



Integral University, Lucknow

| Effective from Session: 2025-26 | | | | | | | |
|---------------------------------|---|---------------------|---------------------------------------|---|---|---|---|
| Course Code | BHM 201 | Title of the Course | Food Production Operations I (Theory) | L | T | P | C |
| Year | II | Semester | III | 3 | 0 | 0 | 3 |
| Pre-Requisite | None | Co-requisite | None | | | | |
| Course Objectives | To manage the planning, factors, and types of menus, one needs to understand the points to be considered while planning the menu. | | | | | | |

| Course Outcomes | |
|-----------------|--|
| CO1 | To understand definitions uses and types of menus with standard recipe formulation and its format use in the hotel industry. Different types of breakfast. |
| CO2 | To understand production, by-products, and uses of common commodities used in the kitchen like milk, and cheese. |
| CO3 | To learn about salads its origin, types, and dressing. |
| CO4 | To learn basic knowledge of Indian curry, gravies, breads, sweets & accompaniments. |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|----------|-------------------------------------|--|--------------|-----------|
| 1 | Menu planning recipe formulation | Factors affecting menu planning standard recipes: definition, writing, format, and costing. Basic principles of menu planning – recapitulation, nutritional factors for the above. Principles of indenting for volume feeding, quantity purchase & storage. | 10 | CO1 |
| 2 | Commodities | Milk and milk products: composition of milk, storage, types of milk, cream, butter, curd cheese: Production of Cheese, classification of cheese, cheese from different countries. Vegetables: Classification, selection, effects of heat. Fruits: classification, selection, uses in Cookery. Nuts & seeds: definition, use. | 10 | CO2 |
| 3 | Salads | Introduction, composition of salads, types of salad, salad dressing, emerging trends in salad Making, and salient features of preparing good salads. | 10 | CO3 |
| 4 | Basic Indian Cookery | Introduction to Indian spices & vegetables, role of spices in Indian cookery. Masalas, blending of spices, different masalas used in Indian Cookery (wet & dry masalas), Composition of different masalas, varieties of masalas available in regional areas, special Masala blends, Introduction to Indian Cookery: - a) historical background b) culture c) religion d) equipment e) staple diets | 15 | CO4 |

References Books:

Food Production Operations by Chef Parvinder S. Bali

Practical Professional Cookery by Cracknell and Kaufmann

Catering Management by Mohini Sethi & Surjeet Malhan

Indian Food: A Historical Companion by Achaya KT & Food: A Culinary History by Jean-Louis Flandrin

Hygiene and Sanitation by S. Roday

e-Learning Source:

<https://whatscookingamerica.net/glossary/>

<http://www.foodsubs.com/>

| PO-PSO CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 | PSO4 |
|--------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| CO1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| CO2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 |
| CO3 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 |
| CO4 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1 |

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

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| Name & Sign of Program Coordinator | Sign & Seal of HoD |
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Integral University, Lucknow

| Effective from Session: 2025-26 | | | | | | | |
|---------------------------------|---|---------------------|--|---|---|---|---|
| Course Code | BHM 201P | Title of the Course | Food Production Operations I (Practical) | L | T | P | C |
| Year | II | Semester | III | 0 | 0 | 2 | 1 |
| Pre-Requisite | None | Co-requisite | None | | | | |
| Course Objectives | To manage the planning, factors, and types of menus, one needs to understand the points to be considered while planning the menu. | | | | | | |

| Course Outcomes | |
|-----------------|--|
| CO1 | To understand Practical application in menu preparation. |
| CO2 | To identify various methods of preparation. |
| CO3 | To understand different types of salad making. |
| CO4 | To understand the preparation of basic Indian cookery. |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|----------|---|---|--------------|-----------|
| 1 | Menu planning recipe formulation | Types of menu presentation, Different menu preparation, Indents writing for the menu according to the recipe. | 8 | CO1 |
| 2 | Commodities | Milk preparation, Items to prepare include cheese, Menu according to category. | 7 | CO2 |
| 3 | Salads | Different types of salad preparation including international and national salad. | 8 | CO3 |
| 4 | Basic Indian cookery | Basics preparation of Indian cookery. | 7 | CO4 |

| References Books: | |
|--|--|
| Food Production Operations by Chef Parvinder S. Bali | |
| Practical Professional Cookery by Cracknell and Kaufmann | |
| Catering Management by Mohini Sethi & Surjeet Malhan | |
| Indian Food: A Historical Companion by Achaya KT & Food: A Culinary History by Jean-Louis Flandrin | |
| Hygiene and Sanitation by S. Roday | |
| e-Learning Source: | |
| https://whatscookingamerica.net/glossary/ | |
| http://www.foodsubs.com/ | |

| PO-PSO CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 | PSO4 |
|--------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| CO1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| CO2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 |
| CO3 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 |
| CO4 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1 |

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

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| Name & Sign of Program Coordinator | Sign & Seal of HoD |
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Integral University, Lucknow

| Effective from Session: 2025-26 | | | | | | | |
|---------------------------------|--|---------------------|--|---|---|---|---|
| Course Code | BHM202 | Title of the Course | Food & Beverage Service Operation I (Theory) | L | T | P | C |
| Year | II | Semester | III | 3 | 0 | 0 | 3 |
| Pre-Requisite | None | Co-requisite | None | | | | |
| Course Objectives | To impart the working procedures and skills required in managing this department of food and beverage related to wines and beer. | | | | | | |

| Course Outcomes | |
|-----------------|--|
| CO1 | To understand the making process of beer. |
| CO2 | To understand the wine law of wine-producing countries. |
| CO3 | To understand the making process of beer. |
| CO4 | To understand the food & beverages outlets operation control system. |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|----------|---|--|--------------|-----------|
| 1 | Classification of Alcoholic Beverage | Beer-History (A brief description of how beer came into being), Ingredients. Brewing Process: Bottom fermentation; Top fermentation. Storage of beer, service of Beer. Types of beer (ales, lagers, draught, and wheat beers), Brand Names (National & International). | 10 | CO1 |
| 2 | Wine | Wine Introduction to wine, cider and perry, definition of wine. Viticulture seasons, Quality of soil, and the area of production. Types & Composition of grapes and its effect on the nature of wine, wine makers' Calendar. Wine-making Methods. Wine classification & Types: table, fortified, aromatized & sparkling. Characteristics of wine: Still, sweet, dry, vintage, & non-vintage. | 10 | CO2 |
| 3 | Wines of France | Different regions, their geographical composition and climate, grape varieties with characteristics of wines from each region. | 10 | CO3 |
| 4 | Restaurant Operation Control System | Necessity of a good control system. Functions of the control system. K.O.T./B.O.T. Taking Order and presenting bills/bills voiding, cancellation method. Duplicate and triplicate checking system. Inter-departmental transfer, summary sheet, control of cash & credit sales. | 15 | CO4 |

References Books:

Sudhir Andrews: F & B Service Trg. Manual

Denni R. Lillicrap: F & B Service

John Walleg: Professional Restaurant Service

Brian Varghese: Professional F& B Service Management

e-Learning Source:

<https://www.unlockfood.ca/en/Articles/Menu-Planning/7-Steps-for-Quick-and-Easy-Menu-Planning.aspx>

<https://hoteltalk.app/the-role-of-a-butler/>

| PO-PSO CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 | PSO4 |
|--------------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| CO1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| CO2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 |
| CO3 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 |
| CO4 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1 |

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

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| Name & Sign of Program Coordinator | Sign & Seal of HoD |
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Integral University, Lucknow

| Effective from Session: 2025-26 | | | | | | | |
|---------------------------------|---|---------------------|---|---|---|---|---|
| Course Code | BHM202P | Title of the Course | Food & Beverage Service Operation I (Practical) | L | T | P | C |
| Year | II | Semester | III | 0 | 0 | 2 | 1 |
| Pre-Requisite | None | Co-requisite | None | | | | |
| Course Objectives | To manage the planning, factors, and types of menus, one needs to understand the points to be considered while planning the menu. | | | | | | |

| Course Outcomes | |
|-----------------|---|
| CO1 | To understand the making and service process of national & international wines. |
| CO2 | To know about the different wine-producing countries and their specialty wine. |
| CO3 | To understand the food and matching wine service harmony. |
| CO4 | To learn different types restaurant systems. |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|----------|--------------------------------------|--|--------------|-----------|
| 1 | Classification of Alcoholic Beverage | Beverage order taking and preparation of bot. Revision of first-year Practical's, table layout and services for different types of meals. | 8 | CO1 |
| 2 | Wine | Understand the wine law of wine-producing countries. Fuels –their usage and precautions while dealing with them in f&b outlets. Services of red wine, white wine, and champagne with all the courses. | 7 | CO2 |
| 3 | Wines of France | Familiarization with the glassware, equipment, and tools required in relation to beer & wine services. Preparing charts, different regions of France, and their characteristics of wine. Regions and characteristics of wine of two other countries. | 8 | CO3 |
| 4 | Restaurant Operation Control System | Order taking for food & beverages, preparation for KOT, understand different control systems in restaurant. | 7 | CO4 |

| References Books: | |
|---|--|
| Sudhir Andrews: F & B Service Training Manual | |
| Dennis R. Lillicrap: F & B Service | |
| John Walleg: Professional Restaurant Service | |
| Brian Varghese: Professional F& B Service Management | |
| e-Learning Source: | |
| https://www.unlockfood.ca/en/Articles/Menu-Planning/7-Steps-for-Quick-and-Easy-Menu-Planning.aspx | |
| https://hoteltalk.app/the-role-of-a-butler/ | |

| PO-PSO CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 | PSO4 |
|-----------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| CO1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| CO2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 |
| CO3 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 |
| CO4 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1 |

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

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Integral University, Lucknow

| Effective from Session: 2025-26 | | | | | | | |
|---------------------------------|--|---------------------|--|---|---|---|---|
| Course Code | BHM203 | Title of the Course | Accommodation & Front Office Operations I (Theory) | L | T | P | C |
| Year | II | Semester | III | 3 | 0 | 0 | 3 |
| Pre-Requisite | None | Co-requisite | None | | | | |
| Course Objectives | This module is prescribed to appraise students about different types of Room Rates applicable in hotels, and guest complaints. | | | | | | |

| Course Outcomes | |
|-----------------|---|
| CO1 | To understand the basics of room tariff. |
| CO2 | To handle various guest services. |
| CO3 | To sewing room activities and manage the uniform room. |
| CO4 | To different types of laundry and stain removal procedures. |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|----------|---|--|--------------|-----------|
| 1 | Room Tariff Formulation & Bell Desk management | Factors affecting Room Tariff, basis for establishing the end of day, Room Rate. Designation Procedures: Check-in., Check-out., Left language Procedure, Duties & Responsibilities of Bell Boy & Bell Captain. | 10 | CO1 |
| 2 | Guest Services | Handling guest mails, Handling guest messages, Room key management. Safety deposit locker: Procedure, Wake-up call. Paging system. Guest Complaint & Handling Procedure. | 10 | CO2 |
| 3 | Sewing room & Uniform room | Activities and area provided. Equipment's. Purpose of uniforms No. Of sets issuing procedure & exchange of uniform. Designing a uniform. Layout and planning of the Uniform room. | 10 | CO3 |
| 4 | Fibers and fabrics & Stain removal | Definition. Origin and classification, characteristics of different fibers – cotton, linen, silk, polyester, nylon, acrylic. Types, different types of strains, cleaning methods. | 15 | CO4 |

| References Books: | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|
| Hotel Hostel and Hospital Housekeeping – Joan C Branson & Margaret Lennox (ELBS). | | | | | | | | | | | |
| Hotel House Keeping – Sudhir Andrews Publisher: Tata Mc Graw Hill. | | | | | | | | | | | |
| Hotel Housekeeping Operations & Management – Raghubalan, Oxford University Press. | | | | | | | | | | | |
| Bruce Braham – Hotel Front Office. | | | | | | | | | | | |
| Jatashankar R. Tewari- Hotel Front Office Operations & Management. | | | | | | | | | | | |
| e-Learning Source: | | | | | | | | | | | |
| https://www.bbcgoodfood.com/howto/guide/top-10-non-alcoholic-drinks | | | | | | | | | | | |
| https://www.brandwatch.com/blog/the-biggest-restaurant-industry-trends/ | | | | | | | | | | | |

| PO-PSO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 | PSO4 |
|--------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| CO | | | | | | | | | | | |
| CO1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| CO2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 |
| CO3 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 |
| CO4 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1 |

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

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| Name & Sign of Program Coordinator | Sign & Seal of HoD |
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Integral University, Lucknow

| Effective from Session: 2025-26 | | | | | | | |
|---------------------------------|---|---------------------|---|---|---|---|---|
| Course Code | BHM203P | Title of the Course | Accommodation & Front Office Operations I (Practical) | L | T | P | C |
| Year | II | Semester | III | 0 | 0 | 2 | 1 |
| Pre-Requisite | None | Co-requisite | None | | | | |
| Course Objectives | This module is prescribed to appraise students about different types of room rates applicable in hotels, guest complains. | | | | | | |

| Course Outcomes | |
|-----------------|---|
| CO1 | To Understand knowledge about fiber, fabrics and yarn. |
| CO2 | To perform Sewing room activities and managing uniform room. |
| CO3 | To have Some knowledge about fiber, fabrics and yarn. |
| CO4 | To understand Planning and organizing of the linen room and uniform room. |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|----------|---|---|--------------|-----------|
| 1 | Room tariff formulation & bell Desk management | Bell desk activities during: - check-in & check-out. Understanding layouts of front office and housekeeping Message and mail handling and books filling up. | 8 | CO1 |
| 2 | Guest services | Handling guest mails & messages. Handling various types of enquires. | 7 | CO2 |
| 3 | Sewing room & Uniform room | Sewing room – mending and use of sewing kit. Visit to hotel laundry / commercial laundry. | 8 | CO3 |
| 4 | Fibers and fabrics & stain removal | Stain removal: identification and removal of the stains using the specific methods and Reagents. | 7 | CO4 |

| References Books: | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|
| Hotel Hostel and Hospital Housekeeping – Joan C Branson & Margaret Lennox (ELBS). | | | | | | | | | | | |
| Hotel House Keeping – Sudhir Andrews Publisher: Tata Mc Graw Hill. | | | | | | | | | | | |
| Hotel Housekeeping Operations & Management – Raghubalan, Oxford University Press. | | | | | | | | | | | |
| Bruce Braham – Hotel Front Office. | | | | | | | | | | | |
| e-Learning Source: | | | | | | | | | | | |
| https://www.brandwatch.com/blog/the-biggest-restaurant-industry-trends/ | | | | | | | | | | | |
| https://www.precog.co/blog/sustainability-food-and-beverage-manufacturing/ | | | | | | | | | | | |

| PO-PSO CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 | PSO4 |
|-----------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| CO1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| CO2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 |
| CO3 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 2 | 2 |
| CO4 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1 |

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

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| Name & Sign of Program Coordinator | Sign & Seal of HoD |
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Integral University, Lucknow

| Effective from Session: 2025-26 | | | | | | | |
|---------------------------------|--|---------------------|----------------|---|---|---|---|
| Course Code | BHM205 | Title of the Course | Bar Management | L | T | P | C |
| Year | II | Semester | III | 2 | 1 | 0 | 3 |
| Pre-Requisite | None | Co-requisite | None | | | | |
| Course Objectives | To familiarize the students with the planning bar layout and bar operations function smoothly. | | | | | | |

| Course Outcomes | |
|-----------------|--|
| CO1 | To understand Bar and its classification. |
| CO2 | To understand preparation methods for mixed drinks. |
| CO3 | To identify the layouts of different types of bars. |
| CO4 | To recognize different types of bar equipment: - Large, medium & small |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|----------|------------------------------|---|--------------|-----------|
| 1 | Bar | Introduction, beverage management, brief history types of bar lounge & bar service Organization of lounge bar syrups and other non-alcoholic beverage mix drinks | 10 | CO1 |
| 2 | Bar Layout & Planning | Introduction, bar section details, bar shapes: planning criteria bars, plans, elevations & sections, themes & concepts bar equipment, glassware's. | 15 | CO2 |
| 3 | Service & Selling Techniques | Bartenders: job analysis salesmanship of bar attendants, guidelines for bar attendants' hygiene & health bar duties, staff management qualities of a professional manager responsible service of alcohol. | 5 | CO3 |
| 4 | Bar operation & Control | Customer service and customer relations sales promotion & merchandising managing The service sequence method of beverage control, stock control in the bar portion control cash handling procedures, and bar licenses. | 15 | CO4 |

| References Books: | |
|---|----------------------------------|
| Michael M Coltman | Beverage Management |
| Lipenski & Lipenski | Professional Beverage Management |
| Mahendra Singh Negi | Handbook of Bar & Beverage |
| Michael M Coltman | Beverage Management |
| e-Learning Source: | |
| https://hoteltechreport.com/news/hotel-housekeeping-duties | |
| https://www.cvent.com/en/blog/hospitality/hotel-interior-design | |
| https://www.hycdesign.com/blogs/design-guides/2021-new-trends-in-hotel-guestroomdecoration | |

| PO-PSO CO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 | PSO4 |
|-----------|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|
| CO1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 1 |
| CO2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 |
| CO3 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 |
| CO4 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

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| Name & Sign of Program Coordinator | Sign & Seal of HoD |
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Integral University, Lucknow

| Effective from Session: 2025-26 | | | | | | | |
|---------------------------------|--|---------------------|--|---|---|---|---|
| Course Code | B150210T/ES143 | Title of the Course | Environmental Education and Sustainable Management | L | T | P | C |
| Year | II | Semester | III | 2 | 1 | 0 | 3 |
| Pre-Requisite | None | Co-requisite | None | | | | |
| Course Objectives | To Create awareness about environmental problems among people. | | | | | | |

| Course Outcomes | |
|-----------------|--|
| CO1 | Gain in-depth knowledge of natural processes and resources that sustain life and govern the economy |
| CO2 | Understand the consequences of human actions on the web of life, global economy, and quality of human life. |
| CO3 | Acquire values and attitudes towards understanding complex environmental- economic-social challenges, and active participation in solving current environmental problems and preventing the future ones. |
| CO4 | Aware students about problems of environmental pollution, its impact on humans and ecosystems, and control measures. |

| Unit No. | Title of the Unit | | Contact Hrs. | Mapped CO |
|----------|---|--|--------------|-----------|
| 1 | Humans and the Environment | The man-environment interaction: Humans as hunter-gatherers; Mastery of fire; Origin of agriculture; Emergence of city-states; Great ancient civilizations and the environment; Middle Ages and Renaissance; Industrial revolution and its impact on the environment; Population growth and natural resource exploitation; Global environmental change. The emergence of environmentalism: Anthropocentric and eco-centric perspectives (Major thinkers); The Club of Rome- Limits to Growth; UN Conference on Human Environment 1972; World Commission on Environment and Development and the concept of sustainable development; Rio Summit and subsequent international efforts. | 10 | CO1 |
| 2 | Natural Resources and Sustainable Development | Overview of natural resources: Definition of resource; Classification of natural resources- biotic and abiotic, renewable and non-renewable. Microbes as a resource; Status and challenges. Water resources: Types of water resources- fresh water and marine resources; Availability and use of water resources; Environmental impact of over-exploitation, issues and challenges; Water scarcity and stress; Conflicts over water. Soil and mineral resources: Important minerals; Mineral exploitation; Environmental problems due to extraction of minerals and use; Soil as a resource and its degradation. Energy resources: Sources of energy and their classification, Implications of energy use on the environment. Introduction to sustainable development: Sustainable Development Goals (SDGs)- targets and indicators, challenges and strategies for SDGs. | 10 | CO2 |
| 3 | Conservation of Biodiversity and Ecosystems | Biodiversity as a natural resource; Levels and types of biodiversity; Biodiversity in India and the world; Biodiversity hotspots. Major ecosystem types in India and their basic characteristics; Ecosystem services- classification and their significance. Threats to biodiversity and ecosystems, Major conservation policies: in-situ and ex-situ conservation approaches; National and International Instruments for biodiversity conservation; the role of traditional knowledge, community-based conservation; Gender and conservation. | 10 | CO3 |
| 4 | Environmental Management | Introduction to environmental laws and regulation: Constitutional provisions- Article 48A, Article 51A(g) and other derived environmental rights; Introduction to environmental legislations on the forest, wildlife, and pollution control. Environmental management system: ISO 14001 Life cycle analysis; Cost-benefit analysis, Environmental audit and impact assessment; Environmental risk assessment. Pollution control and management; Waste Management- Concept of 3R (Reduce, Recycle and Reuse) and sustainability; Ecolabeling /Ecomark scheme | 15 | CO4 |

| References Books: | |
|---|--|
| Agarwal, K.C. 2001 Environmental; Biology, Nidi Pub. Ltd. Bikaner. | |
| Bharucha Erach, The Biodiversity of India, Mapin Pub. Pvt. Ltd., Ahmedabad-380, India. | |
| Brunner R.C. 1989. Hazardous waste incineration, Mc Graw Hill | |
| e-Learning Source: | |
| https://byjus.com/biology/difference-between-environment-and-ecosystem . | |
| https://www.youtube.com/watch?v=dRPI4TB8w7k | |

| Course Articulation Matrix: (Mapping of COs with POs and PSOs) | | | | | | | | | | | | | | | | | | |
|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|
| PO- PSO | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 | PSO6 |
| CO1 | 1 | 1 | 3 | - | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - |
| CO2 | - | 1 | 3 | 1 | - | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - |
| CO3 | - | 1 | 3 | - | 1 | - | - | - | - | - | - | - | - | - | 1 | - | - | - |
| CO4 | 1 | 1 | 3 | - | 1 | 2 | - | - | - | - | - | - | - | - | 2 | - | - | - |

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

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| Name & Sign of Program Coordinator | Sign & Seal of HoD |
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