameters

**Module 3:** Stability of Slopes - Introduction, types of slopes and their failure mechanisms, factor of safety, analysis of finite and infinite slopes, wedge failure Swedish circle method, friction circle method, stability numbers and charts. On completion of this module, the student must be able to:

- Differentiate various modes of slope failure;
- Evaluate factor of safety of infinite slopes based on different ground conditions; Understand various methods for computation of factor of safety for finite slopes.

**Module 4:** Soil Exploration- Introduction, methods of site exploration and soil investigation, methods of boring, soil samplers, sampling procedures, trail pits, borings, penetrometer tests, analysis of borehole logs, geophysical and advance soil exploration methods.

On completion of this module, the student must be able to:



*Rajesh Kumar*



- Specify a strategy for site investigation to identify the soil deposits and determine the depth and spatial extent within the ground;
- Understand various site investigation techniques and their in-situ applications;  Prepare a soil investigation report based on borehole log data and various in-situ tests like SPT, CPT, etc.

**Module 5** Application of soil mechanics to determine earth pressures, analysis of retaining walls, cuts & excavations and sheet piles, stability of slopes, instrumentation.

**Text/Reference Books:**

1. Soil Mechanics by Craig R.F., Chapman & Hall
2. Fundamentals of Soil Engineering by Taylor, John Wiley & Sons
3. An Introduction to Geotechnical Engineering, by Holtz R.D. and Kovacs, W.D., Prentice Hall, NJ
4. Principles of Geotechnical Engineering, by Braja M. Das, Cengage Learning
5. Principles of Foundation Engineering, by Braja M. Das, Cengage Learning
6. Essentials of Soil Mechanics and Foundations: Basic Geotechnics by David F. McCarthy
7. Soil Mechanics in Engineering Practice by Karl Terzaghi, Ralph B. Peck, and Gholamreza Mesri.
8. Geotechnical Engineering: Principles and Practices of Soil Mechanics and Foundation Engineering (Civil and Environmental Engineering) by V.N.S. Murthy

PCC-CE306	Environmental Engineering-II	3L:0T:0P	3 credits
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**Module 1:** Sewage- Domestic and Storm water, Quantity of Sewage, Sewage flow variations. Conveyance of sewage- Sewers, shapes design parameters, operation and maintenance of sewers, Sewage pumping; Sewerage, Sewer appurtenances, Design of sewerage systems. Small bore systems, Storm Water- Quantification and design of Storm water; Sewage and Sullage, Pollution due to improper disposal of sewage, National River cleaning plans, Wastewater treatment, aerobic and anaerobic treatment systems, suspended and attached growth systems, recycling of sewage – quality requirements for various purposes.

**Module2:** Solid waste management-Municipal solid waste, Composition and various chemical and physical parameters of MSW, MSW management: Collection, transport, treatment and disposal of MSW. Special MSW: waste from commercial establishments and other urban areas, solid waste from construction activities, biomedical wastes, Effects of solid waste on environment: effects on air, soil, water surface and ground health hazards. Disposal of solid waste-segregation, reduction at source, recovery and recycle. Disposal methods- Integrated solid waste management. Hazardous waste: Types and nature of hazardous waste as per the HW Schedules of regulating authorities.

**Module 3:** Government authorities and their roles in water supply, sewerage disposal. Solid waste management and monitoring/control of environmental pollution.

**Practical Work: List of Experiments**



*Rejeesh Kumar*

1. Physical Characterization of water: Turbidity, Electrical Conductivity, pH
2. Analysis of solids content of water: Dissolved, Settleable, suspended, total, volatile, inorganic etc.
3. Alkalinity and acidity, Hardness: total hardness, calcium and magnesium hardness
4. Analysis of ions: copper, chloride and sulfate
5. Optimum coagulant dose
6. Chemical Oxygen Demand (COD)
7. Dissolved Oxygen (D.O) and Biochemical Oxygen Demand (BOD)
8. Break point Chlorination
9. Bacteriological quality measurement: MPN,
10. Ambient Air quality monitoring (TSP, RSPM, SO<sub>x</sub>, NO<sub>x</sub>)
11. Ambient noise measurement

**Text/Reference Books:**

1. Introduction to Environmental Engineering and Science by Gilbert Masters, Prentice Hall, New Jersey.
2. Introduction to Environmental Engineering by P. Arne Vesilind, Susan M. Morgan, Thompson /Brooks/Cole; Second Edition 2008.
3. Peavy, H.s, Rowe, D.R, Tchobanoglous, G. Environmental Engineering, Mc-Graw Hill International Editions, New York 1985.
4. MetCalf and Eddy. Wastewater Engineering, Treatment, Disposal and Reuse, Tata McGraw-Hill, New Delhi.
5. Manual on Water Supply and Treatment. Ministry of Urban Development, New Delhi.
6. Plumbing Engineering. Theory, Design and Practice, S.M. Patil, 1999
7. Integrated Solid Waste Management, Tchobanoglous, Theissen & Vigil. McGraw Hill Publication
8. Manual on Sewerage and Sewage Treatment Systems, Part A, B and C. Central Public Health and Environmental Engineering Organization, Ministry of Urban Development.



*Rejeesh Kumar*

<b>HSMC 501</b>	<b>Professional Skill Development</b>	<b>3L:0T: 0P</b>	<b>3 credits</b>
<b>Pre-requisites</b>	HSMC 301		

**Objectives of the course:**

1. To learn various interpersonal skills
2. To help in developing various professionals skills.
3. To cover the facets of verbal and non-verbal languages, public speech, reading gestures and body languages, preparing for group discussion and enhancing presentations skills.
4. To enable learners to speak fluently and flawlessly in all kinds of communicative Contexts with speakers of all nationalities.

**Detail contents:**

**Module 1**

**Lecture 10 hrs.**

**Communication skills:** Public speaking, Group discussion, Gestures and body language & professional presentation skills

**Module 2**

**Lecture 10 hrs.**

**Interpersonal skills:** Group dynamics, Negotiation skills, Leadership, Emotional intelligence

**Module 3**

**Lecture 10 hrs.**

**Employability and Corporate Skills:** Time management and effective planning, Stress management, People skills, Team work, development of leadership qualities, Decision making and Negotiation skills, Positive attitude, Self-motivation, Professional ethics, Business etiquettes, balancing board room.

**Module 4**

**Lecture 10 hrs.**

**Business writing skills,** Resume Writing. Interview Skills, Technical Presentation, Guest Lecture, Professional Ethics, Project Management, Entrepreneurship.

**Suggested reference books:**

1. "Personality Development and Soft Skills", Barun Mitra, Oxford University Press.
2. "Managing Soft Skills for Personality Development", B.N. Ghosh, McGraw Hill.
3. "Communication Skills and Soft Skills: An Integrated Approach", E. Suresh Kumar, Pearson
4. "Communication to Win", Richard Denny, Kogan Page India Pvt. Ltd.

**Course outcomes**

1. Student can able to write their resume and can prepare for presentation, group



*Suresh Kumar*

discussion and interview.

2. Student can develop interpersonal skills like negotiation and leadership skills.
3. Students can develop Employability and Corporate Skills with proper time management and stress management.
4. Students learn to practice the professional ethics, project management and Entrepreneurship.

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*Praveen Kumar*



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Ref. No. SIT/R/279/22

Date: 05-05-2022

## NOTICE

It is hereby informed to all Teaching staffs, Non-Teaching staffs and students of SITYOG Institute of Technology that Institute is Organizing **Blood Donation Camp** in collaboration with **Indian Red Cross Society**.

All Students interested for this novel work are directed to visit **Red Cross Bhawan, GT. Road, Aurangabad (Bihar)**.

**Date of visit: 08.05.2022**

**Time: 8:00 am onwards**

### Copy to:

- ❖ For kind information of Hon'ble Chairman /Secretary
- ❖ Hon'ble Director
- ❖ Professor In-Charge
- ❖ Dean, Academics
- ❖ Principal Diploma
- ❖ All H.O.D
- ❖ Human Resource Department
- ❖ Account Section
- ❖ Examination Department
- ❖ Person Concerned
- ❖ Notice Board
- ❖ Guard File

Sd.

(Principal)



*Rejeesh Kumar*



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## PLANTATION ON THE OCCASSION OF WORLD ENVIRONMENT DAY

On 05-06-2020, Sityog Institute of Technology undertook a significant initiative by organizing a tree plantation drive on the college premises. The event aimed to contribute to environmental conservation, raise awareness about the importance of trees, and engage the college community in sustainable practices.

The successful execution of the tree plantation drive was made possible by the concerted efforts of the organizing committee, consisting of environmentally conscious students, faculty members, and support staff. Their commitment to creating a greener campus environment played a crucial role in the success of the event. The event was started at 10:00 am and ended at 2:00 pm.



*Rajesh Kumar*



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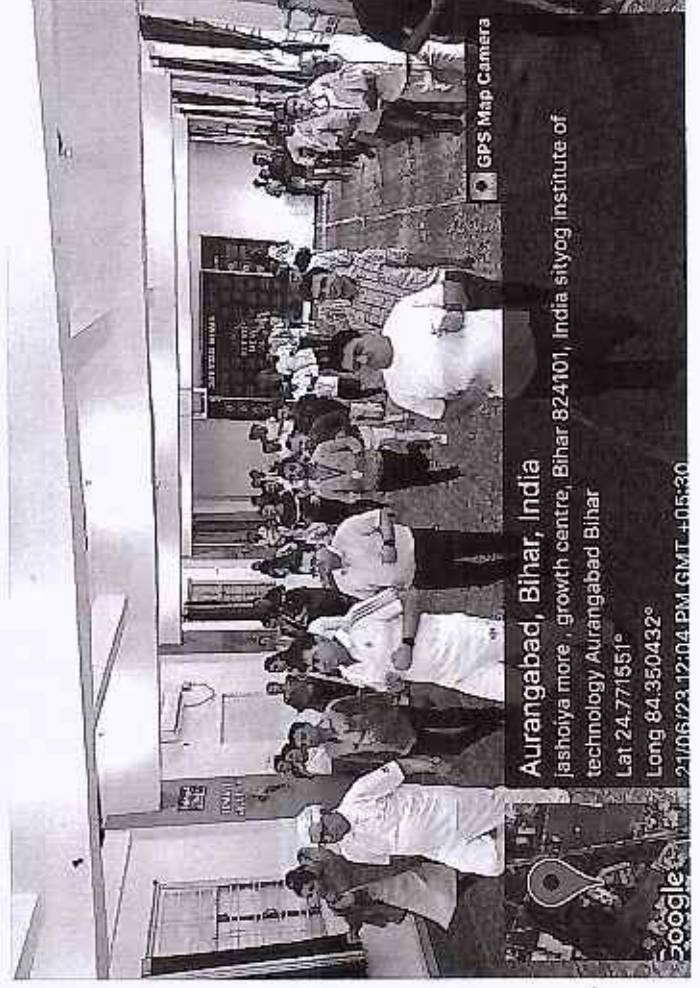
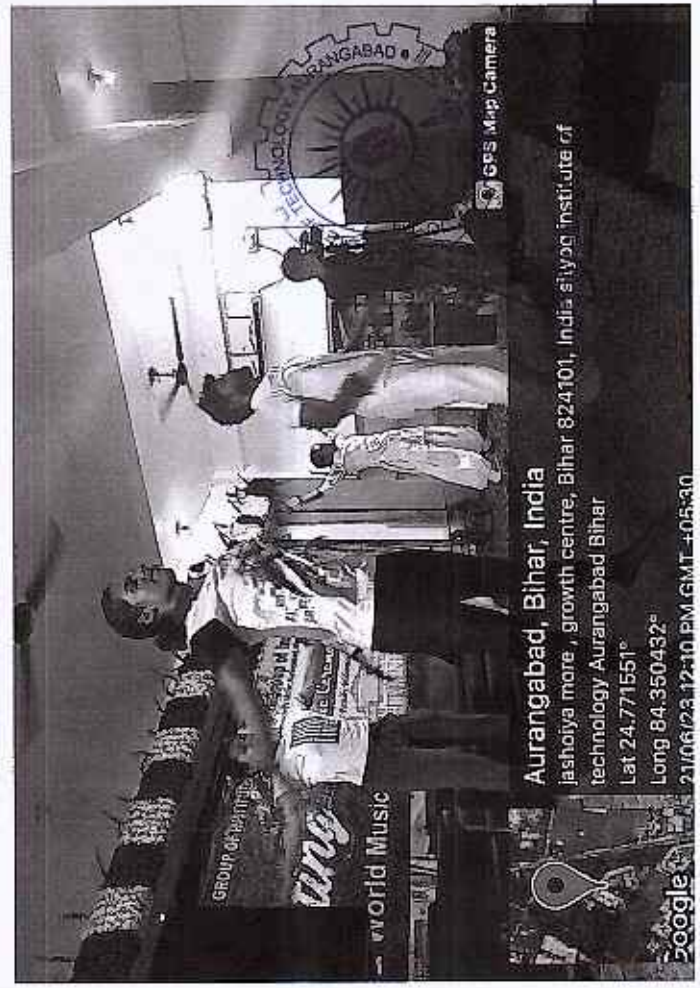
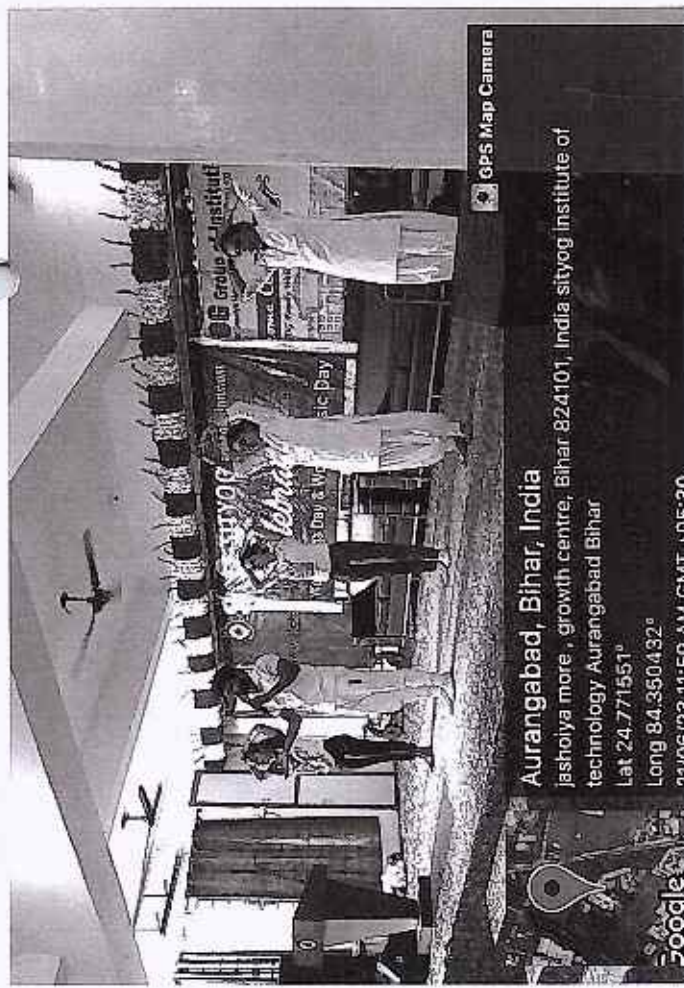
## World Yoga Day '2023 Celebration

On 21/06/23, Sityog Institute of Technology enthusiastically participated in the celebration of World Yoga Day 2023. The event aimed to promote the physical, mental, and spiritual benefits of yoga, emphasizing the importance of incorporating this ancient practice into our daily lives.

The event was meticulously organized by a dedicated committee comprising faculty members, yoga enthusiasts among students, and support staff. Their collaborative efforts ensured a smooth and successful celebration. The YOGA ACTIVITY was started at 11:00 am and ended at 01:30 pm.



World Yoga Day '23.







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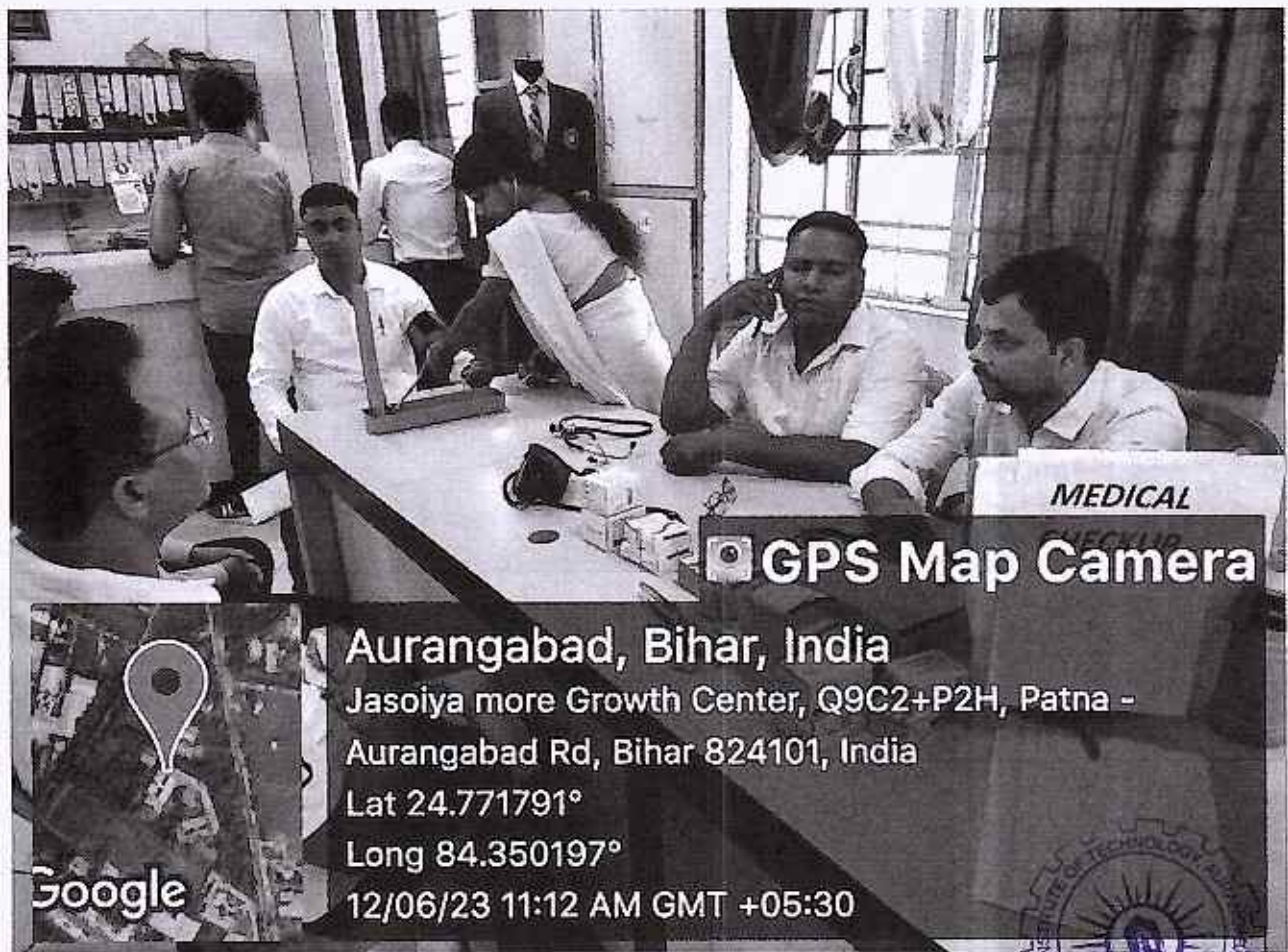
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## MEDICAL CAMP

On 12-06-2023, SITYOG Institute of Technology organized a commendable initiative by hosting a Medical Camp on the college campus. This event aimed to promote health awareness, offer medical services to students and staff, and contribute to the overall well-being of the college community.

The successful execution of the Medical Camp was made possible by the diligent efforts of the organizing committee, which comprised medical professionals, faculty members, and student volunteers. Their dedication and team work ensured the smooth functioning of the camp.

In this medical camp Sadar Hospital, Aurangabad was joined with us. Medical camp started at 10:00 am and ended at 5:00 pm.



*Devesh Kumar*



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GPS Map Camera

Aurangabad, Bihar, India

Jasoiya more Growth Center, Q9C2+P2H, Patna -

Aurangabad Rd, Bihar 824101, India

Lat 24.77178°

Long 84.350191°

12/06/23 11:17 AM GMT +05:30

Google



GPS Map Camera

Aurangabad, Bihar, India

Jasoiya more Growth Center, Q9C2+P2H, Patna -

Aurangabad Rd, Bihar 824101, India

Lat 24.771783°

Long 84.3502°

12/06/23 11:11 AM GMT +05:30

Google

*Jeech Kumar*

# Medical Camp



*Prakash K. K.*



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## Awareness Program- DRUG FREE NATION

- Celebrating an Awareness Program for a Drug-Free Nation is typically driven by a variety of important reasons and goals. Here are some common reasons why institutions might organize and celebrate such programs:



## Awareness Program- END DOWRY SYSTEM

The celebration of an awareness program aimed at ending the dowry system typically stems from a commitment to social change and the recognition of the negative impact of dowry practices on individuals and society. Here are some reasons why institutions might celebrate such awareness programs:



*Rejeet Kumar*  
*Rejeet Kumar*



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## Awareness Program- PROHIBITION OF LIQUOR

The organization of an "AWARENESS PROGRAM- PROHIBITION OF LIQUOR" celebration in a college can have several reasons, each depending on the context and goals of the institution. Here are some possible reasons:

**Promoting a Healthy Lifestyle:** Colleges often aim to promote a healthy and responsible lifestyle among their students. Organizing awareness programs on the prohibition of liquor can be a way to encourage students to make responsible choices regarding alcohol consumption.

**Educating about the Risks of Alcohol Abuse:** The celebration might include educational sessions or workshops to inform students about the potential risks and negative consequences associated with alcohol abuse. This could cover topics such as physical health, mental well-being, and the impact of alcohol on academic performance.



*Rejeesh Kumar*



*Rejeesh Kumar*



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## Awareness Program- SAVE ENVIRONMENT

Celebrating an awareness program focused on saving the environment can serve several important purposes. Here are some key reasons why institutions might choose to organize and celebrate such programs:

- **Education and Awareness:** The primary goal is often to educate people about the importance of environmental conservation. By raising awareness, individuals become more informed about the threats to the environment, such as pollution, deforestation, and climate change.
- **Behavioral Change:** Awareness programs aim to bring about a change in behavior and attitudes towards the environment. By highlighting the consequences of unsustainable practices and promoting eco-friendly alternatives, institutions hope to inspire individuals to adopt more environmentally friendly lifestyles.
- **Community Engagement:** Celebrating environmental awareness programs provides an opportunity to engage the community. This can involve organizing events, workshops, and seminars that bring people together to discuss environmental issues, share ideas, and collaborate on solutions.
- **Corporate Social Responsibility (CSR):** Many institutions, including businesses, recognize the importance of contributing to society and the environment as part of their CSR initiatives. By participating in environmental awareness programs, institutions demonstrate their commitment to sustainability and responsible business practices.
- **Policy Advocacy:** Awareness programs can also serve as a platform for advocating environmental policies. Institutions may use these occasions to encourage policy changes at local, regional, or national levels to better protect the environment.
- **Global Initiatives:** Given the global nature of environmental issues, institutions may celebrate awareness programs in alignment with international environmental campaigns and initiatives. This helps create a sense of global solidarity and emphasizes the interconnectedness of environmental challenges.
- **Long-Term Sustainability:** Institutions may celebrate environmental awareness programs with the long-term goal of promoting sustainable practices. This involves not only raising awareness but also implementing sustainable policies within the institution itself, such as reducing waste, promoting energy efficiency, and incorporating environmentally friendly practices.
- **Inspiring Action:** Celebrating awareness programs is about inspiring people to take action. Whether it's participating in local clean-up events, reducing individual carbon footprints, or supporting environmental causes, institutions hope to motivate individuals to contribute to positive environmental change.



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By celebrating awareness programs focused on saving the environment, institutions play a crucial role in fostering a collective sense of responsibility and encouraging actions that contribute to the well-being of the planet.



## Gandhi and Lal Bahadur Shastri Jayanti

The celebration of Mahatma Gandhi and Lal Bahadur Shastri Jayanti in institutions, particularly in India, is a way to honor and remember the contributions of these two prominent leaders to the country's history and independence movement.

### ➤ Mahatma Gandhi:

Mahatma Gandhi, also known as the "Father of the Nation" in India, played a pivotal role in the Indian independence movement against British rule. He is widely recognized for his philosophy of non-violent resistance, known as "Satyagraha."

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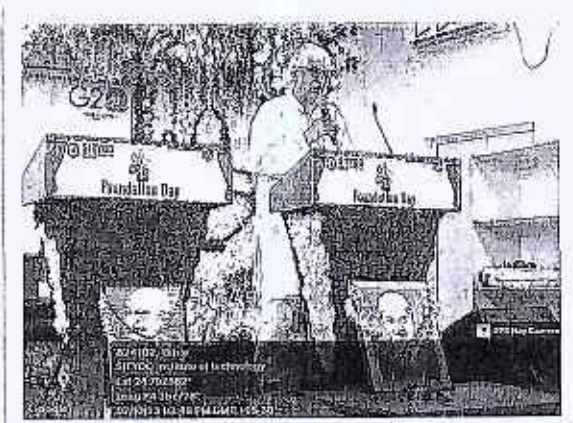
Gandhi's leadership and principles were instrumental in mobilizing the masses and creating a united front against colonial rule. His emphasis on truth, non-violence, and social justice left a lasting impact not only on India but also on the global struggle for civil rights and freedom.

### ➤ Lal Bahadur Shastri:

Lal Bahadur Shastri was the second Prime Minister of India and succeeded Jawaharlal Nehru. He is remembered for his leadership during a critical period, including the Indo-Pakistan War of 1965.

Shastri is perhaps best known for his slogan "Jai Jawan Jai Kisan" ("Hail the Soldier, Hail the Farmer"), which highlighted the importance of both the defense forces and agricultural sector. His leadership during the war and his commitment to the welfare of farmers and the common man are widely appreciated.

The celebration of Gandhi and Shastri Jayanti in institutions is a way to instill the values and principles espoused by these leaders in the minds of students and the broader community. It also serves as a reminder of the sacrifices made by these leaders in the pursuit of freedom and the building of a just and equitable society. Educational institutions often organize events, discussions, and activities on these occasions to promote awareness and understanding of the contributions made by these leaders to the nation's history and development.



*Rajesh Kumar*



*Rajesh Kumar*