



# Mandsaur University, Mandsaur(M.P.)

Department of Mechanical Engineering

Syllabus of

## Foundation of Computer Science & Programming

**B. Tech. (I-Semester) (CBCS Scheme)  
(04YDC)**

W.e.f.(session 2016-17)

Name of Subject With Code No.	Maximum Marks Allocation				Lectures per week			Credits	Total Mark
	Theory Paper		Practical Examination	Continuous Evaluation	L	T	P		
	End Sem. Test (EST)	Mid Sem. Test (MST)							
Foundation of Computer Science & Programming (CSE070)	40	20	30	10	2	1	2	4	100

### Objective of the Course:

- I. The course is designed to provide programming fundamentals using C and C++.
- II. To understand the concepts of programming languages and acquire art of computer programming.
- III Students will learn to write programs (using structured and object oriented programming approach) in C /C++ to solve problems.

### Unit 1: Introduction:

Computational Procedures, Computer architecture, Binary System, Representing Integers, Representing floating points Numbers, Representing Characters, String, Introduction to Algorithms, Complexities and Flowchart, High level and low level Languages, Basic Idea about C Language, Structure of C program

### Unit 2: Data types, Operators and Functions

Identifiers, Types, Constants, Declaration, Assignment & Print statements, Data Types, operators and expressions. Arithmetic operations, Type Conversions and cast, Branching and loops, Two way selection (if, if-else, nested if-else, cascaded if-else), switch statement, ternary operator ? Go to, Loops (For, while-do, do-while) in C, break and continue, Programming examples. Functions, Functions and program structure, Function prototype, Function Definition, Benefit of function, Calling a function, Argument Passing – call by value call by reference, recursion. Scope Rules, Local and Global Variable, file and I/O operations.

### Unit3: Array, Pointer Structure and I/O

**Array:** Introduction to Arrays, Initialization of Array, Multi dimensional Arrays, Passing arrays to functions, **Pointers:** Declarations, Passing pointers to a function, Operations on pointers, Pointer Arithmetic, Pointers and arrays, Arrays of pointers function pointers.

**Structures:** Defining and processing, Passing to a function, Unions, typedef, array of structure, and pointer to structure

## **Unit 4: Introduction to OOP, Classes and object**

Characteristics and Concepts of OOP, Procedure Oriented Programming VS object oriented Programming. Introduction to C++: Character Set, Tokens, Program Structure, Sequential and Conditional execution in C++, Different loops( for, do ..while, while), Object Oriented Programming Paradigm:-Basic Concepts of OOP, Benefits of OOP, Object Oriented, Introduction of Classes, Inline member functions Objects, , Static data member and static member functions ,Constructors, Parameterized Constructors , Default Argument constructors, Copy Constructors, Destructors, Friend functions.

## **Unit 5:Inheritance and Polymorphism**

Introduction to Inheritance, Access Control in Derived Classes, Advance operation with inheritance, Introduction to polymorphism, Examples of polymorphism, Object oriented Static and dynamic polymorphism, Operator and Method overloading, Inherited methods, Redefined methods, the protected interface, Abstract methods and classes, Public and protected properties, Private operations, Disinheritance, Multiple inheritance. various object oriented programming languages

### **References:**

1. Fundamentals of Computers : E Balagurusamy, TMH
2. Basic Computer Engineering : Silakari & Rajesh K Shukla, Wiley India
3. The C Programming Language : Brian W. Kernighan and Dennis M. Ritchie, 2nd Edition, PHI, 2012.
4. Object oriented programming with C++: David Parsons, BPB publication
5. Object oriented programming in C++ : Robert Lafore, Galgotia
6. Object oriented programming with C++ : Balagurusamy, TMH
7. Let us C : Yashavant P. kanetkar, BPB Publications.

### **Suggested List of Experiment**

- (b) Write a program in C to evaluate area of triangle.
- (c) Exchange the values of two variables with and without temporary variable.
- (d) Write a program to find the greatest of three numbers and print the numbers in ascending order.
- (e) Write a program in C to find out roots of given quadratic equations.
- (f) Write C code to compute the real roots of the equation:  $ax^2+bx+c=0$ .
- (g) Write a program that counts from one to ten, prints the values on a separate line for each, and includes a message of your choice when the count is 3 and a different message when the count is 7.

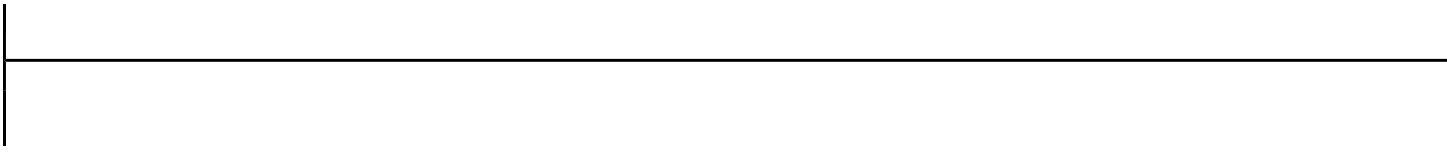
- (h) Write a program that writes your name on the monitor ten times. Write this program three times, once with each looping method.
- (i) Write a program to find a factorial of given n number using do while statement.
- (j) Write a program to print a pyramid using for loop.
- (k) Write a Program for Palindrome.
- (l) Write a program to print Fibonacci series using recursion.
- (m) Write a program with three short strings, about 6 characters each, and use "strcpy" to copy "one", "two", and "three" into them. Concatenate the three strings into one string and print the result out 10 times.
- (n) Write a program that will prompt for a filename for a read file, prompt for a filename for a write file, and open both plus a file to the printer. Enter a loop that will read a character, and output it to the file, the printer, and the monitor. Stop at EOF.
- (o) Define a named structure containing a string field for a name, an integer for feet, and another for arms. Use the new type to define an array of about 6 items. Fill the fields with data and print them out as follows. A human being has 2 legs and 2 arms. A dog has 4 legs and 0 arms. A Television set has 4 legs and 0 arms. A chair has 4 legs and 2 arms. etc.
- (p) Write a program to show different type of constructors
- (q) Write a program to access private member using friend function
- (r) Write a Program to implement multiple inheritance
- (s) Program to Show the concept of virtual function
- (t) Program in C++ to concat two string using operator overloading
- (u) A bookshop uses a personal computer to maintain the inventory of books that are being sold at the shop. The list includes details such as author, title, isbn number, price, author, stock position. Whenever a customer wants a book, the shopkeeper inputs the title or isbn number and the system replies whether the book is available or not. If it is not, an appropriate message is displayed. If book is in the list, then the system displays the book details and asks for number of copies. If the requested copies are available, the total cost of the books is displayed, otherwise the message "Requested copies are not in stock" is displayed. Implement using structures.  
Students have to make a small project in C++.

**Note: Number of experiments may be extended to make the better understanding of subject.**

**Learning Outcomes:**

**At the end of the course the Students will be able to:**

- Explain the processes by which a C programme is compiled
  - Write basic C programs with variables, arithmetic operators, array, function, structure etc.
  - Implement object oriented programming concepts.
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**Mandsaur University, Mandsaur(M.P.)**

**Department of Mechanical Engineering**

Syllabus of

**Environmental Science**

**B. Tech. (I-Semester) (CBCS Scheme)(04YDC)**

w.e.f. (session2016-17)

Name of Subject With Code No.	Maximum Marks Allocation				Lectures per week			Credits	Total Marks
	Theory Paper		Practical Examination	Continuous Evaluation	L	T	P		
	(EST)	(MST)							
Environmental Sciences (CVE010)	60	30	----	10	4	0	0	4	100

**Course Objective:-**This course introduces students to environment concerns. Students are expected to learn about environment, factors affecting it, environmental ethics and its protection through lectures, presentations, documentaries and field visits. To provide every student with opportunities to acquire the knowledge, values, attitudes, skills needed to protect and improve the environment; to create new patterns of behavior of individuals, groups, and society as a whole towards the environment.

**Course Content:-**

### Unit I

**Introduction:** Domestic and Global Environmental concerns, principles of sustainable development, Sustainable agriculture, organic farming, bio-fuels, Threats for sustainability.

### Unit II

**Environmental Ethics & Legislations:** Enforcement of Environment laws in India – The water act, The Air (Prevention and Control of Pollution) Act, 1981, The Environment (Protection) Act, 1986, Environmental Auditing, value education – HIV/AIDS- Women and child welfare.

### Unit III

**Environmental Pollution:** Air Pollution – sources, types of air pollutants, National Ambient Air Quality Standards, Controlling Air Pollution. Water pollution – sources, types of water pollutants, water quality indicators, water quality standards. Soil Pollution - types of soil pollutants: industrial wastes, pesticides ,fertilizers and manures, salination of soil, Controlling Soil Pollution. Noise: Sources of noise pollution Measurements of noise and indices, effect of

metrological parameters on noise propagation, Noise exposure levels and Standards. Noise control and battement measures. Impact of noise on human health

#### **Unit IV**

**Environmental Challenges:** Local Challenges - Solid Waste – Impact of solid waste on natural resources, Deforestation; Global Challenges - climate change and global warming, Kyoto Protocol Greenhouse Gases, Ways to reduce Greenhouse gases emissions, Carbon Footprint, ways to reduce carbon footprint, Carbon Trading.

#### **Unit V**

**Sustainable habitat, industrialization and urbanization:** Concept of Green Building, Volatile Organic Compounds (VOC), GRIHA Rating, LEED Rating, HVAC, Hybrid Car Technology, Industrial ecology, India’s renewable energy capacity. *Green Technology & Green Business: Green Business, Green Computing, E-waste management.*

#### **REFERENCES**

*R. Rajagopalan, Environmental Studies, Oxford IBH Pub, 2011.*  
*Kogent Learning Solutions Inc., Energy, Environment, Ecology and Society, Dreamtech, 2012.*  
*Rag, R. L, Ramesh, Lekshmi Dinachandran, Introduction to sustainable engineering*

#### **Course outcomes-**

- 1.Students will understand and analyse the current local and global environmental issues; looking at the theory behind them, the economics involved, and the policies regarding them.
  - 2.Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.
  - 3.Understanding the character of environmental problems and ways of addressing them.
  4. Articulate the interdisciplinary context of environmental issues.
  5. Identify and justify key stakeholders in humanities and social sciences that need to be a part of sustainable solutions.
  6. Formulate an action plan for sustainable alternatives that integrate science, humanist, and social perspectives
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**Mandsaur University, Mandsaur(M.P.)**  
**Department of Mechanical Engineering**  
**Syllabus of Engineering Mechanics (CVE040)**  
**B. Tech. (I-Semester) (CBCS**  
**Scheme)(04YDC)**  
w.e.f. (session2016-17)

Name of Subject With Code No.	Maximum Marks Allocation				Lectures per week			Credits	Total Marks
	Theory Paper		Continuous Evaluation	Practical Examination	L	T	P		
	End Sem. Test (EST)	Mid Sem. Test (MST)							
Engineering Mechanics (CVE040)	<b>40</b>	<b>20</b>	<b>10</b>	30	2	1	2	4	<b>100</b>

**Course Objective :-**

*Engineering mechanics, as its name suggests, bridges the gap between physical theory and its application to technology. As such, engineering mechanics is used in many fields of engineering, especially mechanical and Metallurgy Engineering. In this context, it is commonly referred to as applied mechanics. To impart basic knowledge of Engineering Mechanics where in Laws of Physics are applied to Solve Engineering problems, this programme /course will help the student to develop basic know how & awareness of the various laws of physics & it's real life applications in the various fields of engineering*

**Unit : I** Introduction, Definition of a Force, Force Representation in 2D and Resultants, Classification of Forces, Law of Triangle, Law of Parallelogram , Law of Polygon. Particle, Rigid Body, Moment, Moment about a Line/Axis, Moment due to Couple, Varignon's Theorem, Particle Equilibrium, Types of Supports and Reactions, Free Body Diagram &Equilibrium analysis techniques, Lami Theorem, Practice Problems.

**Unit: II** 2-Force Members and Multi-force Members; Introduction to Structure, Frames, and Machines, Truss, Analysis of plane Trusses: Method of joints, Method of Sections, Graphical Method. Zero Force Members, Practice Problems.

**Unit: III** Centroid ,Centre of Gravity, Moment of Inertia of area and mass, Radius of Gyration ,Polar Moment of Inertia, Section Modulus, Introduction to product of Inertia and Principle Axes ,Parallel axis Theorem, Perpendicular axis Theorem, MOI of common cross sections, MOI of composite sections, Practice Problems.

**Unit: IV** Beam, Types of Beam, Types of Loading and support, Point Load, UDL,UVL, Introduction to Shear Force and Bending Moment Diagrams for Cantilever & simply supported beam with concentrated, distributed load and Couple, Practice Problems.

**Unit: V** Types of Friction, Law of Friction, The Laws of Dry Friction. Coefficients of Friction, Angles of Friction , Problems Involving Dry Friction ,Wedge friction ,Ladder Friction, Belt Friction ,Practice Problems.

**Reference Books:-**

- 1.Prasad I.B., Applied Mechanics, Khanna Publication.
- 2.Punmia, B.C., Surveying, Standard book depot.
- 3.Tayal AK ,Engineering Mechanics.,Umesh Publications
- 4.Beer &Johnston, Vectot Mechanics for Engineers; The McGraw Hill Company. Hibbler R.C. – Engineering Mechanics: Statics & Dynamics.
- 5.Rajput R.K., Engineering Mechanics S. Chand & Co.
- 6.Dhawan R.K. Applied Mechanic (Engineering Mechanics),S. Chand Publishing

**List of Experiments:**

- (1) To verify the law of Triangle of forces and Lami's theorem.
- (2) To verify the law of parallelogram of forces.
- (3) To verify law of polygon of forces
- (4) To find the support reactions of a given truss and verify analytically.
- (5) To determine support reaction and shear force at a given section of a simply Supported beam and verify in analytically using parallel beam apparatus.
- (6) To determine the moment of inertia of fly wheel by falling weight method.
- (7) To verify bending moment at a given section of a simply supported beam.
- (8) To verify forces in different members of a jib crane.

**Course Outcomes:**

The ability to understand the effect of external forces on the rigid bodies and various types of structural members will be enhanced . The understanding of technical problems in designing of different Mechanical engineering systems in Industrial applications will be enhanced.

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# Mandsaur University, Mandsaur(M.P.)

Department of Electronics and Communication Engineering

Syllabus of

## Transition from Physics to Electronics

**B. Tech. (I-Semester) (CBCS Scheme)(04YDC)**

W.e.f. (session2016-17)

Name of Subject With Code No.	Maximum Marks Allocation				Lectures per week			Credits	Total Marks
	Theory Paper		Continuous Evaluation	Practical Examination	L	T	P		
	End Sem. Test (EST)	Mid Sem. Test (MST)							
Transition from Physics to Electronics (ECE010)	40	20	10	30	2	1	2	4	100

**Course objective:** To bridge the gap between conventional physics and applied electronics.

S.No.	Course Outline	Course Contents
1	The Circuit Abstraction & Resistive Networks	Lumped Circuit Abstraction, Limitations of the Lumped Circuit Abstraction, Practical Two-Terminal Elements, Ideal Two-Terminal Elements, Another Ideal Two-Terminal Element, <b>Kirchhoff's Laws</b> , <b>Circuit Analysis: Basic Method</b> , Intuitive Method of Circuit Analysis: Series and Parallel Simplification
2	Network Theorems	<b>Nodal Analysis and Mesh Analysis, Superposition Theorem, Thévenin's Theorem and Norton's Theorem</b>
3	The Digital Abstraction	Voltage Levels and the Static Discipline, Boolean Logic, Combinational Gates, Standard Sum-of-Products Representation, Simplifying Logic Expressions, Number Representation
4	MOSFET Switch & Amplifier	The Switch, Logic Functions Using Switches, MOSFET Switch Implementation of Logic Gates, Signal Amplification, Review of Dependent Sources, Actual MOSFET Characteristics, The Switch-Current Source (SCS) MOSFET Model, The MOSFET Amplifier
5	Energy Storage Elements	Constitutive Laws, Series and Parallel Connections, Special Examples, Transformers, Energy, Charge, and Flux Conservation

### **LIST OF EXPERIMENTS**

1. To study and test the various electronic component.
2. To study the digital multimeter in detail.
3. To study and plot the V-I characteristics of P-N junction diode.
4. To study and plot the V-I characteristics of Zener diode.
5. To study and plot the forward characteristics of Light Emitting Diode.
6. To study and plot the forward characteristics of Photodiode.
7. To study and verify the working of OR gate.
8. To study and verify the working of AND gate.
9. To study and verify the working of NOT gate.
10. To study and verify the working of NOR & NAND as universal gate.

### **Text/Reference Books:**

1. Boylestad and Nashelsky: Electronic Devices and Circuit Theory, Pearson Education
2. Anant Agrawal and Jeffrey H. Lang: Foundations of AD Circuits
3. Donald A Neamen: Electronic Circuits Analysis and Design, TMH
4. M. Mano : Digital Logic and Computer Design, Pearson Education
5. Salivahanan and Ari Vahagan : Digital Circuits and Design, Vikas Publishing House

**Course outcomes:** :- Ability to understand the basics concept of electronics. Ability to design and analyze electrical and digital circuits.

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# Mandsaur University, Mandsaur(M.P.)

Department of Mechanical Engineering

Syllabus of

## Foundation of Computer Science & Programming

**B. Tech. (I-Semester) (CBCS Scheme)  
(04YDC)**

W.e.f.(session 2016-17)

Name of Subject With Code No.	Maximum Marks Allocation				Lectures per week			Credits	Total Mark
	Theory Paper		Practical Examination	Continuous Evaluation	L	T	P		
	End Sem. Test (EST)	Mid Sem. Test (MST)							
Foundation of Computer Science & Programming (CSE070)	40	20	30	10	2	1	2	4	100

### Objective of the Course:

- I. The course is designed to provide programming fundamentals using C and C++.
- II. To understand the concepts of programming languages and acquire art of computer programming.
- III Students will learn to write programs (using structured and object oriented programming approach) in C /C++ to solve problems.

### Unit 1: Introduction:

Computational Procedures, Computer architecture, Binary System, Representing Integers, Representing floating points Numbers, Representing Characters, String, Introduction to Algorithms, Complexities and Flowchart, High level and low level Languages, Basic Idea about C Language, Structure of C program

### Unit 2: Data types, Operators and Functions

Identifiers, Types, Constants, Declaration, Assignment & Print statements, Data Types, operators and expressions. Arithmetic operations, Type Conversions and cast, Branching and loops, Two way selection (if, if-else, nested if-else, cascaded if-else), switch statement, ternary operator ? Go to, Loops (For, while-do, do-while) in C, break and continue, Programming examples. Functions, Functions and program structure, Function prototype, Function Definition, Benefit of function, Calling a function, Argument Passing – call by value call by reference, recursion. Scope Rules, Local and Global Variable, file and I/O operations.

### Unit3: Array, Pointer Structure and I/O

**Array:** Introduction to Arrays, Initialization of Array, Multi dimensional Arrays, Passing arrays to functions, **Pointers:** Declarations, Passing pointers to a function, Operations on pointers, Pointer Arithmetic, Pointers and arrays, Arrays of pointers function pointers.

**Structures:** Defining and processing, Passing to a function, Unions, typedef, array of structure, and pointer to structure

## **Unit 4: Introduction to OOP, Classes and object**

Characteristics and Concepts of OOP, Procedure Oriented Programming VS object oriented Programming. Introduction to C++: Character Set, Tokens, Program Structure, Sequential and Conditional execution in C++, Different loops( for, do ..while, while), Object Oriented Programming Paradigm:-Basic Concepts of OOP, Benefits of OOP, Object Oriented, Introduction of Classes, Inline member functions Objects, , Static data member and static member functions ,Constructors, Parameterized Constructors , Default Argument constructors, Copy Constructors, Destructors, Friend functions.

## **Unit 5:Inheritance and Polymorphism**

Introduction to Inheritance, Access Control in Derived Classes, Advance operation with inheritance, Introduction to polymorphism, Examples of polymorphism, Object oriented Static and dynamic polymorphism, Operator and Method overloading, Inherited methods, Redefined methods, the protected interface, Abstract methods and classes, Public and protected properties, Private operations, Disinheritance, Multiple inheritance. various object oriented programming languages

### **References:**

1. Fundamentals of Computers : E Balagurusamy, TMH
2. Basic Computer Engineering : Silakari & Rajesh K Shukla, Wiley India
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### **Suggested List of Experiment**

- (b) Write a program in C to evaluate area of triangle.
- (c) Exchange the values of two variables with and without temporary variable.
- (d) Write a program to find the greatest of three numbers and print the numbers in ascending order.
- (e) Write a program in C to find out roots of given quadratic equations.
- (f) Write C code to compute the real roots of the equation:  $ax^2+bx+c=0$ .
- (g) Write a program that counts from one to ten, prints the values on a separate line for each, and includes a message of your choice when the count is 3 and a different message when the count is 7.

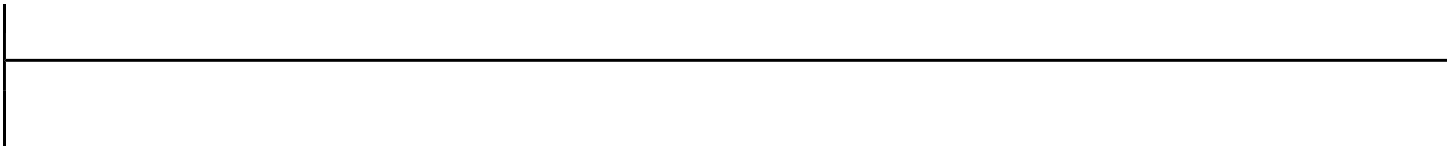
- (h) Write a program that writes your name on the monitor ten times. Write this program three times, once with each looping method.
  - (i) Write a program to find a factorial of given n number using do while statement.
  - (j) Write a program to print a pyramid using for loop.
  - (k) Write a Program for Palindrome.
  - (l) Write a program to print Fibonacci series using recursion.
  - (m) Write a program with three short strings, about 6 characters each, and use "strcpy" to copy "one", "two", and "three" into them. Concatenate the three strings into one string and print the result out 10 times.
  - (n) Write a program that will prompt for a filename for a read file, prompt for a filename for a write file, and open both plus a file to the printer. Enter a loop that will read a character, and output it to the file, the printer, and the monitor. Stop at EOF.
  - (o) Define a named structure containing a string field for a name, an integer for feet, and another for arms. Use the new type to define an array of about 6 items. Fill the fields with data and print them out as follows. A human being has 2 legs and 2 arms. A dog has 4 legs and 0 arms. A Television set has 4 legs and 0 arms. A chair has 4 legs and 2 arms. etc.
  - (p) Write a program to show different type of constructors
  - (q) Write a program to access private member using friend function
  - (r) Write a Program to implement multiple inheritance
  - (s) Program to Show the concept of virtual function
  - (t) Program in C++ to concat two string using operator overloading
  - (u) A bookshop uses a personal computer to maintain the inventory of books that are being sold at the shop. The list includes details such as author, title, isbn number, price, author, stock position. Whenever a customer wants a book, the shopkeeper inputs the title or isbn number and the system replies whether the book is available or not. If it is not, an appropriate message is displayed. If book is in the list, then the system displays the book details and asks for number of copies. If the requested copies are available, the total cost of the books is displayed, otherwise the message "Requested copies are not in stock" is displayed. Implement using structures.
- Students have to make a small project in C++.

**Note: Number of experiments may be extended to make the better understanding of subject.**

**Learning Outcomes:**

**At the end of the course the Students will be able to:**

- Explain the processes by which a C programme is compiled
  - Write basic C programs with variables, arithmetic operators, array, function, structure etc.
  - Implement object oriented programming concepts.
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# Mandsaur University, Mandsaur(M.P.)

Department of Mechanical Engineering

Syllabus of

Introduction to Engineering Mathematics with Applications- I

B. Tech. (I-Semester) (CBCS Scheme)(04YDC)

w.e.f. (session2016-17)

Name of Subject With Code No.	Maximum Marks Allocation				Lectures per week			Credits	Total Marks
	Theory Paper		Continuous Evaluation	Practical Examination	L	T	P		
	End Sem. Test (EST)	Mid Sem. Test (MST)							
Introduction to Engineering Mathematics with Applications- I (MAT010)	60	30	10	-----	4	0	0	4	100

**Course objectives:** The objective of the subject is to impart basic knowledge of Functions and Differentiation with application, revise basic concepts of Indefinite and definite Integrals, learn about Sequences and Series, to know about the uses of differential equations in practical problems, Basic knowledge of Algebra of Logic, Boolean algebra, Graph Theory and Fuzzy Logic and applications in the engineering field.

## Unit 1: Differential Calculus

**Functions:** Introduction of Functions, Concept of real function, types of functions, Applications of functions, Composite functions, its domain and range.

**Limit:** Introduction, fundamental theorems on limits, Operation on Limits, Functions in the Real World Limits, Continuity, Infinity.

**Differentiation:** Introduction, the Beginning of Derivatives, Techniques of Differentiation, Chain Rule, Derivatives of Transcendental (Trigonometric) Functions, Derivatives in the Real World, Antidifferentiation. Expansion of functions, Maxima and Minima of functions of one variable.

## Unit 2 : Integral Calculus

**Integration:** Introduction, fundamental theorem of calculus, Techniques of Integration, Substitution Rule.

**Indefinite Integral:** Basics of Indefinite Integral and its properties, Substitution, Integration using Trigonometric Identity & Integration by Parts.

**Definite Integrals:** Basics of definite Integral and its properties, Definite Integrals as a Limit of a Sum, Application in Summation of series.

## Unit 3 : Sequences and Series

**Sequences:** Introduction, Some Examples of Sequences, Limit of a Sequence.

**Series:** Arithmetic progression (AP), Examples of AP and insertion of Arithmetic means, Geometric Progression (GP), Sum to infinity of a GP, Arithmetic, geometric sequence, sum to n terms of special sequences, Exponential Series, Logarithmic Series.

## Unit 4 : Ordinary Differential Equations

First-order differential equations (Separable, Exact, Homogeneous, Linear), linear differential equations of higher order with constant coefficients. Homogeneous differential equations, Simultaneous linear differential equations.

## **Unit 5 :Algebra of Logic, Boolean Algebra, Graph Theory and Fuzzy Logic**

**Algebra of Logic:** Introduction, Logical connectives, Elementary operations of logic.

**Boolean algebra:** Introduction, Principle of Duality, Basic Theorems, Boolean Expressions and Functions, Switching circuit algebra.

**Graph Theory:** Introduction, Graphs, Sub graphs, Degree and Distance, Basic Theorems, Types of Graphs, Tree, cycles and Network.

**Fuzzy Logic:** Introduction, Elementary concept of Fuzzy Logic, Applications of Fuzzy logic.

### **References**

- (i) Advance Engg. Mathematics, By Ramana, Tata McGraw hill.
- (ii) Advance Engineering Mathematics by D. G. Guffy.
- (iii) Engineering Mathematics by S S Sastri. P.H.I.

### **COURSE OUTCOMES:**

- (a) Student learns about the use of Functions and Differentiation in daily life.
  - (b) Optimum solutions and Modeling of the functions.
  - (c) Student learns about the use of Indefinite and definite Integrals in daily life.
  - (d) Basic fundamentals of used in various fields of Engineering.
  - (e) Student learns about the use of Sequences and Series in daily life, various practical problems and further uses.
  - (f) Student will learn about the basic application of differential equations in various practical problems and further uses.
  - (g) Useful for field of Network analysis, Digital Electronics, Network synthesis Neural Network.
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# Mandsaur University, Mandsaur(M.P.)

Department of Mechanical Engineering

Syllabus of

## WORKSHOP PRACTICE

B.Tech. (I-Semester) (CBCS Scheme)

(04YDC)

W.e.f.(session 2016-17)

Name of Subject With Code No.	Maximum Marks Allocation				Lectures per week			Credits	Total Marks
	Theory Paper		Practical Examination	Continuous Evaluation	L	T	P		
	Mid Sem. Test (MST)	End Sem. Test (EST)							
Workshop Practice (MEC010)	-----	-----	50	50	2	0	4	4	100

### Course Objective:-

*Workshop practice is the backbone of industries it helps to develop and enhance relevant technical skills and provides ability to work using tools and equipments required by the Engineers in the various engineering industrial sectors, manufacturing processes and workshops. The on hand training is imparted to the students to develop skills and understanding with applications of basic principles in the practical field..*

**Module 1 :Fitting Shop:** Introduction of fitting and tool used in fitting shop; Study and use of Measuring instruments, Engineer steel rule, Surface gauges caliper, Height gauges, feeler gauges, micro meter. Different types of files, File cuts, File grades, Use of surface plate, Surface gauges drilling tapping Fitting operations; Chipping filling, Drilling and tapping, Die and Stocks, Dieing.

**Module 2: Welding:** Introduction to different welding methods; Weldability; Welding equipment; electrodes & its specification; Welding joints; Welding defects; Welding positions; Techniques of welding; Gas & Arc welding; Study of TIG & MIG welding processes.

**Module 3 : Black Smithy:** Intoduction of smithing; Heating Equipment, Use of various smithy tools. Forging operations; Upsetting, Drawing down, Fullering, Swaging, Cutting down, Forge welding, Punching and drafting.

**Module 4 :Carpentry Shop:** Various type of timbers: Qualities of timber disease, Defects in timbers; Timber grains, Structure of timber, Timber preservation, Seasoning of wood, Wood Working tools: Wood working machinery, joints & joinery. Process of carpentry, Various operations of planning using various carpentry planes sawing & marking of various carpentry joints.

**Module 5: Foundry:** Pattern Making: Study of Pattern materials, pattern allowances and types of patterns. Core box and core print, .Use and care of tools used for making wooden patterns. Moulding: Properties of good mould, Moulding material & Core sand, Composition of Green , Dry and Loam sand. Methods used to prepare simple green and bench and pit mould dry sand bench mould using single piece and split patterns.

## **List of Practicals**

1. To study of Fitting tools, work material and equipments.
2. To prepare job piece by making use of filing, sawing and chipping , drilling and tapping operations.
3. To study of different types of welding processes and their tools, equipments and safety measures
4. To prepare V-butt joint using AC arc welding.
5. To study of Black smithy tools, equipments and safety measures
6. To prepare a Chisel by forging with the help of hot working process
7. To study of carpentry tools, work material and equipments.
8. To prepare a Carpentry joint like mortise or tenon, halving joint
9. To study of Foundry tools, work material and equipments
10. To prepare a Green sand mould in a foundry shop

## **REFERENCE Books:**

1. Bawa HS; Workshop Practice, TMH
2. Rao PN; Manufacturing Technology- Vol.1& 2, TMH
3. John KC; Mechanical workshop practice; PHI
4. Hazara Choudhary; Workshop Practises -, Vol. I & II.
- 5 Jain. R.K. Production Technology

## **Course Outcome:**

1. This course intends to impart basic know -how of various hand tools and their use in different sections of manufacturing.
  2. The workshop experiences would help to build the understanding of the complexity of the industrial job, along with time and skills requirements of the job.
  3. Irrespective of branch, the use of workshop practises in day to day industrial as well domestic life helps to dissolve the problems.
  4. Understand applications of tools.
  5. Select the appropriate tools required for specific operation.
  6. Comprehend the safety measures required to be taken while using the tools.
  7. To ability to design and conduct experiments
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