



**GARGI EDUCATION INSTITUTE'S**  
**GARGI AGRICULTURE RESEARCH AND**  
**TRAINING INSTITUTE NASHIK.**



**Asia's First Wine, Brewing and Alcohol Technology College**

**Affiliated to Savitribai Phule Pune University (Institute Id No. PU/NS/C/149/2009)**

**Approved by Government of Maharashtra, Accredited By NAAC**

**ISO 9001:2015 Certified**

**2.6.1 - Programme and course outcomes for all Programmes offered by the institution are stated and displayed on website and communicated to teachers and students.**

**Course Outcomes, Programme Outcomes at UG/PG Level**

**Faculty of WBAT, Computer Science and Commerce**

**B.Sc. (Wine, Brewing and Alcohol Technology)**

**Statement of programme outcomes (PO)**

By the of this programme, the students will be able to ;

PO1: Understand the contribution of various scientist in wine brewing and alcohol technology and scope of various branches.

PO2: Understand the concept of alcoholic beverage and their types

PO3: Understand the basic concept of yeast technology, fermentation technology and brewing technology.

PO4: Students absorb knowledge about diverse basic production steps in wine and beer Production.

PO5: Understand and explain various process of chemical Plant engg. And wine marketing

PO6: Explain and describe importance of health benefits of wine, by product and waste management.

PO7: Understand the fundamental concept of viticulture, biochemistry and sensory evaluation of wine, waste management and environmental awareness etc.

PO8: Students develop the skills to think independently plan wine fortification technique and execute it in different fields of wine technology especially the environment sustainability.

PO9: Students will acquire and demonstrate competency in laboratory techniques



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**Semester-I**

**Course Outcomes:**

**Course code WT-101-T - Basic Microbiology-I**

At the end of the courses, the students will be able to

- CO1 Identify and classify different types of microorganisms, including bacteria, viruses, fungi, and protozoa.
- CO2 Describe the structure and function of microorganisms.
- CO3 Explain the factors affecting microbial growth.
- CO4 Understand the roles of microorganisms in various ecological processes.
- CO5 Develop basic microbiological laboratory skills, including aseptic techniques, staining procedures, and culture methods.
- CO6 Effectively communicate microbiological concepts both orally and in writing.

**Course code WT-101-P: Laboratory techniques in Microbiology I**

By the end of the course the students will be able to

- CO1 Demonstrate proficiency in aseptic techniques for handling microorganisms to prevent contamination.
- CO2 Learn and apply various methods for culturing microorganisms, including agar plate streaking, broth cultures, and microbial isolation techniques.
- CO3 Master the use of light microscopes and other microscopy techniques for observing microorganisms.
- CO4 Perform staining techniques such as Gram staining to differentiate bacterial types.
- CO5 Demonstrate awareness of laboratory safety protocols and practice safe handling of chemicals and biological materials.

**Course code WT-102-T: Basic Biochemistry-I**

At the end of courses, the students will be able to.

- CO1 Identify and describe the structure of major biomolecules, including proteins, nucleic acids, lipids, and carbohydrates.
- CO2 Explore the levels of protein structure and understand the relationship between structure and function in proteins.
- CO3 Explore the principles of metabolism, including catabolic and anabolic pathways, and the role of ATP as an energy currency.
- CO4 Understand the metabolism of amino acids, including their anabolism and catabolism.
- CO5 Understand the structure and function of biological membranes



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## Course code WT-102-P: Laboratory techniques in Biochemistry I

At the end of courses the students will be able to

- CO1 Demonstrate proficiency in aseptic techniques for handling microorganisms to prevent contamination.
- CO2 Learn and apply various methods for culturing microorganisms, including agar plate streaking, broth cultures, and microbial isolation techniques.
- CO3 Master the use of light microscopes and other microscopy techniques for observing microorganisms.
- CO4 Perform staining techniques such as Gram staining to differentiate bacterial types.
- CO5 Demonstrate awareness of laboratory safety protocols and practice safe handling of chemicals and biological materials.

## Course code WT-103-T: Basics of wine technology-I

At the end of courses the students will be able to-

- CO1. Students should demonstrate a comprehensive understanding of the key stages in the winemaking process, from grape cultivation to bottling.
- CO2. Ability to identify and describe major grape varieties used in winemaking and their characteristic flavors.
- CO3. Demonstrate competence in selecting and implementing appropriate grape harvesting techniques for optimal wine quality.
- CO4. Mastery of the scientific principles behind fermentation, including the role of yeast, temperature control, and the conversion of sugars into alcohol.

## Course code WT -103-P: Laboratory techniques in wine technology-I

At the end of courses the students will be able to-

- CO1 Demonstrate advanced knowledge and practical skills in specialized production techniques for wine, beer, and various alcoholic beverages.
- CO2 Apply advanced methods to optimize brewing, distillation, and winemaking processes, incorporating innovative techniques to enhance product quality and efficiency.
- CO3 Implement stringent quality control measures, advanced sensory analysis, and chemical testing methods to ensure consistent and superior quality in alcoholic beverages.
- CO4 Showcase an in-depth understanding of microbial interactions, fermentation processes, and advanced yeast management techniques to influence flavor profiles and product consistency.
- CO5 Demonstrate advanced knowledge of complex regulations governing alcoholic beverage production, ensuring adherence to legal and industry standards.



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**Course code OE-101- WT: Vine to wine**

At the end of courses the students will be able to-

- CO1 Students should demonstrate a thorough understanding of viticulture, including the cultivation of grapevines, soil management, and the impact of climate and terroir on grape quality.
- CO2 Students should be able to identify and describe various grape varieties, understanding their unique characteristics and how they contribute to different wine styles.
- CO3 Apply practical vineyard management practices, including optimize grape yield and quality.
- CO4 Apply various techniques for pressing grapes and extracting juice, taking into consideration the impact on wine quality.
- CO5 Apply methods for quality control, including sensory analysis and laboratory testing of wines.

**Course code SECP-101- WT: Handling and maintenance of equipment's in alcohol production**

At the end of courses the students will be able to-

- CO1 Provide an overview of the various types of equipment used in alcohol production, including fermentation vessels, distillation columns, refractometer, Hydrometer, ebulliometer, Spectrophotometer.
- CO2 Develop a detailed understanding of the functions and operational principles of key equipment involved in alcohol production.
- CO3 Teach the principles of distillation and guide students in the safe and efficient operation of distillation columns for alcohol separation.
- CO4 Introduce the use of centrifuges in alcohol production, covering operational procedures and maintenance requirements.



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## Semester-II

### Course code WT-151-T: Basic Microbiology-II

At the end of course the students will be able to-

- CO1 Identify and classify different types of microorganisms, including bacteria, viruses, fungi, and protozoa.
- CO2 Describe the structure and function of microorganisms.
- CO3 Explain the factors affecting microbial growth.
- CO4 Understand the roles of microorganisms in various ecological processes.
- CO5 Develop basic microbiological laboratory skills, including aseptic techniques, staining procedures, and culture methods.
- CO6 Effectively communicate microbiological concepts both orally and in writing.

### Course code WT-151-P: Laboratory techniques in Microbiology-II

At the end of the courses the students will be able to-

- CO1 Demonstrate proficiency in aseptic techniques for handling microorganisms to prevent contamination.
- CO2 Learn and apply various methods for culturing microorganisms, including agar plate streaking, broth cultures, and microbial isolation techniques.
- CO3 Master the use of light microscopes and other microscopy techniques for observing microorganisms.
- CO4 Perform staining techniques such as Gram staining to differentiate bacterial types.
- CO5 Demonstrate awareness of laboratory safety protocols and practice safe handling of chemicals and biological materials.

### Course code WT-152-T: Basic Biochemistry-II

At the end of the course the students will be able to-

- CO1 Identify and describe the structure of major biomolecules, including proteins, nucleic acids, lipids, and carbohydrates.
- CO2 Explore the levels of protein structure and understand the relationship between structure and function in proteins.
- CO3 Explore the principles of metabolism, including catabolic and anabolic pathways, and the role of ATP as an energy currency.
- CO4 Understand the metabolism of amino acids, including their anabolism and catabolism.
- CO5 Understand the structure and function of biological membranes



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**Course code WT-152-P: Laboratory techniques in Biochemistry-II**

At the end of the course the students will be able to-

- CO1 Demonstrate proficiency in aseptic techniques for handling microorganisms to prevent contamination.
- CO2 Learn and apply various methods for culturing microorganisms, including agar plate streaking, broth cultures, and microbial isolation techniques.
- CO3 Master the use of light microscopes and other microscopy techniques for observing microorganisms.
- CO4 Perform staining techniques such as Gram staining to differentiate bacterial types.
- CO5 Demonstrate awareness of laboratory safety protocols and practice safe handling of chemicals and biological materials.

**Course Code WT -153-T: Basics of beer and alcohol technology**

At the end of the course the students will be able to-

- CO1 Demonstrate a comprehensive understanding of the basic principles, terminology, and key concepts related to beer and alcohol production.
- CO2 Identify and explain the role of different ingredients (e.g., grains, hops, yeast, and malt) and the processes involved in brewing beer and producing various types of alcoholic beverages.
- CO3 Understand fundamental brewing techniques, including mashing, fermentation, aging, distillation, and bottling, for producing a range of alcoholic beverages.
- CO4 Understanding of raw-material with respect to its selection and standardization.
- CO5 Apply quality control measures to ensure consistency, purity, safety of beer and alcoholic products.
- CO6 Comply with safety protocols and demonstrate an understanding of regulatory standards related to production, distribution and consumption of alcoholic beverages.

**Course Code WT -153-P: Laboratory techniques of beer and alcohol technology**

- CO1 Demonstrate advanced knowledge and practical skills in specialized production techniques for wine, beer, and various alcoholic beverages.
- CO2 Apply advanced methods to optimize brewing, distillation, and winemaking processes, incorporating innovative techniques to enhance product quality and efficiency.
- CO3 Implement stringent quality control measures, advanced sensory analysis, and chemical testing methods to ensure consistent and superior quality in alcoholic beverages.
- CO4 Showcase an in-depth understanding of microbial interactions, fermentation processes, and advanced yeast management techniques to influence flavor profiles and product consistency.



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**Course Code OEP-151- WT: Laboratory techniques in vine to wine:**

At the end of the course the students will be able to-

- CO1 Students should be proficient in collecting and preparing wine samples for various laboratory analyses, ensuring accuracy and representativeness.
- CO2 Demonstrate a strong commitment to laboratory safety protocols and ethical considerations in handling chemicals, equipment, and data.
- CO3 Conduct precise pH measurements in wines using appropriate instruments, understanding the significance of pH in winemaking.
- CO4 Apply techniques for measuring sugar content in grapes and wines, utilizing methods such as refractometry.
- CO5 Identify and analyse common yeast and bacterial strains associated with winemaking, demonstrating competence in microbial analysis.
- CO6 Perform analyses related to wine stability, including protein and tartrate stability, ensuring the quality and longevity of wines.

**Course Code SECP-151- WT: Experiments in fruit processing:**

At the end of the course the students will be able to-

- CO1 Demonstrate hands-on proficiency in various fruit processing methods, including juicing, drying, canning, freezing, fermenting, and other experimental techniques.
- CO2 Conduct experiments to assess and analyse the quality parameters of processed fruits.
- CO3 Design and execute experiments to optimize processing parameters (time, temperature, additives, etc.) for enhancing the quality, flavour, and nutritional value of processed fruit products.
- CO4 Experiment with different fruit combinations, additives, and novel processing methods to develop innovative and value-added fruit products, evaluating their sensory attributes and market potential.
- CO5 Gain practical experience in operating fruit processing equipment, handling laboratory tools, and maintaining proper hygiene and safety practices during experiments.



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## S.Y.B.Sc. (WBAT)

### Semester-III Course Code WT-201-MJ Arts and Science of Wine

At the end of the course the students will be able to-

- CO1 Define and explain key terminologies in viticulture, grapevine structure and functions, stages of grape berry development, and the impact of temperature on grape maturation.
- CO2 Identify major white grape varieties and analyze the chemical composition of grape juice and perform grape berry sampling using standard methods.
- CO3 Conduct basic chemical and sensory evaluations of grape berries to determine ripeness and suitability for winemaking.
- CO4 Illustrate and describe the complete white wine production process, including harvesting, pre-fermentation treatments, fermentation, and post-fermentation practices.
- CO5 Understand the role of cooperage in wine aging, differentiate between oak species used in barrel making, and describe the maintenance and conditioning of oak barrels used in wine production.

### Course Code WT-202-MJ Basics of Fermentation Technology

At the end of the course the students will be able to-

- CO1 Describe and explain the structural components of a fermenter, including body construction, aeration/agitation systems, and control devices.
- CO2 Demonstrate an understanding of sterilization methods and aseptic handling in fermentation processes.
- CO3 Compare and contrast different types of fermenters such as batch, fed-batch, continuous, and solid-state systems, along with their applications.
- CO4 Explain the roles of various utility systems (e.g., boilers, compressors, chilling units, water treatment) in supporting fermentation operations
- CO5 Apply knowledge of fermenter design and operation to troubleshoot and optimize bioprocesses.

### Course Code WT- 203-MJP Laboratory techniques in Wine and Fermentation Technology

At the end of the course the students will be able to-

- CO1 Prepare and formulate appropriate culture media for fermentation and microbial growth.
- CO2 Analyze sugar fermentation processes, identifying acid and gas production in different conditions.
- CO3 Measure pH and total acidity in grape juice, wine, and other fermentation substrates using standard techniques.
- CO4 Analyze total soluble solids in juices and wines using refractometry and hydrometry methods.
- CO5 Perform quality assessment of barley including sampling, grading, protein estimation, and moisture content analysis.



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## Course Code WT-221-VSC Vineyard management

At the end of the course the students will be able to-

- CO1 Classify different types of soils and evaluate their suitability for grapevine cultivation
- CO2 Analyze soil properties such as texture, structure, and colloid content and explain their impact on nutrient availability
- CO3 Assess climatic influences on grapevine growth and select appropriate grape varieties and rootstocks for specific regions.
- CO4 Explain the principles of canopy management and evaluate various trellising and training systems.
- CO5 Identify different stages of grape development and interpret changes in grape morphology and composition during ripening.

## Course Code WT- 231-FP FIELD PROJECT:

At the end of the course the students will be able to-

- CO 1 Students will be able to demonstrate an understanding of raw material selection, fermentation processes, and quality control methods used in wine, beer, and alcohol production industries.
- CO 2 Students will apply microbiological, biochemical, and analytical techniques in solving practical problems during wine and alcohol production.
- CO 3 Students will be able to design and conduct small-scale experiments or surveys related to fermentation, sensory evaluation, or raw material analysis.
- CO 4 Students will demonstrate communication, reporting, teamwork, and professional ethics through participation in industrial training or collaborative fieldwork.

## Course Code WT - 241 MN: Yeast Culture technology I:

At the end of the course the students will be able to

- CO1 Describe morphological and cytological features of different yeast species, especially *Saccharomyces cerevisiae*.
- CO2 Identify and apply appropriate methods for cultivating, maintaining, and preserving commercial yeast strains.
- CO3 Differentiate various growth phases and types of yeast growth, and interpret their relevance in industrial processes.
- CO4 Explain the microbial interactions and spoilage organisms associated with grapevines and wine fermentation.
- CO5 Implement preventive measures during fermentation, curing, and storage to avoid microbial spoilage.



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**Course Code WT-242 MNP: Laboratory techniques in Yeast Culture Technology-I:**

At the end of the course the students will be able to-

- CO1** Prepare and differentiate nutrient media tailored for yeast, LAB, and AAB cultures.
- CO2** Morphologically identify yeast and bacterial strains using microscopic and staining techniques.
- CO3** Isolate wild yeast from natural substrates and characterize them through identification protocols.
- CO4** Evaluate yeast metabolic activity such as hydrogen sulphide production and resistance to chemical agents like sulphur dioxide.
- CO5** Measure microbial cell density accurately using turbidometry and interpret growth patterns.

**Course Code OE-201- WT: Grains to beer:**

At the end of the course the students will be able to-

- CO1** Describe the historical evolution and industrial advancements in beer making.
- CO2** Identify and evaluate the role of various raw materials (malt, water, hops, yeast, adjuncts) in the brewing process.
- CO3** Explain the steps involved in barley processing and malt production, including germination and kilning techniques.
- CO4** Demonstrate understanding of key unit operations in brewing: milling, mashing, lautering, wort boiling, fermentation, and product recovery.
- CO5** Assess the impact of process parameters on the final product's quality, including filtration, maturation, and storage conditions.

**Course Code IKS 201-WT Indian Knowledge System and Wine, brewing and alcohol technology:**

At the end of the course the students will be able to-

- CO 1** Explain the evolution and diversity of fermentation practices in ancient India based on Vedic, Ayurvedic, and regional texts.
- CO 2** Identify and describe various traditional fermented beverages, raw materials, starter cultures, and indigenous fermentation vessels used in Indian communities.
- CO 3** Evaluate the microbiological, nutritional, and environmental principles behind traditional Indian fermentation and distillation techniques.
- CO 4** Demonstrate knowledge of traditional fermentation and distillation apparatus, environmental factors, and indigenous quality control methods.
- CO 5** Describe and evaluate traditional distillation and storage practices



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## Semester IV

### Course Code WT-251 MJ- Advances in Beer and Alcohol Technology:

At the end of the course the students will be able to-

- CO1 Describe the classification, properties, and global significance of alcohol and alcoholic beverages.
- CO2 Explain starch gelatinization and saccharification processes, and the role of enzymes in alcohol production.
- CO3 Analyze factors affecting enzyme activity and apply calculations for alcohol yield and recovery.
- CO4 Identify and evaluate brewing raw materials, including malt, hops, adjuncts, and yeast strains.
- CO5 Illustrate the steps in malt and beer production and explain the functional role of each raw material.

### Course Code WT-252 MJ- Fermentation Technology:

At the end of the course the students will be able to-

- CO1 Design and optimize fermentation media including selection of appropriate carbon, nitrogen sources, vitamins, minerals, and buffering systems.
- CO2 Evaluate the composition of grape juice for its efficiency as a fermentation medium in wine production.
- CO3 Explain media sterilization methods and calculate parameters such as Decimal Reduction Time (D-value).
- CO4 Apply techniques for measuring and controlling key process parameters in microbial fermentation.
- CO5 Outline the production processes of various fermented products such as oriental foods, organic acids, amino acids, and fruit-based alcoholic beverages.

### Course Code WT-253 MJP - Laboratory techniques in Beer, Alcohol and Fermentation Technology

At the end of the course the students will be able to-

- CO1 Examine and interpret microbial presence in fermented wash using microscopy.
- CO2 Measure °Brix and specific gravity to evaluate fermentation potential of molasses.
- CO3 Estimate residual sugars, alcohol, and volatile acids in fermented molasses broth.



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## Course Code WT -271-VSC: Laboratory techniques in Vineyard management:

At the end of the course the students will be able to-

- CO1 Measure soil parameters like water holding capacity, temperature, pH, and test soil using kits.
- CO2. Identify and describe common grapevine varieties and vineyard weeds.
- CO3 Operate basic vineyard equipment and perform pruning and training techniques.
- CO4 Examine stem, berry, and leaf anatomy and recognize symptoms of diseases like Powdery and Downy mildew.
- CO5 Prepare a report based on vineyard field visits, demonstrating understanding of vineyard management.

## Course Code WT- 232 -CEP – COMMUNITY ENGAGEMENT PROGRAM:

At the end of the course the students will be able to-

- CO 1 Understand community perceptions, practices, and challenges related to alcohol production.  
Develop small-scale, sustainable brewing models suitable for local deployment.
- CO 2 Communicate scientific brewing methods in an accessible way to community members.
- CO 3 Promote responsible alcohol use and public health awareness in rural communities.
- CO 4 Collaborate effectively with local stakeholders to co-create knowledge and solutions.

## Course Code WT -291-MN: Advances in Yeast Culture Technology:

At the end of the course the students will be able to-

- CO1 Demonstrate yeast culturing techniques including starter preparation, maintenance, and inoculum development.
- CO2 Explain yeast metabolism of sugars and nitrogen, and its effect on fermentation dynamics.
- CO3 Evaluate the impact of temperature, oxygen levels, and killer factors on yeast activity during fermentation.
- CO4 Describe the roles of various yeast strains in wine production and their contribution to flavor and aroma.
- CO5 Identify fermentation problems such as phage attack, acetic acid formation, and stuck fermentations, and suggest remedies.



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**Course Code WT-292 MNP Laboratory techniques in yeast culture technology-II**

- CO1** Evaluate how ethanol affects the microbial flora of the skin and understand implications for hygiene and fermentation environments.
- CO2** Demonstrate the ability to distinguish live and dead yeast cells using vital staining techniques.
- CO3** Isolate and identify indigenous microbial populations associated with grape berries and leaves.
- CO4** Conduct direct cell counts to assess yeast biomass in fermentation samples.
- CO5** Compare the fermentation profiles of yeast and bacteria on various sugars and interpret gas and acid production results.

**Course Code OE-251 WT - Laboratory techniques in Grains to beer**

- CO1** Detect and evaluate thresholds of sweet, acid, and bitter tastes.
- CO2** Analyze taste interactions in multi-component solutions (sweet, acid, bitter).
- CO3** Identify beer aroma characteristics using the beer aroma wheel.
- CO4** Conduct sensory evaluation of beer and recognize off odors.
- CO5** Perform sampling and physical quality tests of barley and malt used in brewing.

**Course Code SEC-251 WT - Techniques in Horticulture**

- CO1** Identify and handle common garden tools and horticultural crops.
- CO2** Prepare nursery beds and demonstrate various propagation techniques like cutting, layering, grafting, and budding.
- CO3** Apply propagation through specialized vegetative structures effectively.
- CO4** Perform pruning, training, potting, and fertilizer application in horticultural settings.
- CO5** Prepare field visit reports and describe real-world nursery and vineyard operations.



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## T.Y.B.Sc. (WBAT)

### Semester-V Course Code WBAT-351: Basic Chemical Engineering

At the end of the course students will be able to-

CO1: Understand the role and importance of chemical engineering in various industries, including pharmaceuticals, petrochemicals, food processing, and materials.

CO2: Gain a solid understanding of fundamental chemical concepts such as atomic structure, chemical bonding, stoichiometry, and chemical reactions.

### Course code WBAT-352 : Equipment & utilities

At the end of the course students will be able to-

CO1: Understanding and selection of beverage production equipment. CO2: Ensuring quality control and regulatory compliance CO3: Learn the principles of material and energy balances, including the conservation of mass

CO3: Effective management of utilities for production processes.

CO4: Maintenance and troubleshooting skills for equipment.

CO5: Integration with brewing and distillation processes.

CO6: Awareness of emerging technologies and innovations

### Course code WBAT-353: Health benefits of alcoholic beverages -I

At the end of the course students will be able to-

CO1: Understanding and evaluating health effects.

CO2: Critical analysis of scientific literature.

CO3: Identification of bioactive compounds.

CO4: Assessment of moderate consumption guidelines.

CO5: Analysis of population studies.

CO6: Discussion of risks and benefits.

### Course Code WBAT-355: Marketing of alcoholic beverages

At the end of the course students will be able to-

CO1: Understanding consumer behavior and preferences in the alcoholic beverage market.

CO2: Knowledge of marketing strategies specific to alcoholic beverages, including branding, packaging, and promotion.

CO3: Ability to analyze market trends, competitive landscape, and consumer demographics.



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CO4: Application of marketing principles to develop effective advertising campaigns and sales initiatives.

CO5: Understanding of regulatory constraints and compliance issues in alcohol advertising.

CO6: Skill development in market research, product positioning, and pricing strategies.

**Course Code WBAT-356 : Business management**

At the end of the course students will be able to-

CO1: Understanding of fundamental business principles and concepts.

CO2: Knowledge of organizational structures, functions, and processes.

CO3: Ability to analyze business environments and identify opportunities and threats.

CO4: Skill development in strategic planning, goal setting, and decision-making.

CO5: Proficiency in financial management, including budgeting, accounting, and financial analysis.

CO6: Effective leadership and team management skills.

**Course Code WBAT-3510 : Bio analytical Techniques**

At the end of the course students will be able to-

CO1: Proficiency in various analytical techniques used in biological sciences.

CO2: Understanding of sample preparation methods for biological samples.

CO3: Skill development in chromatographic separation techniques.

CO4: Competence in spectroscopic methods for biomolecule analysis.

CO5: Knowledge of mass spectrometry and its applications in bioanalysis.

CO6: Ability to interpret and analyze bioanalytical data accurately.

**Course Code WBAT-3511 : Computer aided applications**

At the end of the course students will be able to-

CO1: Mastery of computer software tools for various applications.

CO2: Understanding of design principles and techniques.

CO3: Integration of computer-aided applications in engineering and design projects.



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CO4: Knowledge of emerging trends and advancements in computer-aided technologies.

CO5: Application of computer-aided applications in real-world problem-solving scenarios.

CO 6: Familiarity with computer-aided design (CAD) standards and practices.

**Semester-VI**

**Course Code WBAT-361: Sensory evaluation of wine, beer and alcohol**

At the end of the course students will be able to-

CO1: Mastery of sensory analysis techniques specific to wine, beer, and other alcoholic beverages.

CO2: Understanding of key sensory attributes such as appearance, aroma, taste, and mouthfeel.

CO3: Proficiency in descriptive sensory analysis to evaluate beverage characteristics.

CO4: Skill development in sensory discrimination testing to identify differences between products.

CO5: Competence in sensory profiling to assess consumer preferences and market trends.

CO 6: Ability to apply statistical analysis methods to sensory data interpretation.

**Course Code WBAT- 362: Waste treatment paper –II**

At the end of the course students will be able to-

CO1: Understanding of waste generation sources and types.

CO2: Knowledge of waste treatment methods, including physical, chemical, and biological processes.

CO3: Proficiency in waste characterization and analysis techniques.

CO4: Skill development in waste minimization and resource recovery strategies.

CO5: Application of risk assessment and mitigation strategies in waste treatment.



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CO 6: Collaboration with stakeholders to develop effective waste management solutions.

**Course Code WBAT-363 : Health benefits of alcoholic beverages-II**

At the end of the course students will be able to-

CO1: Understanding of research findings regarding health effects of moderate alcohol consumption.

CO2: Recognition of potential benefits on cardiovascular health, cognitive function, and longevity.

CO3: Ability to critically evaluate scientific literature on alcohol's health impacts.

CO4: Awareness of guidelines for responsible alcohol consumption.

CO5: Knowledge of bioactive compounds in alcoholic beverages and their effects.

CO 6: Application of evidence-based recommendations for health promotion.

**Course Code WBAT- 364 : Maturation and aging of alcoholic beverages**

At the end of the course students will be able to-

CO1: Understanding of maturation and aging processes in alcoholic beverages.

CO2: Recognition of factors influencing flavor development during maturation.

CO3: Proficiency in assessing sensory changes in aged beverages.

CO4: Skill development in selecting appropriate aging techniques and materials.

CO5: Integration of maturation principles into beverage production processes.

CO 6: Application of aging techniques to enhance product differentiation and value.

**Course Code WBAT- 365 : Alcohol marketing laws and regulatory polices**

At the end of the course students will be able to-

CO1: Understanding of laws and regulations governing alcohol marketing.

CO2: Recognition of key stakeholders involved in alcohol regulation.



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CO3: Proficiency in interpreting and applying advertising standards and restrictions.

CO4: Skill development in navigating licensing requirements for alcohol marketing.

CO5: Competence in compliance with age-restriction policies and responsible marketing practices.

CO 6: Ability to assess the impact of regulatory policies on alcohol marketing strategies.

### **Course Code WBAT- 366 : Wine technology- III**

At the end of the course students will be able to-

CO1: Understanding of wine production processes and technologies.

CO2: Recognition of grape varieties and vineyard management practices.

CO3: Proficiency in grape harvesting and sorting techniques.

CO4: Skill development in grape crushing, pressing, and juice extraction methods.

CO5: Competence in fermentation techniques and yeast selection.

CO 6: Ability to manage temperature control during fermentation and aging.

### **Course Code WBAT- 3610: Brewing technology -II**

At the end of the course students will be able to-

CO1: Understanding of brewing principles and processes.

CO2: Recognition of raw materials used in brewing, including malt, hops, yeast, and water.

CO3: Proficiency in mashing, lautering, boiling, and fermentation techniques.

CO4: Skill development in yeast management and fermentation control.

CO5: Competence in wort cooling, clarification, and conditioning methods.

CO 6: Ability to apply quality control measures throughout the brewing process.



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**Course Code WBAT- 3611 : Alcohol technology - II**

At the end of the course students will be able to-

CO1: Understanding of alcohol production processes and technologies.

CO2: Recognition of raw materials used in alcohol production, such as grains, fruits, or sugarcane.

CO3: Proficiency in fermentation techniques and yeast selection for alcohol production.

CO4: Skill development in distillation methods for alcohol concentration.

CO5: Competence in purification and filtration processes to refine alcohol quality.

CO 6: Ability to manage temperature control and environmental conditions during production.



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## M.Sc. Wine, Brewing and Alcohol Technology Programme outcomes:

This programme intends to blend the theoretical knowledge with practical learning skills with a view to prepare students for careers in industry, notably alcoholic beverages industry such as winery, distillery and brewery etc

**PO-1: Knowledge:** students are encouraged to apply the knowledge of fundamentals of wine, beer and alcohol production while dealing with complex technical problem and . A student is exposed to a wide range of topics in wine, beer and alcohol production and is given intensive training in laboratory related work. The students are encouraged to develop an ability to be a specialist in wine/beer/alcohol production.

**PO-2: Problem Analyses:** students will be able to conduct research literature survey, identify, formulate and analyze complex problems in wine, beer and alcohol production and reach concrete solutions using fundamental principles. Students will be able to interpret and analyze results from various experiments and draw suitable conclusions against their supported data acquired.

**PO-3: Designing Solutions:** students are trained to design solutions for production problems and develop a process that can meet specific needs.

**PO-4: Modern tool usage:** As an outcome students are trained to create, select, and apply appropriate techniques, resources and tools in the analysis and synthesis of data with an understanding of the limitations.

**PO-5: Communication Development:** Students will be able to communicate effectively on scientific issues with the scientific community and society at large in writing effective reports and designing documentation, make effective presentations and give and receive appropriate instructions.

**PO-6: Employability:** Along with academic excellence, we aim at making our students suitable for employment in alcoholic beverages industry. In the effort to train our students for industry, we attempt to seek collaboration and co-operation from various industries for organizing internship and on-campus interview.



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**PO-7: Ethics:** Along with spirit of competitiveness among students, we give importance in developing a strong sense of ethics among Students by manifesting the impact that science has on social, economic and environmental issues. At the end of this programme students will be able to apply ethical principles and commit to professional ethics and responsibilities and norms of the wine practice.

**PO-8: Environment and Sustainability:** This programme facilitates understanding of the impact of the professional solutions in societal and environmental contexts through classroom discussions and research projects. At the end of this programme students will be able to identify and analyse problems deterrent to environmental sustainability and provide creative solutions towards the same.

**PO-09: Science and Society:** students are encouraged to apply logical reasoning based on the knowledge, skills, designing solutions to evaluate societal, health, safety issues and the responsibilities that go along with the scientific practice.

**PO-10: Life-long learning:** students are encouraged to volunteer and be self-motivated that will enhance society values, active involvement, personality development, self-sustainability, and employability. As such, students will be able to recognize the need for the preparation and have the ability to engage in independent and life-long learning in every broad context of technological changes



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**SEMESTER- I**

**COURSE CODE: WT 511 MJ Microbiology of Wine, Beer & Alcohol**

**After successfully completing this course, students will be able to:**

**CO1:** Knowledge of the types of microbes, its cytology, staining techniques and role in alcohol, beer and wine industries.

**CO2:** Knowledge of the sterilization and disinfection principles and its use in alcohol, beer and wine industries.

**CO3:** Knowledge of the isolation of microbes and its growth in the laboratory using various types of media. Also growth pattern of microbes and its measurement.

**CO4:** Knowledge of the use of microbes in various fermentation industries.

**COURSE CODE: WT 512 MJ: Biochemistry of wine, Beer & Alcohol**

**After successfully completing this course, students will be able to:**

**CO1:** Knowledge of the basic concepts of biochemistry.

**CO2:** Knowledge of the proteins, amino acids, lipids, their types and metabolism

**CO3:** Knowledge of the enzymes & vitamins, their kinetics and its use in alcohol, beer and wine industries.

**COURSE CODE: WT 513 MJ Vineyard Technology**

**After successfully completing this course, students will be able to:**

**CO1:** Idea and information of the physical and chemical properties of soil used for cultivation of grapes, grapevine planting materials and its propagation.

**CO2:** Knowledge of the site selection for the cultivation of the grapes, irrigation climate & vegetative analysis

**CO3:** Information regarding selection of cuttings treatment and storage, propagation by layering propagation of grafted vines etc,

**CO4:** Vineyard establishment, Grapevine pests and diseases, Developmental stages of grapes and harvesting of grapes for wine production.

**COURSE CODE: WT 514 MJP: Practical's based on WT 511 MJ, WT 512 MJ, WT 513 MJ Compulsory Practical Paper**

**After successfully completing this course, students will be able to:**



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**COURSE CODE: WT 510 RM- Research Methodology**

**After successfully completing this course, students will be able to:**

- CO1** Understand research terminology
- CO2** Describe quantitative, qualitative and mixed methods approaches to research
- CO3** Identify the components of a literature review process
- CO4** Analyse and interpret the research
- CO5** Apply ethical principles of research in preparation of scientific documents

**COURSE CODE: WT 516 MJ : Alcohol Technology-I**

**After successfully completing this course, students will be able to:**

- CO1** Overview of molasses composition, grades, storage and cost.& details of molasses weighing system used in distillery.
- CO2** Knowledge of the BH Molasses, sugar syrup & sugarcane juice used for alcohol fermentation & its composition and use for alcohol fermentation. Also they get information about molasses dilution practices adopted and design of diluter, quality of dilution water used in distillery.
- CO3** Knowledge of the Classification of alcohols, Important chemical reactions of alcohol, Scenario of ethanol blending programme in India, Current status of ethanol blending programme.

**WT 516 MJP: Practicals based on WT 516 MJ: Alcohol Technology-After**

**successfully completing this course, students will be able to:**

- CO1.** Hands on experience of determination of ethanol content of spirit sample by oxidation method and determination of fermentation efficiency of yeast growing on molasses medium.
- CO2.** Skills of determination of various parameters of rectified spirit
- CO3.** Hands on experience of testing of spirit for good quality.
- CO4.** Information of selection of spirit for liquor industry by analysing various



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**SEMESTER- II**

**COURSE CODE: WT 521 MJ Enology-I**

**After successfully completing this course, students will be able to:**

- CO1. Knowledge of history of wine, classification and nutritional aspects of wine.
- CO2. Knowledge of principal constituents of grape juice & wine
- CO3. Knowledge of production of red and white wine from grapes.
- CO4. knowledge of Oak & Cooperage

**COURSE CODE: WT 522 MJ: Brewing Technology-I**

**After successfully completing this course, students will be able to:**

- CO1. knowledge of history, classification and various styles of beer.
- CO2. knowledge of overview of basic raw materials used for brewing process.
- CO3. knowledge of use of barley and malt for brewing process.
- CO4. knowledge of use of hops and yeast for brewing process.

**WT 523 MJ: Alcohol Technology-II**

**After successfully completing this course, students will be able to:**

- CO1. Knowledge of yeast maintenance in distillery industry
- CO2. Knowledge of propagation of yeast in distillery
- CO3. Details of alcohol fermentation
- CO4. Batch fermentation process of alcohol fermentation and its control

**COURSE CODE: WT 524 MJP Practicals based on WT 521 MJ, WT 522 MJ, WT 523 MJ Compulsory Practical Paper**

**After successfully completing this course, students will be able to:**

- CO1. Determination of pH, total acidity, Volatile acidity of wine & must.
- CO2. Determination of free & total Sulphur dioxide of wine, soluble solids of grape juice & wine by refractometry & hydrometry.
- CO3. Preparation of sample of barley for chemical analysis. & determination of Moisture & Extract content of barley.



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**COURSE CODE: WT 527 MJ: Equipment in alcoholic beverages**

**After successfully completing this course, students will be able to:**

- CO1.** knowledge of Required utilities services & industrial equipments used in alcohol industries
- CO2.** Information of functions and uses of each equipments
- CO3.** Winery & brewery Sanitization
- CO4.** Special Lab equipment's used in alcohol industries

**COURSE CODE: WT-528 MJ : Fermentation Technology**

**After successfully completing this course, students will be able to:**

- CO1.** Scope and importance of fermentation and types of fermenters
- CO2.** Sterilization process used in fermentation
- CO3.** Development of Inoculum for industrial fermentation
- CO4.** Details of production media fomulation

**SEMESTER-III**

**COURSE CODE: WT-601-MJ Enology-II**

**After successfully completing this course, students will be able to:**

- CO1** Define wine fortification
- CO2** Understand role of various microbes in enology
- CO3** Determine constituents of grape juice and wine
- CO4** Illustrate development of wine parks
- CO5** Evaluate quality of wine by sensory analysis
- CO6** Understand the principles of wine tasting, including aroma, flavor, and mouth feel analysis.



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**COURSE CODE: WT-602-MJ Brewing Technology-II**

**After successfully completing this course, students will be able to:**

- CO1** Define the level of packaging
- CO2** Describe the waste generation in beer making process
- CO3** Demonstrate the process of beer making
- CO4** Illustrate the factors affecting beer quality
- CO5** Compare beer styles based on production techniques
- CO6** Evaluate the quality and characteristics of brewing ingredients and their impact on the final product.

**COURSE CODE: WT-603-MJ Alcohol technology-II**

**After successfully completing this course, students will be able to:**

- CO1** Define the maturation and aging of county and foreign liquor
- CO2** Describe the rectified spirit, extra neutral alcohol and anhydrous alcohol
- CO3** Illustrate the Indian & International standards of molasses and various alcohol
- CO4** Categorize the manufacturing process of extra neutral alcohol and anhydrous alcohol
- CO5** Compare the atmospheric and multipressure distillation
- CO6** Gain knowledge of global and local regulations governing the production, labelling, and distribution of alcoholic beverages.

**COURSE CODE: WT-604-MJP Practical based on WT 601 MJ, WT 602 MJ and WT 603 MJ Core Compulsory Practical Paper**

**After successfully completing this course, students will be able to:**

- CO1** Study properties of Wine, Indian-made foreign liquor, Spirits
- CO2** Understand basic concepts of Indian-made foreign liquor, spirit
- CO3** Determine chemical parameters of Indian-made foreign liquor, spirit
- CO4** Illustrate methods of wine making from raw material other than grapes
- CO5** Assess wine sensory analysis parameters
- CO6** Understand maturation and aging processes in spirits production.



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**COURSE CODE: WT 631 RP: Research project**

**After successfully completing this course, students will be able to:**

- CO1** Identify and model problems linked to the beverage industries
- CO2** Develop technical, inter personal and communication skill
- CO3** Apply theoretical aspects in practical situations by accomplishing the tasks with respect to social, cultural, global and environmental responsibility
- CO4** Analyze the challenges and future potential of outcomes with respect to industrial issues
- CO5** Evaluate the training/research experience in terms of their personal, educational and career perspective
- CO6** Develop presentation skills to present the research outcomes

**COURSE CODE: WT-610-MJ Advance Marketing of Alcoholic Beverages**

**After successfully completing this course, students will be able to:**

- CO1** Describe wine marketing principles
- CO2** Understand basic wine marketing terminologies
- CO3** Examine consumer behaviour and marketing strategies
- CO4** Categorize marketing opportunities
- CO5** Summarize financial management
- CO6** Demonstrate strategic management skills in the context of alcoholic beverages.

**COURSE CODE: WT-610-MJP Practical on Advance Marketing of Alcoholic Beverages**

**After successfully completing this course, students will be able to:**

- CO1** Identify advertising and promotion management aspects
- CO2** Understand bottle labelling and packaging
- CO3** Demonstrate e-commerce design and digital marketing
- CO4** Illustrate industrial analysis report
- CO5** Develop brand and label for alcoholic beverages
- CO6** Assess regulatory compliance and ethical considerations in alcohol marketing.



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**SEMESTER-IV**

**COURSE CODE: WT-651-MJ Industrial Waste Treatment and Environmental Management**

**After successfully completing this course, students will be able to:**

- CO1** Identify different types of industrial wastes (e.g., solid, liquid, hazardous) and their sources across various industrial sectors.
- CO2** Explain the characteristics and composition of industrial wastes, including their potential environmental impacts
- CO3** Develop strategies for waste minimization, resource recovery, and pollution prevention in industrial processes.
- CO4** Implement cleaner production techniques and technologies to reduce waste generation and environmental impact.
- CO5** Design comprehensive waste management plans that include collection, transportation, treatment, and disposal of industrial waste.
- CO6** Evaluate and select appropriate disposal methods, including landfilling, incineration, and secure containment.

**COURSE CODE: WT-652-MJ Business Management of Alcoholic Beverages**

**After successfully completing this course, students will be able to:**

- CO1** Apply management principles and practices specific to the alcoholic beverages industry.
- CO2** Analyse operational aspects including production management, quality assurance, and innovation in alcoholic beverages.
- CO3** Evaluate financial management techniques and their application within the alcohol industry.
- CO4** Assess organizational behaviour and its impact on business management in the context of alcoholic beverages.
- CO5** Assess market opportunities and create competitive strategies.
- CO6** Optimize business processes to improve efficiency and productivity.

**WT-653-MJP Practical based on WT 651 MJ, WT 652 MJ**

**After successfully completing this course, students will be able to:**

- CO1** To identify various types of industrial wastes, including their sources, composition and potential environmental impacts.
- CO2** Demonstrate proficiency in techniques for sampling, analyzing, and characterizing industrial waste.
- CO3** Gain hands-on experience with physical, chemical and biological methods for treating industrial waste.
- CO4** Design, operate and troubleshoot various industrial waste treatment systems, such as filtration, sedimentation, flotation and biological treatment units.



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**COURSE CODE: WT-660-MJ Advance Enology – III**

- CO1 Describe clarification & stability of wine
- CO2 Understand maturation and ageing of wine
- CO3 Illustrate the concept of blending and bottling
- CO4 Select suitable practical technique to solve wine defects
- CO5 Evaluate wine quality on the basis of maturation and ageing
- CO6 Implement stabilization techniques to prevent precipitation of tartrates and protein hazes during storage and bottling.

**COURSE CODE: WT-660-MJP Practical on Advance Enology**

- CO1 Identify new techniques in wine production
- CO2 Understand pre-operations of wine bottling
- CO3 Demonstrate filtration and bottling of wine
- CO4 Assess wine based on fining agents
- CO5 Evaluate quality control aspects of packaging materials
- CO6 Calculate and apply adjustments to alcohol content, acidity levels, and residual sugar to achieve target wine specifications.

**COURSE CODE: WT-661-MJ Advance Brewing Technology-III**

- CO1 Describe contamination control method in beer making process
- CO2 Explain beer stability
- CO3 Illustrate different packaging methods of beer
- CO4 Outline entire beer making process from aging to finishing
- CO5 Compare home brewing and micro brewing
- CO6 Experiment with alternative brewing methods (e.g., souring, barrel aging, dry hopping) to create unique beer styles and flavors.

**COURSE CODE: WT-661-MJP Practical on Advance Brewing Technology**

- CO1 Describe raw material and beer product parameters
- CO2 Understand culture media requirement for isolation of bacteria from beer
- CO3 Determine physical parameters of raw material and product in beer production
- CO4 Analyze sugar and alcohol content of beer
- CO5 Evaluate compositional analysis method for raw material of beer production
- CO6 Evaluate the microbial profile of beer.

**WT-662-MJ Advance Alcohol technology-III**

- CO1 Describe various types of continuous fermentation process
- CO2 Describe method of alcohol analysis
- CO3 Illustrate process of alcoholic beverages and their sensory analysis
- CO4 Outline process of alcohol production from non-molasses sources
- CO5 Evaluate quality aspects of alcohol using MPR distillation



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## M.Sc. (Computer Science)

### **Program Outcomes:**

By the end of the programme the students will be able to-

PO1: Provides technology-oriented students with the knowledge and ability to develop creative solutions.

PO2: Develop skills to learn new technology.

PO3: Apply computer science theory and software development concepts to construct computing-based solutions.

PO4: Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, Artificial Intelligence, Mobile applications.

PO5: Ability to identify entrepreneurial opportunities and leverage managerial & leadership skills for founding, leading & managing startups as well as professionalizing and growing family businesses.

PO6: Perform laboratory-orientated computer programs to demonstrate different programming language concepts.

PO7: Ability to exhibit a broad appreciation of the ethical and value underpinnings of managerial choice in a political, cross-cultural, globalized, digitized socio-economic environment and distinguish between ethical and unethical behaviors & act with integrity.

PO8: Ability to operate independently in new environment acquire new knowledge and skill and assimilate them into the internalized knowledge that and skill.

PO9: Design small executable software, useful mobile application by implementing analytical and critical thinking skills and deliver it on time in the form of report and Power Point



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## Sem – I CS-501-MJ : Advanced Operating System

- CO1 To learn Advanced Operating Systems Concepts
- CO2 To understand the programming interface to the Unix/Linux system
- CO3 To provide an understanding of the system calls of Operating Systems
- CO4 To get knowledge of the design and implementation of Operating Systems.

## CS-502-MJ : Artificial Intelligence

- CO1 To understand the concept of Artificial Intelligence in the form of various tasks.
- CO2 To understand Problem Solving using various searching strategies for AI.
- CO3 To understand multi-agent environment.
- CO4 To acquaint with the fundamentals of knowledge and reasoning.

## CS-503-MJ : Principles of Programming Language

- CO1 Separate syntax from semantics
- CO2 Compare programming language designs
- CO3 Understand their strengths and weaknesses
- CO4 Learn new languages more quickly

## CS-512-MJ : Cloud Computing

- CO1 To understand the principles of cloud computing
- CO2 To understand the importance of virtualization and how it has helped the
- CO3 development of cloud computing.
- CO4 To understand the concept of cloud security.
- CO5 To design and deploy cloud infrastructure.

## CS-531-RM : Research Methodology

- CO1 Research Methodology course are designed to equip students with the necessary knowledge, skills, and understanding of various research techniques
- CO2 Students should be familiar with various data collection techniques, such as surveys, interviews, observations, and experiments, and understand their strengths and limitations.
- CO3 Students should be aware of ethical considerations in research, including issues related to participant consent, privacy, confidentiality, and avoiding plagiarism.
- CO4 Its aim is to enable students to conduct research effectively, critically evaluate existing research, and contribute to the advancement of knowledge in their respective fields.



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**SEM-II**

**CS-551-MJ : Design and Analysis of Algorithms**

- CO1** To learn basic Algorithm Analysis techniques and understand the use of asymptotic notation
- CO2** To Understand different design strategies
- CO3** To Understand the use of data structures in improving algorithm performance
- CO4** To critically analyze the efficiency of alternative algorithmic

**CS-552-MJ : Mobile App Development Technologies**

- CO1** Students should understand GUI Design concepts and design Android GUI Layout.
- CO2** Students should be able to design visually appealing and intuitive user interfaces for Android apps, using appropriate layouts, widgets, and styles.
- CO3** Students should be Develop and design event-driven programming with UI Controls

**CS-553-MJ: Software Project Management**

- CO1** To get skills that are required to ensure successful medium and large scale software projects
- CO2** To study Requirements Elicitation, Project Management, Verification & Validation and Management of Large Software Engineering Projects.
- CO3** To learn to select and apply project management techniques for process modeling, planning, estimation, process metrics and risk management

**CS-560-MJ : Full Stack Development-I**

- CO1** Get familiar with the MEAN stack
- CO2** Learn advanced ES6 features in Javascript & typescript
- CO3** Learn front end development using Angular
- CO4** Create backend APIs using NodeJS and ExpressJS



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**SEM-III**

**CS-601-MJ :Software Architecture and Design Pattern**

- CO1** To introduce students to the foundation ideas, methods and techniques of Software Architecture and Design Patterns.
- CO2** To write java programs and applications that make use of frameworks
- CO3** patterns to create reusable and flexible software systems.
- CO4** To make use of patterns and architectures for solving practical problems.
- CO5** To clear idea about various design pattern.

**CS-602-MJ: Machine Learning**

- CO1** To introduce students to the basic concepts and techniques of Machine Learning.
- CO2** To write python programs using machine learning algorithms for solving practical problems.
- CO3** To understand about Machine Learning Library and use cases.
- CO4** To understand about the process of deploying ML model.

**CS-603-MJ :Internet of Things**

- CO1** To understand the fundamentals of Internet of Thing
- CO2** To build a small low cost embedded system using Arduino / Raspberry Pi or equivalent Boards
- CO3** To create a network of connected devices.
- CO4** To apply the concept of Internet of Things in the real world scenario.

**CS-610-MJ : Full Stack Development-II**

- CO1** Get deep understanding of Angular framework and RxJS library.
- CO2** Learn State management with NgRx.
- CO3** Create dynamic components with custom life-cycle hooks.
- CO4** Build scalable and reusable features.
- CO5** Learn advanced Typescript concepts.



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**Sem – IV**

**CS-651-MJP : Full Time Industrial Training (IT)**

- CO1** To provide students with an opportunity to apply theoretical knowledge gained throughout the program in a real-world industrial setting
- CO2** To foster professional skills such as teamwork, communication, time management, and
- CO3** problem-solving in an industrial environment.
- CO4** To expose students to the practices, technologies, and challenges prevalent in the IT industry or related sectors.
- CO5** To enable students to gain hands-on experience by working on projects or tasks relevant to their field of study.

**CS-681-RP : Research Work-II**

- CO1** To acquire skills necessary for conducting independent research in the field of computer science.
- CO2** To apply theoretical concepts learned throughout the program to solve real-world problems.
- CO3** To enhance communication skills through presentation and documentation of research findings.
- CO4** To get hands-on-experience for applying research methodology

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Class : F.Y.B.Sc. Computer Science(Semester-I)

## CS-101-T : Problem Solving using 'C' Programming

- CO1 To understand fundamentals of **problem solving and algorithmic thinking**
- CO2 To develop ability to design **algorithms, flowcharts, and pseudocode**
- CO3 To implement solutions using **C programming language**
- CO4 To understand **control structures, functions, and arrays**
- CO5 To test, debug, and execute C programs effectively

## CS-102-P : Lab Course based on CS-101-T

- CO1 To implement **C programs** based on problem-solving concepts
- CO2 To gain hands-on experience with **control structures and functions**
- CO3 To develop skills in **debugging and program execution**
- CO4 To apply arrays and modular programming concepts
- CO5 To improve logical thinking through practical programming

## MTC-101-T : Matrix Algebra

- CO1 To understand basic concepts of **matrices and matrix operations**
- CO2 To perform algebraic operations on matrices
- CO3 To solve systems of **linear equations using matrix methods**
- CO4 To understand determinants, inverse, and rank of matrices
- CO5 To apply matrix algebra concepts in **computer science problems**

## MTC-102-P : Mathematics Practical I

- CO1 To implement mathematical concepts through **practical problem solving**
- CO2 To apply matrix operations in computational problems
- CO3 To develop accuracy in mathematical calculations
- CO4 To strengthen analytical and logical skills
- CO5 To correlate theoretical mathematics with practical applications



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## ELC-101-T : Principles of Analog Electronics

- CO1 To understand basic concepts of **analog electronics**
- CO2 To study characteristics of **diodes, BJTs, and FETs**
- CO3 To analyze rectifier, filter, and amplifier circuits
- CO4 To understand operational amplifiers and applications
- CO5 To relate analog electronics concepts with computer hardware

## ELC-102-P : Electronics Practical Course I

- CO1 To perform experiments on **analog electronic circuits**
- CO2 To understand practical behavior of electronic components
- CO3 To analyze input-output characteristics of devices
- CO4 To develop skills in circuit testing and measurement
- CO5 To enhance experimental and observation skills

## IKS-100-T : Generic Indian Knowledge System (IKS)

- CO1 To understand the **Indian Knowledge System** and its relevance
- CO2 To explore traditional Indian contributions to science and technology
- CO3 To develop ethical and cultural awareness
- CO4 To connect ancient knowledge with modern applications
- CO5 To inculcate value-based education

## SEC-101-CS : Statistical Methods for Computer Science I

- CO1 To understand basic concepts of **statistics and probability**
- CO2 To analyze and interpret data statistically
- CO3 To apply statistical methods in computer science problems
- CO4 To develop data handling and analytical skills
- CO5 To understand importance of statistics in computing



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## **AEC-101-ENG : English**

- CO1** To develop **communication skills** in English
- CO2** To improve reading, writing, and comprehension abilities
- CO3** To enhance vocabulary and grammatical accuracy
- CO4** To build confidence in professional communication
- CO5** To strengthen soft skills required for career development

## **VEC-101-ENV : Environmental Studies – I (EVS-I)**

- CO1** To understand environmental issues and sustainability
- CO2** To create awareness about conservation of natural resources
- CO3** To understand impact of human activities on environment
- CO4** To promote eco-friendly practices
- CO5** To develop environmental responsibility



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## F.Y.B.Sc. Computer Science – Semester II

### CS-151-T : Advanced C Programming

- CO1 To understand advanced concepts of **C programming**
- CO2 To implement programs using **pointers, structures, and dynamic memory**
- CO3 To develop modular and efficient programs
- CO4 To use file handling for data storage and retrieval
- CO5 To debug and optimize complex C programs

### CS-152-P : Lab Course based on CS-151-T

- CO1 To implement advanced C programs practically
- CO2 To use pointers and structures effectively
- CO3 To perform file handling operations
- CO4 To strengthen problem-solving through programming
- CO5 To enhance coding and debugging skills

### MTC-151-T : Graph Theory

- CO1 To understand basic concepts of **graph theory**
- CO2 To represent graphs using suitable data structures
- CO3 To apply graph traversal techniques
- CO4 To understand trees and spanning trees
- CO5 To apply graph concepts in computer science applications

### MTC-152-P : Mathematics Practical II

- CO1 To solve graph theory problems practically
- CO2 To apply mathematical concepts computationally
- CO3 To enhance analytical and reasoning abilities



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## ***ELC-151-T : Principles of Digital Electronics***

- CO1** To understand digital systems and number systems
- CO2** To analyze Boolean algebra and logic gates
- CO3** To design combinational and sequential circuits
- CO4** To understand flip-flops, registers, and counters
- CO5** To apply digital electronics in computer hardware

## ***ELC-152-P : Electronics Practical Course II***

- CO1** To perform experiments on **digital electronic circuits**
- CO2** To analyze logic gates and sequential circuits
- CO3** To interpret timing diagrams and outputs
- CO4** To develop practical circuit testing skills
- CO5** To understand digital IC applications

## ***SEC-151-CS : Statistical Methods for Computer Science II***

- CO1** To apply advanced statistical techniques
- CO2** To analyze datasets using probability concepts
- CO3** To interpret statistical results in computing problems
- CO4** To strengthen data analysis skills
- CO5** To understand role of statistics in computer science

## ***AEC-151-ENG : English***

- CO1** To improve professional communication skills
- CO2** To enhance written and verbal abilities
- CO3** To develop presentation and interpersonal skills
- CO4** To strengthen employability skills
- CO5** To build confidence in academic and professional settings



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Class : S.Y.B.Sc.

## CS-201-MJ-T : Data Structure – I

- CO1 To understand basic concepts of **data structures**
- CO2 To study linear data structures such as **arrays, stacks, and queues**
- CO3 To implement searching and sorting techniques
- CO4 To analyze time and space complexity of algorithms
- CO5 To apply data structures in problem solving

## CS-202-MJ-T : Database Management System – I

- CO1 To understand basic concepts of **databases and DBMS**
- CO2 To study database architecture and data models
- CO3 To design databases using **ER diagrams**
- CO4 To understand relational model and constraints
- CO5 To write SQL queries for data retrieval and manipulation

## CS-203-MJ-P : Lab Course based on CS-201-MJ-T & CS-202-MJ-T

- CO1 To implement data structure programs practically
- CO2 To execute SQL queries using DBMS software
- CO3 To develop problem-solving skills through lab work
- CO4 To understand practical applications of databases
- CO5 To improve coding and debugging skills

## CS-221-VSC-T : Software Engineering

- CO1 To understand fundamental concepts of **software engineering**
- CO2 To study software development life cycle models
- CO3 To analyze software requirements and specifications
- CO4 To understand software design and testing techniques
- CO5 To gain knowledge of software project management



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## CS-201-IKS-T : Indian Knowledge System in Computing

- CO1 To understand Indian contributions to **computing and mathematics**
- CO2 To study ancient Indian algorithms and logical systems
- CO3 To appreciate traditional knowledge in modern computing
- CO4 To develop ethical and cultural awareness
- CO5 To integrate Indian knowledge with technological development

## CS-231-FP : Mini Project

- CO1 To apply theoretical knowledge in a **practical project**
- CO2 To develop problem identification and solution skills
- CO3 To gain experience in software development process
- CO4 To improve teamwork and communication skills
- CO5 To present and document project work effectively

## CS-241-MN-T : Mathematics / Electronics (Minor – Theory)

- CO1 To understand core concepts of **mathematics or electronics**
- CO2 To apply theoretical knowledge in computer science
- CO3 To develop analytical and logical thinking
- CO4 To strengthen interdisciplinary understanding
- CO5 To support computing applications



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## S.Y.B.Sc. Computer Science – Semester II

### CS-251-MJ-T : Data Structure – II

- CO1 To understand advanced data structures such as **linked lists, trees, and graphs**
- CO2 To implement traversal and manipulation operations on trees and graphs
- CO3 To study advanced searching and sorting algorithms
- CO4 To analyze time and space complexity of data structure algorithms
- CO5 To apply data structures to solve real-world complex problems

### CS-252-MJ-T : Database Management System – II

- CO1 To understand advanced concepts of **DBMS**
- CO2 To study **normalization** and database design
- CO3 To understand **transaction management, concurrency control, and recovery techniques**
- CO4 To work with **indexing and file organization**
- CO5 To implement SQL queries for advanced database operations

### CS-253-MJ-P : Lab Course based on CS-251-MJ-T & CS-252-MJ-T

- CO1 To implement advanced data structure programs practically
- CO2 To perform database normalization and implement constraints
- CO3 To execute transaction-based SQL queries
- CO4 To develop problem-solving skills using programming and DBMS
- CO5 To strengthen coding, debugging, and analytical skills

### CS-271-VSC-P : Advanced Python Programming

- CO1 To understand advanced features of **Python programming**
- CO2 To implement object-oriented programming in Python
- CO3 To work with files, modules, and libraries
- CO4 To develop applications using Python
- CO5 To improve scripting, debugging, and automation skills



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## **CS-281-FP : Mini Project**

- CO1** To apply theoretical knowledge in a **real-life project**
- CO2** To develop problem identification and solution skills
- CO3** To gain hands-on experience in software development

## **CS-291-MN-T : Mathematics / Electronics (Minor – Theory)**

- CO1** To understand advanced concepts of mathematics or electronics
- CO2** To apply theoretical knowledge in computer science
- CO3** To strengthen analytical and reasoning abilities
- CO4** To develop interdisciplinary understanding
- CO5** To support computational problem-solving

## **CS-292-MN-P : Mathematics / Electronics (Minor – Practical)**

- CO1** To perform practical experiments in minor subject
- CO2** To analyze and interpret experimental results
- CO3** To apply theoretical concepts in practice
- CO4** To enhance technical and analytical skills
- CO5** To improve experimental accuracy and reporting

## **OE-251/252/253/254-CS-T : GE / OE – II**

- CO1** To understand advanced concepts of chosen elective subject
- CO2** To develop practical and industry-relevant skills
- CO3** To apply modern tools and techniques in projects
- CO4** To understand real-world applications of technology
- CO5** To enhance employability and professional competence



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## T.Y.B.Sc. Computer Science – Semester III

### CS-301-MJ-T : Core Java (*Font 14, Bold*)

- CO1 To understand the principles of **object-oriented programming** in Java
- CO2 To implement classes, objects, inheritance, and polymorphism
- CO3 To work with exception handling, packages, and I/O streams
- CO4 To develop GUI applications using Java
- CO5 To apply Java concepts in real-world programming projects

### CS-302-MJ-T : Operating Systems

- CO1 To understand fundamental concepts of **operating systems**
- CO2 To study process management, scheduling, and synchronization
- CO3 To understand memory management, virtual memory, and paging
- CO4 To study file systems and I/O management
- CO5 To analyze OS concepts through practical implementation

### CS-303-MJ-T : Web Technology – I

- CO1 To understand basics of **web development**
- CO2 To study HTML, CSS, JavaScript, and client-server architecture
- CO3 To implement dynamic web pages and forms
- CO4 To understand basics of web protocols and security
- CO5 To develop small web-based applications

### CS-304-MJ-T : Theory of Computer Science

- CO1 To understand the **foundations of computation**
- CO2 To study formal languages, grammars, and automata
- CO3 To analyze finite state machines and Turing machines
- CO4 To learn about computability and decidability
- CO5 To apply theoretical concepts in problem-solving and algorithm analysis



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## CS-305-MJ-P : Lab Course based on CS-302-MJ-T

- CO1 To implement OS-related programming exercises
- CO2 To develop process scheduling and synchronization programs
- CO3 To understand file handling and memory management practically
- CO4 To enhance problem-solving skills using OS concepts
- CO5 To strengthen programming and debugging skills

## CS-306-MJ-P : Lab Course based on CS-301-MJ-T & CS-303-MJ-T

- CO1 To develop Java-based programming projects
- CO2 To implement web applications using HTML, CSS, and JavaScript
- CO3 To integrate Java with web technologies for real-world applications
- CO4 To enhance coding, testing, and debugging skills
- CO5 To develop modular and interactive programs

## CS-307-MJ-T : Data Science

- CO1 To understand fundamental concepts of **data science**
- CO2 To perform data collection, cleaning, and preprocessing
- CO3 To apply statistical and machine learning methods
- CO4 To visualize data using modern tools and libraries
- CO5 To implement data-driven solutions for real-world problems

## CS-308-MJ-P : Lab Course based on CS-307-MJ-T

- CO1 To practice **data science programming exercises**
- CO2 To implement data preprocessing and visualization techniques
- CO3 To apply machine learning algorithms on datasets
- CO4 To enhance analytical and problem-solving skills
- CO5 To develop small data-driven projects

## CS-309-MJ-T : Database Technologies (*Alternative Elective*)

- CO1 To study advanced **database technologies and architectures**
- CO2 To implement SQL and NoSQL database systems
- CO3 To understand indexing, transactions, and query optimization
- CO4 To apply database design concepts in real applications



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## CS-3010-MJ-P : Lab Course on CS-309-MJ-T

- CO1 To practice advanced SQL queries and NoSQL databases
- CO2 To implement database projects with transactions and constraints
- CO3 To perform database normalization and optimization
- CO4 To develop practical database applications
- CO5 To improve technical and analytical skills

## CS-3011-MJ-T : Embedded Systems (*Alternative Elective*)

- CO1 To understand **embedded system architectures**
- CO2 To study microcontrollers and real-time operating systems
- CO3 To implement embedded programming projects
- CO4 To interface sensors and actuators with microcontrollers
- CO5 To design embedded solutions for practical applications

## CS-3012-MJ-P : Lab Course on CS-3011-MJ-T

- CO1 To practice embedded system programming
- CO2 To develop microcontroller-based projects
- CO3 To implement real-time data acquisition and control
- CO4 To enhance technical skills in embedded applications
- CO5 To develop practical solutions integrating hardware and software

## CS-321-VSC-P : Advanced Python Programming

- CO1 To understand advanced features of **Python**
- CO2 To implement object-oriented programming in Python
- CO3 To work with libraries for data analysis and automation
- CO4 To develop applications using Python modules and packages
- CO5 To improve scripting, debugging, and problem-solving skills

## CS-341-MN-T : Mathematics / Electronics (Minor)

- a. To understand advanced concepts in mathematics or electronics
- b. To apply theoretical knowledge to computational problems
- c. To strengthen analytical and reasoning abilities



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## T.Y.B.Sc. Computer Science – Semester VI

### CS-351-MJ-T : Advanced Java

- CO1 To understand **advanced concepts of Java programming**
- CO2 To work with multithreading, exception handling, and I/O streams
- CO3 To implement Java collections framework and generics
- CO4 To develop GUI applications using Java Swing and AWT
- CO5 To apply Java concepts in building real-world applications

### CS-352-MJ-T : Design Framework

- CO1 To understand principles of **software design and architecture**
- CO2 To study design patterns and their applications
- CO3 To implement modular and reusable software components
- CO4 To analyze system requirements and design frameworks
- CO5 To improve software development efficiency and maintainability

### CS-353-MJ-T : Web Technology – II

- CO1 To study **advanced web technologies**
- CO2 To implement server-side scripting using PHP/ASP.NET or similar technologies
- CO3 To work with databases for web applications
- CO4 To develop dynamic and secure web applications
- CO5 To integrate front-end and back-end for real-world solutions

### CS-354-MJ-T : Compiler Construction

- CO1 To understand the **fundamentals of compiler design**
- CO2 To study lexical analysis, parsing, and syntax-directed translation
- CO3 To understand semantic analysis, code generation, and optimization
- CO4 To implement compiler components practically
- CO5 To analyze and design simple compiler modules



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## CS-355-MJ-P : Lab Course based on CS-352-MJ-T

- CO1 To implement software design and architecture exercises
- CO2 To develop applications using design patterns
- CO3 To practice modular programming and reusable code development
- CO4 To strengthen problem-solving and analytical skills
- CO5 To enhance practical design and development abilities

## CS-356-MJ-P : Lab Course based on CS-351-MJ-T & CS-353-MJ-T

- CO1 To develop advanced Java programming projects
- CO2 To implement dynamic web applications integrating front-end and back-end
- CO3 To practice GUI and server-side programming
- CO4 To improve coding, testing, and debugging skills
- CO5 To develop complete, functional software solutions

## CS-357-MJ-T : Android Programming (*Major Elective*)

- a. To understand **Android application development** concepts
- b. To work with Android SDK, layouts, activities, and intents
- c. To develop mobile applications with proper UI/UX
- d. To use databases, sensors, and multimedia in Android apps
- e. To deploy and test Android applications on devices

## CS-358-MJ-P : Lab Course based on CS-357-MJ-T

- CO1 To implement Android programming exercises
- CO2 To develop functional mobile apps
- CO3 To integrate databases and device features into apps
- CO4 To practice debugging and testing Android applications
- CO5 To enhance practical mobile application development skills



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## CS-359-MJ-T : Software Testing Tools (*Alternative Elective*)

- CO1 To understand **software testing methodologies and tools**
- CO2 To perform manual and automated testing
- CO3 To study functional, regression, and performance testing
- CO4 To work with testing frameworks and bug-tracking tools
- CO5 To improve software quality through systematic testing

## CS-3510-MJ-P : Lab Course based on CS-359-MJ-T

- CO1 To practice software testing exercises
- CO2 To implement automated test scripts
- CO3 To perform test planning and execution
- CO4 To generate test reports and analyze defects
- CO5 To enhance problem-solving and analytical skills in testing

## CS-3511-MJ-T : Internet of Things (OE)

- CO1 To understand **IoT architecture and components**
- CO2 To study IoT communication protocols and sensors
- CO3 To implement IoT devices and applications
- CO4 To analyze data from IoT networks
- CO5 To develop IoT solutions for real-world problems

## CS-3512-MJ-P : Lab Course based on CS-3511-MJ-T

- CO1 To implement IoT programming exercises
- CO2 To connect sensors and actuators with microcontrollers
- CO3 To collect and analyze IoT data
- CO4 To develop small IoT-based projects
- CO5 To enhance technical and analytical skills in IoT systems



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## CS-321-VSC-P : Agile Processes

- CO1 To understand principles of **Agile software development**
- CO2 To implement Agile practices in software projects
- CO3 To study Scrum, Kanban, and other Agile frameworks
- CO4 To improve team collaboration and project management skills
- CO5 To develop real-world projects using Agile methodology

## CS-381-OJT : OJT (On-the-Job Training)

- CO1 To gain **practical industry experience** in computing
- CO2 To apply theoretical knowledge in real-world projects
- CO3 To develop professional and soft skills
- CO4 To enhance teamwork, communication, and documentation skills
- CO5 To complete a project under industrial guidance



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## T.Y.B.Sc. Computer Science – Semester VII

### CS-401-MJ-T : Advanced Operating System

- To learn **advanced concepts of Operating Systems**
- To understand system calls and kernel programming
- To study process scheduling, synchronization, and deadlocks
- To explore memory management, file systems, and I/O management
- To design and analyze OS mechanisms for real-world applications

### CS-402-MJ-T : Artificial Intelligence

- To understand **fundamental concepts of Artificial Intelligence (AI)**
- To study problem-solving using search algorithms and heuristics
- To understand knowledge representation and reasoning
- To explore machine learning and multi-agent environments
- To develop AI-based solutions for real-world problems

### CS-403-MJ-T : Principles of Programming Language

- To separate **syntax from semantics** in programming languages
- To compare programming language designs and paradigms
- To understand strengths and weaknesses of different languages
- To learn new programming languages quickly
- To apply language concepts in software development

### CS-404-MJ-P : Lab Course based on CS-401-MJ-T

- To implement Operating System exercises and experiments
- To practice process scheduling and synchronization
- To simulate memory management and file system operations
- To enhance programming and debugging skills
- To develop practical understanding of OS concepts



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## CS-405-MJ-P : Lab Course based on CS-402-MJ-T

- To implement AI algorithms in programming exercises
- To practice search strategies, reasoning, and knowledge representation
- To develop small AI-based projects
- To strengthen analytical and problem-solving skills
- To enhance understanding of AI concepts practically

## CS-406-MJ-T : Advance Databases and Web Technologies (*Major Elective*)

- To study **advanced database concepts** including transactions and concurrency
- To understand database design and normalization
- To explore web technologies and server-side scripting
- To integrate database systems with web applications
- To develop dynamic, secure, and scalable web applications

## CS-407-MJ-P : Lab Course on CS-406-MJ-T

- To implement advanced database exercises
- To design and query relational and NoSQL databases
- To develop web applications integrated with databases
- To practice testing, debugging, and optimization
- To enhance hands-on skills in database-driven web development

## CS-408-MJ-T : Cloud Computing (*Alternative Elective*)

- To understand **principles of cloud computing**
- To study virtualization and cloud infrastructure
- To explore cloud services (IaaS, PaaS, SaaS)
- To understand cloud deployment models and security
- To design and deploy applications on the cloud

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## **CS-409-MJ-P : Lab Course on CS-408-MJ-T**

- To implement cloud computing exercises
- To practice deployment of applications on cloud platforms
- To understand cloud resource management
- To develop cloud-based solutions for real-world problems
- To strengthen practical cloud computing skills

## **CS-410-MJ-T : C# .NET Programming (*Alternative Elective*)**

- To understand **C# programming concepts and .NET framework**
- To work with object-oriented programming in C#
- To develop desktop and web applications using C#
- To explore ADO.NET for database connectivity
- To implement real-world software solutions in C#

## **CS-411-MJ-P : Lab Course on CS-410-MJ-T**

- To implement exercises in C# and .NET framework
- To develop applications integrating UI and database
- To practice debugging and testing in .NET environment
- To develop functional software projects
- To enhance practical programming skills in C#

## **CS-431-RP : Research Project (FP/OJT/CEP/RP)**

CO1 To undertake **research-oriented software development**

CO2 To apply theoretical knowledge to practical problems

CO 3 To design, implement, and document a research project

CO 4 To develop problem-solving, analytical, and communication skills

CO 5 To gain hands-on experience in project development and presentation



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## Faculty of Commerce

### **Programme Outcomes :**

By the end of the programme the students will be able to-

PO1: In depth knowledge, understanding and skills in commerce.

PO2: Build a strong foundation of knowledge in different areas of Commerce.

PO3: Develop the skill of applying concepts and techniques used in Commerce for real life problems.

PO4: Inculcate reading, writing, speaking skills and Business correspondence.

PO5: Creates awareness among society about Law and Legislations related to commerce and business.

PO6: Use effectively recent Trends in Business, Organizations and Industries. PO7: Communicate effectively about Economic Environment of Country as well as World.

PO8: Use effectively practical skills in real life related to banking and corporate world.

PO9: Provides a platform for overall development and develop knowledge level and awareness about Recent Trends of World

PO10: Use new technologies effectively to communicate ideas in the area of commerce.

PO11: Critically evaluate new research findings, ideas, methodologies and theoretical frame work in specialized study.

PO12: Work collaboratively and productively in groups.

### **Course Outcomes :**

#### **111 Compulsory English :**

By the end of the course the students will be able to-

CO1: Students have learned prose and poetry.

CO2: This course has helped the students to realize the communicative power of English

CO3: Students have learned the importance and utility of English language

CO4: Students have developed overall linguistic competence and communicative skills.

CO5: Students have developed oral and written communicative skills



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## **Financial Accounting-I**

CO1. To make students understand the concepts of the Financial Accounting.

CO2. To impart the knowledge of Partnership Accounts, AS, Ind AS, Lease, Hire Purchase and Royalty.

CO3. To make accounting treatment of Partnership Accounts, Lease, Hire Purchase

CO4. To teach the utility and practical use of Partnership Accounts, Lease, Hire Purchase, Royalty and Accounting Standards.

## **Fundamentals of Banking-I**

CO1. To provide knowledge of Fundamentals of Banking.

CO2. To create awareness about various banking concepts.

CO3. To conceptualize banking operations.

CO4. To develop the working capability of students in banking sector

CO5. To Make the Students aware of Banking Business and practices.

## **Introduction to Behavioural Economics**

CO1. To know about the origin of economics

CO2. To understand the relationship between economics and other discipline.

CO3. To introduce microeconomic concepts, theory and Laws.

CO4. To introduce simple mathematical equations.

CO 5. To incorporate Indian Knowledge System in economics.

## **Business Accounting-I**

CO1. To make students understand the concepts of the financial accounting and partnership accounts.

CO2. To impart the knowledge of accounting principles, concepts, conventions, and partnership accounts.

CO3. To make students understand the applicability of accounting principles, concepts, conventions, partnership accounts, and partnership accounts.

CO4. To teach the utility and practical use of accounting principles, concepts, conventions, and partnership accounts.

## **Mastering English for Professional Purposes-I**

CO1. To make students understand the importance of communicative competence.

CO2. To expose students to the basics of communication.

CO3. To introduce students to vocabulary, spoken and written components of communication.

CO4. To lead students through rigorous exercise related to communication.

CO5. To make students proficient in communication.



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## **Business Accounting-II**

CO1.To make students understand the meaning, fundamental principles, types, and legislation in India and Maharashtra of Co-Operation.

CO2To impart the knowledge of By-Laws of Co-Operative Society, Appropriation of Profits, legal provisions pertaining to reserves and funds, and preparation of Final Accounts of Co-Operative Societies.

CO3 To make students understand the meaning and classification of branches.

### **Marathi :**

By the end of the course the students will be able to-

CO1: Introduce students to Marathi literature, language and culture. CO2: Create interest in Marathi literature.

CO3: Develop the literary taste of students. CO4: Cultivate ability to appreciate literature. CO5: Connect literature to real life experience.

CO6: Understand various branches and movements of Marathi literature.

CO7: Develop linguistic skills to meet the requirements in the age of globalization. CO8: Importance of language in personality developments.

### **HINDI :**

By the end of the course the students will be able to-

CO1: Introduce students to Hindi literature, language and culture. CO2: Create interest in Hindi literature. CO3: Develop the literary taste of students. CO4: Cultivate ability to appreciate literature. CO5: Connect literature to real life experience. CO6: Understand various branches and movements of Hindi literature.

CO7: Develop linguistic skills to meet the requirements in the age of globalization. CO8: Importance of language in personality developments.



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## Sem-II

### Financial Accounting-II

CO1. To understand the Accounting Standards, Ind AS, and Concepts of Insurance, Goodwill, and Investment.

CO2. To impart the knowledge of accounting treatment of Accounting Standards, Ind AS, and Concepts of Insurance, Goodwill, and Investment.

CO3. To understand the accounting treatment of Accounting Standards, Ind AS, and Concepts of Insurance, Goodwill, and Investment.

CO4. To teach the utility and practical use of Accounting Standards, Ind AS, and Concepts of Insurance, Goodwill, and Investment.

### Market Structure and Welfare Economics

CO1. To know about the different market structures

CO2. To study welfare economics.

CO3. To know about different welfare schemes

CO4. To study oligopoly market with case studies.

CO5. To incorporate Indian Knowledge System in microeconomics.

CO6. To teach the accounting treatment of various types of branches.

## S.Y.B.Com

### Corporate Accounting-I

Course Objectives:

1. To understand the importance of apportionment of profits between Pre and Post incorporation Period and prepare Profit and Loss Account to ascertain the Pre and Post Incorporation Period Profit or Loss.

2. To learn the need for reconstruction of a company, modes of internal reconstruction, accounting treatment and prepare Financial Statements of Company as per Schedule-III after internal reconstruction

3. To explain the statutory provisions regarding preparation of Company's Financial Statements as per Schedule-III, modes of making different adjustments, and preparation of Financial Statements of Company.

4. To learn meaning of liquidation, its consequences, and prepare the Statement of Account such as Liquidator's Final Statement of Account, Statement of Affairs and Deficiency/Surplus Account.

### Forensic Accounting and Fraud Detection-I

Course Objectives:

1. To understand the concept and meaning of Forensics, Forensic Accounting, Fraud, and Investigation.

2. To overview of Theories and Vulnerabilities of Fraud and gain knowledge of FAIS.

3. To learn the nature and types of frauds and their impact on victims

4. To understand preventive measures and mitigation techniques that can be adopted to



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minimize or avoid particular type of fraud.

5. To learn various steps involved in the process of forensic investigation.

## **Methods of Costing-I**

Course Objectives:

1. To introduce the various Methods of Costing.
2. To understand the Applications of Job Costing and Contract Costing.

## **Indian Banking System-I**

Course Objectives:

1. To provide a comprehensive understanding of the evolution and development of the Indian banking system, from ancient times to the post-liberalization era.
2. To familiarize students with the structure and classification of banks in India, including scheduled and non-scheduled banks, and various types of banks based on their services.
3. To impart knowledge about the functioning and significance of the Reserve Bank of India (RBI) as the central banking authority, including its organizational structure and core functions.
4. To enhance understanding of the role of banks in economic development, including their impact on financial inclusion, digital payments, and economic growth.
5. To explain the objectives, credit control instruments, and structure of the monetary policy formulated by the RBI to maintain price stability, economic growth, and financial discipline.
6. To develop awareness about the RBI's initiatives in response to financial crises, particularly its contribution to post-COVID economic recovery and financial stabilization.

## **Macro Economics**

Course Objectives:

1. To introduce Macro Economics Concepts and Measurement.
2. To learn National Income Accounting.
3. To know Keynesian Theory.
4. To understand the Concept of Business Cycles.

## **Computerized Accounting-I**

Course Objectives:

1. To make students understand the concept of Computerized Accounting System.
2. To impart the knowledge of Tally Accounting Software and Computerized Accounting to the Students.
3. To make students understand the applicability of Tally Accounting Software as an integrated business management software.
4. To teach the utility / practical use of Tally Accounting Software and Computerized Accounting.
5. To provide hands on Practical Training to the Students in the Computer Laboratory with License Copy of TallyPrime Basic or TallyPrime with GST Essential.

## **Costing Systems in Ancient India**



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Course Objectives:

- 1) To overview the Journey of Indian Accounting Practices.
- 2) To understand Indian System of Cost and Management Accounting
- 3) To learn concepts of labour, expenses and funds in Indian Vedic Texts.

## **Ancient Indian Banking System**

Course Objectives:

1. To inform students about the Banking System in India during the ancient period.
2. To give introduction about the Indigenous Banking Institutions and the traditional financial instruments.

## **Field Project**

Course Objectives:

1. To provide a transformative educational experience that goes beyond textbooks and traditional classroom learning typically in collaboration with businesses or organizations.
2. To strengthen students' understanding of commerce-related concepts and develop practical skills that will be valuable in their future careers.
3. To intensify students understanding of theoretical concepts and equip them with practical skills and experiences that are valuable in their future careers.
4. To bridge the gap between theory and practice that enhance their academic knowledge and prepare them for the dynamic challenges of the business world, fostering the development of critical skills, a professional mindset, and a comprehensive understanding of the field of commerce.
5. To develop a holistic skill set, empowering students to become skilled professionals capable of navigating and analysing the complexities of the business and socio-economic landscape.
6. To foster ability of students to work in team, develop social awareness and nurture human values among students.
7. To enhance research and analytical skills by encouraging students to collect, observe, and analyse field data, and to develop problem-solving skills through identifying issues and suggesting practical recommendations.
8. To encourage collaboration between Higher Education Institutions, Government Organizations, Non-Government Organizations, Social Organization, Business and Industry Organization for better implementation of Field Project.
9. To nurture teamwork, ethical awareness, and human values, promoting social sensitivity and civic responsibility among students.
10. To foster institutional collaboration between Higher Education Institutions (HEIs) and external stakeholders including government bodies, NGOs, social enterprises, and industry—for effective implementation and broader community impact.



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## T.Y.B.Com

### 351 Business Regulatory Framework:

By the end of the course the students will be able to-

CO1: Define the terms Contract, Offer, Acceptance, Consideration, Consent, Free- Consent, Discharged of Contract. Explain legal rules as to valid offer, acceptance, consideration, consent, free-consent, discharged of contract.

CO2: Define the terms Partnership, LLP, Designated partner. Explain the rights & duties of partners under Partnership Act,1932. Describe incorporation of LLP, liabilities of LLP & partners, their relations, Financial Disclosure, Conversion, Winding up and Dissolution of LLP.

CO3: Define the terms Sell, Agreement to Sell, Conditions & Warranties, Unpaid seller.

Describe implied conditions and warranties, Explain the rights of unpaid seller, explain legal provision regarding transfer by non-owners.

CO4: Explain e-Contracts, Digital Signature, describe formation, recognition of E- Contracts.

Discuss the functions of Digital Signature and Digital Certificate CO5: Define the terms Consumer, Complaint, Services, unfair trade practices, restrictive trade practices. Explain consumer protection councils, redressal agencies, describe the procedure to file complaint and resolve the complaint, relief available to customers.

CO6: Discuss the objectives, organs, programs, activities of WIPO. Define the terms



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Patent, Copyright, Trademarks, Design, Geographical Indication, Trade secrets and Traditional Knowledge.

CO7: Define the terms Negotiable Instruments, Promissory Note, Bill of Exchange, Cheque, Explain the essentials of N.I. Discuss Holder, Holder in due course, privileges of Holder in due course, kinds of endorsement.

CO8: Explain Arbitration, essentials of arbitration agreement. Describe rights and duties of arbitrator. Define and explain Conciliation.

### **352 Advance Accounting:**

By the end of the course the students will be able to-

CO1: Impart the knowledge of Indian accounting standards and IFRS like AS- 3, AS-7, AS-12, AS-15 AS-17 to AS-25.

CO2: Discuss Banking Company, Legal Provisions, Non - Performing Assets (NPA), Reserve Fund, Acceptance, Endorsements & Other Obligations and Preparation of Final Accounts in vertical form as per Banking Regulation Act 1949.

CO3: Calculate amount of insurance claims using various methods like Claim for Loss of Stock, claim for Loss of Profit and Claim for Loss of Fixed Assets.

CO4: Explain co-operative society and prepare financial reports as per Maharashtra State Co-operative Societies Act.

CO5: Describe indirect tax like VAT & VAT Report, Service Tax, Central Value Added Tax and Income Tax - Tax Deducted at Source (TDS) and calculate tax liability using computer.

CO6: Discuss the methods of maintaining accounts of different types of branches and Goods supplied at Cost & Invoice Price.

CO7: Ascertain profit or loss by using various methods in single entry system like Preparation of Cash Book, Total Debtor Account, Total Creditor Account, and Final Accounts.

CO8: Analysis and evaluate the financial performance using various ratios like Gross Profit Ratio, Net Profit Ratio, Operating Ratio, Stock Turnover Ratio, Debtor Turnover Ratio, Current Ratio, Liquid Ratio, Debt to Equity Ratio.



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## **351 Indian and Global Economic Development:**

By the end of the course the students will be able to-

CO1: Students will be able to understand present Economic Scenario of Indian Economy as well as World Economy.

CO2: Students will be able to understand the various aspects of development in Agricultural, Industrial and service sector in India.

CO3: Student will be able to critically evaluate the role of India in international economy.

CO4: Students will be able to evaluate the working of international financial organization and institutions.

CO5: Students will understand basic concepts of Development. CO6: Will be able to analyze and interpret critically.

CO7: Will know Difficulties in agricultural development in India. CO8: Will understand the sources of agro finance marketing.

## **352 Auditing & Taxation:**

By the end of the course the students will be able to-

CO1: Discuss the various concepts of audit like Types of errors and frauds, Various Classes of Audit, Audit programme, Audit Note Book, Working Papers, Internal Control-Internal Check-Internal Audit

CO2: Explain verification and valuation of assets and liabilities and Auditing and Assurance Standards like AAS- 1,2,3,4,5,28,29.

CO3: Recognize Company Auditor like his Qualification, Disqualifications, Appointment, Removal, Rights, Duties and liabilities.

CO4: Explain tax audit with computerized system and Scope of Auditor's Role under Income Tax Act.

CO5: Define various concepts under Income Tax act 1961 like Income, Person, Assessed, Assessment year, Pervious year, Agricultural Income, Exempted Income, Residential Status of an Assessed, PAN, TAN



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CO6: Calculate Taxable Income under Head of Income like Income from Salary, Income from House Property, Profits and Gains of Business and Professions, Capital Gains and Income from other sources

CO7: Calculate total taxable Income and tax liability of an individual under chapter VIA i.e. deductions u/s-80C to 80 U

CO8: Explain procedure of individual income tax filing and Income Tax Return Filing and Structure, Functions and powers of various Income Tax Authorities.

### **353 (a) Business Administration-II:**

By the end of the course the students will be able to-

CO1: Discuss Meaning, Objectives of Human Resource Function, Organization, Human Resource Planning, and Emerging Concept of H.R.D. – Quality Circles –Kaizen – Voluntary Retirement Schemes.

CO2: Discuss Methods of Recruitment of manpower, Types of Interviews, and Types and Methods of Training Programmes.

CO3: Understand Career Planning Process and succession planning and Types of Career Opportunities in Public Sector and Private Sector.

CO4: Study Performance Appraisal Process its Methods and Techniques. CO5: Discuss Scope, objectives classification and functions of marketing.

CO6: Discuss 4 P's of marketing mix like Product, Price, Place and Promotion.

CO7: Explain the Meaning, Scope, Importance, Role of advertising in modern business, Criticism on Advertising practices, Advertising media, Ethics and future in advertising.

CO8: Analyze the various modern marketing trends like Global marketing, Marketing Research, Retailing, E-Marketing, Telemarketing, Internet Marketing and M- Marketing.

### **Business Administration- III**

By the end of the course the students will be able to-

CO1: Define the Basic Concept of Money and Finance and Describe the Functions of Money and Finance.

CO2: Student Explain the Steps in Financial Planning its characteristics of financial planning. Scope, Importance, Advantages, Limitations, of Financial Planning



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CO4: Evaluate and Distinguish the Sources of Capital and Judge the Appropriate Source for Capital Requirement of Business.

CO5: Explain the Various Methods of Production and identify the Functions and Responsibilities of Production Management.

CO6: Understand the Preparation of Plant Layout, the Importance of good layout, factors relevant for choice of layout, Line, Process and Product layout

CO7: Apply the Various techniques of Inventory Management like EOQ, Material Requisition Planning (MRP), Just in Time (JIT), ABC Analysis.

CO8: Explain and Get the Knowledge of the Various Material Handling Devices in Business like fork lift truck, platform truck, straddle carrier, chain hoist, roller and belt conveyor, bridge crane, crawler crane.

## **(B) Banking and Finance:**

By the end of the course the students will be able to-

CO1: Understanding the Indian Financial System. Understanding the meaning, structure and role of Financial System in India.

CO2: Understanding the meaning, functions, credit instruments, deficiencies and recent development in Money Market in India.

CO3: Understanding the meaning, definition functions, credit instruments, deficiencies and recent Development in Capital Market in India.

CO4: Understanding the meaning, definition functions, participants and recent development in Foreign Exchange Market.

## **(E) Cost and Works Accounting-II:**

By the end of the course the students will be able to-

CO1: Define Overheads and classify types of overheads like functional, behavior wise, Element wise, Control wise, and Normality.

CO2: Describe accounting of overheads and apply apportionment and reapportionment of overheads.



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CO3: Explain methods of overhead absorption like Under and Over Absorption of overheads its Meaning, Reasons and Accounting treatment.

CO4: Recognize Stages in Activity Based Costing, purpose and benefits of activity based costing.

CO5: Discuss Job Costing its Meaning, Features, Advantages and Limitations. CO6: Analyze and evaluate procedure of contract costing like Work Certified and Uncertified, Escalation clause, Cost Plus contract, work-in- progress.

CO7: Prepare process cost accounting including normal and abnormal loss/gain and Joint Products and by Products.

CO8: Prepare service costing in Motor transport service, Hospital and Hotel Organization.

## **(E) Cost and Works Accounting-III:**

By the end of the course the students will be able to-

CO1: Discuss the meaning and concepts of marginal costing like Fixed cost, Variable costs, Contribution, Profit-volume Ratio, Break-Even Point & Margin of Safety and its application.

CO2: Discuss Definition and Meaning, Objectives, Procedure and Types of budgets. CO3: Understand the concept of uniform costing and inter- firm comparison like Meaning and, objectives, Advantages and disadvantages.

CO4: Explain Meaning, objectives, Advantages and Procedure of MIS in costing.

CO5: Define standard cost & standard Costing, Variance Analysis & its Significance and to calculate different types of variances like Material & Labor variances.

CO6: Discuss Meaning, Features, Advantages & Limitations of Farm Costing and preparation of farm cost statement.

CO7: Identify different cost accounting record rules u/s 148 of the companies Act 2013.

CO8: Understand the legal provisions of cost audit like Cost Audit Report and Annexure to cost Audit Report, Cost Accounting Standards issued by Institute of Cost and Management of India and Generally accepted Cost Accounting principles.



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## Programme Outcomes:

### M.Com Semester-I

By the end of the programme the students will be able to-

PO1: Aware the internal and external effects in developing business strategy.

PO2: Express an understanding of the tools and techniques necessary for research in Business.

PO3: Trained the students' well-acquainted regarding current financial structure.

PO4: Versatile the nature of HRM and the study of linkage between labor and management.

PO5: Inculcated students to acquire sound knowledge, concept and structure of capital market and financial services.

PO6: Develop competence with their usage in managerial decision making and control. PO7: Identify the role of production and operation functions in business.

PO8: Illustrate the implications of various financial ratios in decision making. PO9: Correlate the manufacturing technology and its role in developing business. PO10: Criticize the business ethics and professional values in running business.

PO11: Gain ability to solve problems relating to Company Accounts, Valuations and special types of situations.

PO12: Equip with the advanced knowledge of techniques and methods of planning and executing the management audit.



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## **Class: M. Com. SEM-I**

### **Management Accounting**

Course Objectives:

- To enhance the abilities of learners to develop the concept of management accounting and its significance in the business.
- Equip the students with the knowledge and skills of concepts, techniques of management accounting.
- Enhance skills of students regarding managerial decision-making.
- To enable the learners to understand, develop and apply the techniques of management accounting in the financial decision-making in the business corporates.

### **Industrial Economics:**

Course Objectives:

1. To help the learners to understand the concepts of industrial economics.
2. To help the learners to acquire knowledge about the recent changes in industrial finance, measures to correct industrial imbalance.
3. To enable the students to identify the location of industries and the concepts associated therewith.
4. To make the learners aware of the industrial profile of Maharashtra.
5. To enable the students to apply and interpret the concepts of industrial economics.

### **Research Methodology**

Course Objectives:

1. To acquaint the students with the areas of Business Research Activities



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2. To enhance capabilities of students to conduct the research in the field of business and social sciences
3. To enable students in developing the most appropriate methodology for their research studies
4. To make them familiar with the art of using different research methods and techniques.

## **Personal Income Tax and Tax Planning:**

Course Objectives:

- 1.To understand the provisions of residential status of individual assessee
- 2.To learn various forms of ITR and other forms
- 3.To understand Tax Planning and deductions under Chapter VI
- 4.To study of clubbing income and computation of individual's taxable income and tax liability under different tax regime.

## **Direct Tax:**

Course Objectives:

- To understand the Constitutional provisions for levy of Tax in India.
- To learn basic concepts of Income Tax Act 1961.
- To learn the old tax regime and alternative tax regime.
- To learn the provision pertaining to ICDS, payments of advance tax and interest penalty.

## **Advanced Accounting:**

Course Objectives:

- 1.To understand the application of IND – AS, IFRS for companies



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- 2.To learn treatment of Accounting for Price Level Changes
- 3.To study of accounting treatment of the preparation of consolidated statements
- 4.To learn the incorporation of Statement of Accounts of Foreign Branch into Head Office Statement of Accounts.

## **Central Banking:**

### Course Objectives:

1. To make students understand the concept of Central Banking.
2. To impart the knowledge of the various facets in the working of the Central Banks.
3. To make students understand the applicability of the policies of Central Banks in general and Reserve Bank of India (RBI) in particular.
4. To teach the utility/practical use of the Central Bank regulation on the economy.

## **Universal Banking:**

### Course Objectives:

1. To make students Understand the concept of Universal Banking.
2. To impart the knowledge of Universal Banking
3. To make students understand the applicability of Universal Banking.
4. To teach the Utility / Practical use of the Universal Banking.

## **Legal Framework of Banking:**

### Course Objectives:

- 1) To acquaint the students with legal framework in which the Indian banking is working



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- 2) To make the students aware about the latest developments in the field of banking law.
- 3) To enable the students to understand modern banking practices.
- 4) To enable the students to establish a link between the legal provisions and the practical aspects of banking.

## **Semester-II**

### **Financial Analysis & Control:**

#### Course Objectives:

1. To enable the learners to understand the concept of financial statements and acquire the knowledge of financial analysis and control tools.
2. To enhance skills of learners to make appropriate application and uses of financial analysis and control.
3. To enable the students to learn the various techniques of financial analysis.
4. To impart the basics knowledge of capital budgeting.

### **Strategic Management:**

#### Course Objectives:

1. To introduce the students to the emerging changes in the modern business environment
2. To develop the analytical , technical and managerial skills of students in the various areas of Business Administration
3. To empower to students with necessary skill to become effective future managers and leaders
4. To develop Technical skills among the students for designing and developing effective Functional strategies for growth and sustainability of business



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## **Business Tax Assessment and Planning:**

### Course Objectives:

1. To understand the provisions of exemption pertaining to Agricultural Income and Set Off and Carry Forward of Losses.
2. To learn the tax treatment of Hindu Undivided Family.
3. To learn the tax treatment of Firm.
4. To understand the provisions of Return of Income, Assessment and Miscellaneous.

## **Indirect Tax (GST):**

### Course Objectives:

1. To understand the Constitutional Background of GST, Objectives of GST and Pre-GST Indirect Tax Structure in India.
2. To learn Definitions of Basic Concepts under GST, GST Council, Authorities under GST, Registration Procedure, and Levy of GST.
3. To study the Composition Scheme and Alternative Composition Scheme.
4. To learn the Returns, Assessment, and Audit under GST.

## **Specialized Areas in Accounting:**

### Course Objectives:

1. To understand the Key Terms of Insurance Business, Hotel Business, Contract Accounting and Accounting Standards, and Ind AS.
2. To learn accounting treatment of various terms.
3. To prepare Financial Statements of Insurance Business and Hotel Business.



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4. To study of recent development in accounting.

## **Banking Law & Practices:**

### Course Objectives:

1. To enable students to acquire sound Knowledge of banking laws and practices in India.
2. To make the students aware about the latest developments in the field of banking law.
3. To enable the students to understand modern banking practices.
4. To enable the students to establish a link between the legal provisions and the practical aspects of banking.

## **Banking Product & Services:**

### Course Objectives:

1. To enable students to acquire sound Knowledge of Digital Banking.
2. To enable the students to understand the applicability of Digital Banking.
3. To make the students aware about the emerging trends in the field of Banking & financial services.

## **Monetary Policy:**

### Course Objectives:

1. To make students understand the way modern monetary systems operate.
2. To impart knowledge about the fiscal and monetary policy options available to the Governments.
3. To make students appreciate the issues involved in balancing demands for growth and economic stability.



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## **M.Com Part-II (Sem-III)**

### **Business Finance:**

Course Objectives:

1. To acquaint the students with corporate finance required for Indian industries.
2. To make the students aware about the latest developments in the field of corporate finance.
3. To enable the students to understand the traditional theories of capitalization and dividend distribution practices.
4. To give detail exposure of working capital management practice of finance to students

Skills to be developed:

### **Auditing and Corporate Governance:**

Course Objectives:

1. To provide concept clarity of Auditing and Corporate Governance.
2. To enable students to gain the insights of Corporate Governance Code
3. To develop critical analytical skill through case studies.
4. To enable students to learn the Global and Indian Corporate Governance Framework
5. To enable students to explore standard business ethical practices.

### **Audit Assurance Standards:**

Course Objectives:

1. To provide concept clarity about Digital Auditing and Audit Risk
2. To enable students to gain the insights about Ethics and Audit Engagement
3. To develop the analytical skills of Audit Evidences



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4. To enable students to prepare and understand Audit Reports

5. To explore the CARO 2020 Rules

## **International Taxation:**

Course Objectives:

1. To understand the basics of International Taxation
2. To gain insights about DTAA
3. To develop the analytical skills of Eligibility of applicability of DTAA

## **Inflation Accounting and Investment Portfolio Management:**

Course Objectives:

1. To impart the knowledge of inflation accounting
2. To make study of Human Resource Accounting
3. To learn the insights of Social Cost Benefit Analysis
4. To understand the insights of portfolio investment management

## **International Banking and Finance:**

Course Objectives:

1. To understand the basic concept of International Banking and Financial Institutions,
2. To provide necessary knowledge of interactional banking operations and international payment arrangements,
3. To understand the Risk Management in the context of International Banking.
4. To introduce recent trends in International banking.



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## **Insurance Studies:**

1. To make students understand the concept of Insurance & functions of Insurance.
2. To enable the students to understand the Role of Insurance in economic development.
3. To impart the knowledge of the various types of Insurance.
4. To throw light on the new reforms in Insurance sector.

## **Introduction to Actuarial Studies:**

Course Objectives:

1. To make students understand the concept of Actuarial Studies.
2. To impart the knowledge of the various facets in the study of Actuarial Studies.
3. To make students comprehend the application of Actuarial Studies.
4. To enable the students to learn the utility of the study of Actuarial Studies.

## **Commercial Banking and Investment Banking:**

Course Objectives:

1. To understand the structure and operations of commercial banking.
2. To analyse the practices and challenges within commercial banking.
3. To comprehend the concepts and functions of investment banking.
4. To study the products and functioning of investment.

## **SEMESTER-IV**

### **Capital Market and Financial Services:**

Course Objectives:

1. To acquaint the students with working of capital market.



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2. To make the students aware about the latest developments in the field of capital market in

In

3. To enable the students to understand various transactions in stock exchanges and agencies involved in it.

4. To give exposure of financial services offered by various agencies and financial adviser to students

## **Sustainable Development Goals:**

Course Objectives:

- 1) To know the meaning of sustainability.
- 2) To know the various sustainable development goals (SDGs).
- 3) To study the socio-economic conditions.
- 4) To study welfare schemes and its planning.
- 5) To know about targets, actions and achievements made by different countries regarding the SDGs.
- 6) To know the transformation taking place in environment and institutions for peaceful living

## **Customs Act, 1962 and Customs Tariff Act, 1975:**

Course Objectives:

1. To acquire knowledge of legal provisions enshrined in laws related to Customs Act.
2. To appreciate the applicability of Customs Act in business operations.
3. To gather understanding of legal provisions of the Customs Act, 1962 about matters of compliance while conducting business operations.



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## **Foreign Trade Policy (FTP) & Environment, Social and Governance (ESG)**

### **Assurance:**

Course Objectives:

1. To explain the legislation governing FTP, salient features of FTP, administration of FTP, contents of FTP, other related provisions and basic concepts relating to import and export of goods under FTP.
2. To analyze the basic concepts relating to export promotion schemes provided under FTP namely, duty exemption and remission schemes, RoDTEP scheme, EPCG scheme, EOU, EHTP, STP & BTP schemes, deemed exports.
3. To understand Environment, Social and Governance (ESG) Pillars of Sustainability and Evolution of ESG in India and Learn the Sustainable Development Goals and creating an awareness of the Global trends of Sustainability.
4. To gain knowledge of ICAI's role in Sustainability and learn about Integrated Reporting and Role of Auditor in Sustainability Forum and Certify the BRSR.
5. To analyze the Business Responsibility and Sustainable Reporting requirements.

### **Foreign Exchange & Financing of Foreign Trade:**

Course Objectives:

1. To provide an understanding of various aspects of foreign exchange market.
2. To acquaint the students with financing of foreign trade.



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3. To provide an understanding of exchange rate mechanism and factors affecting exchange rates.
4. To provide knowledge to students regarding recent developments and changes in Foreign Exchange and foreign trade etc.
5. To make students aware of changes in foreign exchange market and foreign trade.
6. To gain the knowledge of Foreign Exchange and foreign trade.

## **Emerging Trends in Banking, Finance and Insurance:**

Course Objectives:

1. To provide a foundational understanding of the banking, financial and insurance sectors and analyze the emerging trends
2. To analyze advancements in technology, statistical tools, regulations and challenges within the banking sector
3. To examine technological innovations, statistical tools, regulations and challenges in the financial sector.
4. To explore technological advancements, regulatory changes, and challenges shaping the insurance sector.
5. To provide an understanding of various aspects of foreign exchange market.
6. To acquaint the students with financing of foreign trade.
7. To provide an understanding of exchange rate mechanism and factors affecting exchange



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8. To provide knowledge to students regarding recent developments and changes in Foreign Exchange and foreign trade etc.
9. To make students aware of changes in foreign exchange market and foreign trade.

  
  
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