Shiv Chhatrapati Shikshan Sanstha's

# Rajarshi Shahu Mahavidyalaya (Autonomous), Latur

## Value Added, Certificate Courses Imparting Transferable and Life Skills

## (2021-22)

# SYLLABUS

# Shiv Chhatrapati Shikshan Sanstha's
# Rajarshi Shahu Mahavidyalaya (Autonomous), Latur

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For additional details and notifications, visit College Website ([www.shahucollegelatur.org.in](http://www.shahucollegelatur.org.in))

Dr Mahadev Gavhane

Principal

**MORAL EDUCATION**

**Course Code: U-MOE-235**

**Duration: 30 Hrs**

**Learning Objectives:**

1. To enhance one's ability to be fully self-aware by helping oneself to overcome all fears and insecurities and to grow fully from inside out and outside in.
2. To increase one's knowledge and awareness of emotional quotient.
3. To provide opportunity for realising one's potential through practical experience.
4. To develop interpersonal skills.
5. To manage competency- mix at all levels for achieving excellence with ethics.

**Course Outcomes:**

At the end of the course learners will be able to:

1. Gain Self Competency and Confidence
2. Practice Emotional Competency
3. Gain Scientific temperament
4. Aim for high sense of Social Competency
5. Be an integral Human Being

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit I Introduction to Values**<br>Introduction to Moral Values, Personal Values, Social Values, National & International Values Love & Compassion, Non-Violence, Satyam (Truth), Dharmah (Righteousness), Tapah (Austerity), Tyaagah (Renunciation), Damah (Restrain), Dayaa (Mercy), Daanam (Charity), and Shamah (Tranquility), Patriotism, National Integrity, Communal Harmony, Gender Equality, Accountability, Commitment, Respectfulness, Belongingness, etc. | **5** |
| 2 | **Unit II Scientific Temperament**<br>difference between a superstition and a scientific theory, Healthy skepticis, niversalism, Freedom from prejudice or bias, Objectivity, Open mindedness and humility, Willingness to suspend judgement without sufficient evidence, Rationality, Perseverance – positive approach to failure. | **5** |
| 3 | **Unit III Gender Equality**<br>Human rights, Constitutional Rights, System based gender discrimination, Concept of Patriarchy, Women Violence | **5** |
| 4 | **Unit IV Secularism**<br>Difference between Secularism and Secular State, History and Development of Secularism, World Secularism, Secularism in India. | **5** |

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|---|---|---|
| 5 | **Unit V Mythological stories**<br><br>मरीआईचा गाडा (Mary's cart), नाकाचा मळा (Nakacha Mala), खाबूराव (Khaburao), खादी काका (Khadi Kaka), चाळीपेक्षा ब्यांक बरी (Bank better than Chali), मुहर्तने म्हैस मारली (Muharta killed buffalo), भोलाजीची यात्रा (Bholaji's journey). | **5** |
| 6 | **Unit VI Project**<br><br>As a part of practical experience, student has to complete a project work on various social issues for which students have to visit, interact and experience the atmosphere and social services rendered to deprived class of the society. The students have to submit the visit report in the form of project to the institute for evaluation. | **5** |

**References:**


i. Mulya Pravah, Inculcation of human values and professional ethics in Higher educational institutions, UGC, New Delhi (2019).
ii. Life Skills (Jivan Kaushal) UGC, New Delhi 2019.
iii. Study Material on Moral Education (prepared by BoS in Moral Education, Rajarshi Shahu Mahavidyalaya (Autonomous), Latur)

**DTP**

**Course Code: U-ADC-434-D**

**Duration: 45 Hrs**

**Learning Objectives:**

1. To understanding Desktop Publishing Concepts:
2. To gain Proficiency in using desktop publishing software such as Ms Office and Adobe Page Maker
3. To Create and format documents for print and digital media, such as brochures, flyers, newsletters, and magazines.
4. To achieve typography mastery**:**

**Course Outcomes:**

After completion of this course students will be able to

1. Understand Desktop Publishing Concepts.
2. Increase proficiency in using desktop publishing software such as Ms Office and Adobe Page Maker.
3. Create brochures, flyers, newsletters, and magazines for print media and digital media.
4. Apply typography mastery for creating documents in page maker.

| ***Sr No*** | ***Contents*** | ***Hrs*** |
|---|---|---|
| 1 | **Unit-1**<br>**Desktop Publishing Introduction**<br>Computer-Importance & Evaluation | **8** |
| 2 | **Unit-2**<br>**DTP-Meaning & Importance**<br>DTP-Hardware<br>DTP-Software | **7** |
| 3 | **Unit-3**<br>**M.S. Office-Introduction**<br>M.S. Office – Word<br>M.S. Office – Excel<br>M.S. Office – PowerPoint Presentation | **15** |

| | | |
|---|---|---|
| 4 | **Unit-4**<br>**Adobe PageMaker**<br>Introduction<br>Importance<br>Data Entry | **15** |

**References:**


1. Microsoft Office 2010 Introductory by Gary B. Shelly, Misty E. Vermaat
2. Adobe PageMaker 7.0 Classroom in a Book by Staff of Adobe

**Mobile Repairing**

**Course Code: U-ADC-334-M**

**Duration: 45 Hrs**

**Learning Objectives: (LOs)**

1. To provide basic knowledge of Mobile Phones hardware.
2. To understand the various identifying issues, troubleshoot issues and techniques.
3. To learn Architecture of Mobile Phone.

**Course Outcomes (COs):**

After successful completion of the course, students will be able to:

1. Find the problem and solution of various Mobile Phone Devices.
2. Start a mobile repair shop of their own.
3. Perform any issue-related tasks such as identifying issues, troubleshoot issues, repairing mobile phones, etc.
4. Get entry level (technician) jobs at relevant places, Mobile repair centers, mobile shops, mobile service centers

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **UNIT I INTRODUCTION**<br>1.1 Information about Mobile<br>1.2 Invention of Mobile<br>1.3 Information about I-Phone<br>1.4 Invention of I Phone<br>1.5 Difference between Keypad mobile And Smartphone mobile | **12** |
| 2 | **UNIT II: Information About IMEI number**<br>2.1 Uses of IMEI number<br>2.2 Digit of IMEI number<br>2.3 Code of IMEI number<br>2.4 Information About all full forms | **10** |
| 3 | **UNIT III : Instruments for Mobile Repairing**<br>3.1 Hot air gun<br>3.2 Shoulder gun<br>3.3 PCB Stand | **13** |

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|---|---|---|
| | 3.4 Multi-meter<br>3.5 Kathli<br>3.6 Lamp<br>3.7 Battery Booster<br>3.8 Screwdriver set<br>3.9 Tweezers<br>3.10 Battery Meter<br>3.11 Brush<br>3.12 Thinner<br>3.13 Paste<br>3.14 Jumper wire<br>3.15 Computer | |
| 4 | **UNIT IV : Information About MultiMeter**<br>4.1 Digital Multimeter<br>i) Continuity<br>ii) 20 V.(Voltage)<br>4.2 Analog Millimeter | **10** |

**References:**


1. Mobile Repairing Book in Hindi by Nitin Kothari
2. Mastering Mobile Learning by Chad Udell, Gary Woodill

**Hardware Maintenance**

**Course Code: U-ADC-334-H**

**Duration: 45 Hrs**

## Learning Objectives:

1. to help students step by step through the typical hardware and operating system
2. to solve problems encountered by technicians
3. to teach troubleshooting techniques to decode any problem, and giving the skills to solve them.

## Course Outcomes:

After Completion of the Course students will be able to:

1. Work inside a microcomputer system with supervision.
2. A hands-on approach will be used to provide the student with a basic skill level to work on a computer with the lid off.
3. Recognition and solution of common hardware-software problems including the replacement or upgrading of components will be addressed.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **UNIT I**<br>**1 Basic Information of Computer**<br>Introduction and classification of computer, Functional block diagram of pc with its internal Working.<br>**2 Identification of Computer Parts**<br>Introduction of computer parts like SMPS, Motherboard, Processor, Ram, Hard disk, Optical drive, Cabinet, Keyboard, Mouse, Monitor, Add-On Cards. | **11** |
| 2 | **UNIT II**<br>**1 Assembling of computer**<br>Building your own pc with all parts Installation, Cable Connection and power Connections other<br>**2 CMOS Setting**<br>CMOS Setup, formatting of Hard Disk, Bios Password Stetting and Recovery. | **11** |
| 3 | **UNIT III**<br>**1 Installation of Operating System** | **12** |

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|---|---|---|
| | Windows XP, Win 7, Win 8, Win 10, Linux Ubuntu, Drivers Installation<br>**2 Installation of Application Software**<br>Installation of Application Software like MS-Office, Adobe Reader, WinRAR, VLC Player, Page Maker, Corel Draw, Marathi Font, Ism Office and Other.<br>**3 Installation of Peripherals**<br>Installation of external Parts of computer like Printer, Scanner Modem Card, Web Camera and other. | |
| 4 | **UNIT IV**<br>**1 Virus Removal**<br>Installation of Antivirus software and Activation like NPAV, Quick Hel, Updating, scanning.<br>**2 Uses of Internet**<br>Online form filling Gov. Jobs (competitive exam), Uses of internet in education, Remote Desktop Connection sharing, Downloading, Uploading.<br>**3 Troubleshooting**<br>Fault Finding and Troubleshooting, Data recovery, password Recovery various type of computers problem. | **11** |

**References:**


1. Peter Norton's Inside The PC, Seventh Edition
2. Upgrading and Repairing PCs by Scott Mueller

**Basic Techniques of Beautician**

**Course Code: U-ADC-334-B**

**Duration: 45 Hrs**

**Learning Objectives: (LOs)**

1. To provide basic knowledge of the Various Cosmetics.
2. To understand the various Bleaching, Mehendi, Rangoli techniques.
3. To learn organizing Various Occasions & Celebration programs on beauty trends.

**Course Outcomes (COs):**

After successful completion of the course, students will be able to:

1. Get Good Paying Job as A Beautician.
2. Start Their Own Shop of Cosmetics, Jewellery & Related Articles.
3. Do Job as Nail Care Artist, Hair Cut Stylist & Personal Beauty.
4. Do Independent Work of Bleaching, Mehendi, Rangoli & Waxing.
5. Do Make-up of the Client's for Various Occasions & Celebrations Advanced.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **UNIT I: INTRODUCTION**<br>1.1 Threading<br>1.2 Hair Style [SIX Types]<br>1.3 Bleach<br>1.4 Mehendi<br>1.5 Rangoli<br>1.6 Facial<br>1.7 Waxing a. hand b. Leg | **10** |
| 2 | **UNIT II: SKIN TREATMENT**<br>2.1 Skin Care<br>2.2 Manicure<br>2.2 Pedicure<br>2.3 Practice all Unit I | **13** |
| 3 | **UNIT III: HAIR CUTTING AND MAKE-UP**<br>3.1 Different Types of Hair | **10** |

| | | |
|---|---|---|
| | 3.2 Advanced Type Hair Styles<br>3.3 Make-Up a. Simple b. Different Occasions<br>3.4 Saree wearing - 10 types. | |
| 4 | **UNIT IV: SKIN AND HAIR TREATMENT**<br>4.1 Skin Treatment [all Types of skin]<br>4.2 Hair Treatment [all Types of Hair]<br>4.3 Dandruff Treatment<br>4.4 Pimple Treatment<br>4.5 Hair Falling Treatment<br>4.6 Final Touch<br>4.7 Practice | **12** |

**References:**


1. Complete Beauty Parlor Course by Aastha
2. Beauty Salon Employee Manual

**Journalism & Mass Communication**

**Course Code: U-ADC-334-J**

**Duration: 45 Hrs**

**Learning Objectives:**

- To understand the nature of communication.
- To understand the types of Communication.
- To understand journalism.
- To know stalwart editors and their contribution to journalism

**Course Outcomes:**

After successful completion of the course, students will be able to:

- Define communication
- Explain Components of human communications
- Interpret the Levels of Communication
- Understand the technological development in jouirnalism

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit I- Communication:**<br><br>-Meaning, Definition, Nature, Scope, Process of communication, Elements of communication (Source-receiver- context-message-channel-noise-encoding decoding-feedback-effect). Why do we communicate? Development of Human communication, Meaning & Elements, Components of human communications; Concept of Communication, 7 c's Communication, Noise and feedback in communication, Functions of Communication, Communication barriers: Psychological, mechanical, physical, Linguistic and cultural. | 11 |
| 2 | **Unit II - Kinds of Communication:**<br><br>Oral & Written, Verbal and Non – Verbal., Characteristics of verbal and non-verbal communication, Levels of Communication: Intrapersonal – Interpersonal,- Group – Mass Communication., Differences between levels of Communication. | 11 |
| 3 | **Unit III: Beginning of the Press in world**<br><br>Technological development, Invention of printing and movable type in Europe, Beginning of Press in India, Early Anglo-Indian newspapers, Hicky‟s Gazette, Buckingham‟s Journal, Social reform movement and journalism- Raja Ram Mohan Roy, etc. | 12 |

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|---|---|---|
| 4 | **Unit IV: National leaders and newspapers**<br><br>Driving force of the freedom struggle (1885 to 1947): National leaders and newspapers, Lokmanya Tilak, Surendranath Banerjee, Dadabhai Nauroji, Mahatma Gandhi, Ghose brothers (Amrut Bazar Patrika), Benjamin Horniman (Bombay Chronicle), Kasturi Ranga (The Hindu), LalaLajpat Rai, Moulana Azad, Jawaharlal Nehru, S. Sadanand (Free Press Journal), Robert Knight (Times of India, Statesman), etc. | 11 |

**References:**

1) Vir Bala Agarwal & V.S. Gupta, Handbook of Journalism & Mass Communication; Concept Publisher Delhi.

2) Keval J. Kumar: Mass Communication in India

3) Mitra, Mohit and Sunil Basu. A History of Indian Journalism.

4) Murthy, N.K. Indian Journalism,

**Advanced DTP**

**Course Code: U-ADC-640-D**

**Duration: 45 Hrs**

**Learning Objective:**

The objective of the course is to provide the participants understanding of the techniques essential to build their career in desktop publishing using suitable hardware and software tools.

**Course Outcomes:**

After successful completion of the course, students will be able to:

- Work as Photo editor
- Work as Web designer
- Complete job role of Graphic designer
- Perform the work of DTP Operator

| *Sr No* | *Contents* | *Hrs.* |
|---|---|---|
| 1 | **Unit I: MS Paint**<br>Introduction, About the limits of MS Paint, Presentation and setup of user interface and help, Open and save an image, Knowledge of available file types (JPG, TIFF,ICO, PNG, GIF...), Set opened image as desktop wallpaper, Display options (zoom, miniature, grid, etc.), Define or resize the size of an image (non-functional transparency), Drawing tools overview, Colors selection with right click/left click in the palette, Copy/Paste from selection with or without transparency, Insert an external image in a composition, Colors number selection and color inversion | **12** |
| 2 | **Unit II: Photoshop**<br>Getting Acquainted with Photoshop, Basic Image Manipulation, Color Basic, Painting Tools, Brush Settings, Making Selections, Filling and stroking, Layers, Advanced Layers, Text | **11** |
| 3 | **Unit III: Coral Draw**<br>Getting started with Corel Draw, Introduction to Corel Draw, Features of Corel Draw, Corel Draw Interface, Tool Box, Moving from Adobe | **11** |

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|---|---|---|
| | Illustrator to Corel Draw, Common Tasks, Drawing and Coloring, Selecting Objects, Creating, Basic Shapes, Reshaping Objects, Organizing objects, Applying color fills and Outlines, Mastering with Text, Text Tool Artistic and paragraph text, Formatting Text, Embedding Objects into text, Wrapping Text around Object, Linking Text to Objects | |
| 4 | **Unit IV: Project Work**<br>Design Process, Designing Aids, Printing and presentation | **11** |

**References:**

1. Desktop Publishing, By Bittu Kumar, 2015.

2. DTP Course Book, By Vishnu P. Singh, 2008

**Advanced Mobile Repairing**

**Course Code: U-ADC-434-M**

**Duration: 45 Hrs**

## Learning Objectives: (LOs)

1. To provide basic knowledge of Various Mobile Phones hardware and software's.
2. To understand the various software installation, use of secret code techniques.
3. To learn Management of Mobile Phone Shoppe.

## Course Outcomes (COs) :

After successful completion of the course, students will be able to:

1. Perform any issue-related tasks such as mobile phone hardware troubleshoots, about the generations of mobile phones, flashing, use of secret codes, etc.
2. Expand career in the wireless market.
3. Command on Installation of software.
4. Become a Mobile architecture.
5. Self-employment, you may start your own mobile repair shop or service centre

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **UNIT I Information About SMD Electric Spare**<br>1.1 Register<br>1.2 Coilr<br>1.3 Fuse<br>1.4 Capacitor<br>1.5 Wire<br>1.6 Wire Crossing<br>1.7 Battery<br>1.8 Conductor<br>1.9 Insulation<br>1.10 Current<br>1.11 Frequency<br>1.12 Difference between AC current And DC current<br>1.13 Practice for connecting Jumper to PCB | **11** |
| 2 | **UNIT II: Information of spare parts on PCB**<br>2.1 Headphone Connector<br>2.2 Battery Connector | **12** |

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|---|---|---|
| | 2.3 Camera<br>2.4 Display Connector<br>2.5 Touchpad Connector<br>2.6 Sim tray<br>2.7 Memory Tray<br>2.8 On/Off switch<br>2.9 Power I.C [Power Amplifier]<br>2.10 Flash I.C<br>2.11 Network I.C<br>2.12 Charging I.C<br>2.13 Light I.C<br>2.14 Capacitor<br>2.15 Coil<br>2.16 Speaker<br>2.17 Mike<br>2.18 Ringer<br>2.19 Vibrate | |
| 3 | **UNIT III : Antenna and Sensor**<br>3.1 Antenna Point<br>3.2 Antenna Switch<br>3.3 Network I.C<br>3.4 Oscillator<br>3.5 Fitter<br>3.6 Light Sensor<br>3.7 Universal Remote Sensor<br>3.8 Fingerprint Sensor<br>3.9 Accelerometer | **11** |
| 4 | **UNIT IV : Reasons behind Mobile Shorting And Types of Shorting, Android Versions**<br>4.1 Full Shorting<br>4.2 Medium Shorting<br>4.3 Normal Shorting<br>4.4 Types of Shorting Method<br>4.5 Information about Reset code i) GSM ii)CDMA<br>4.6 Steps of switching on mobile at the time of repairing<br>4.7 Steps of switching on mobile at the time of repairing Practical<br>4.8 Information of On/Off switch<br>4.9 Information of Battery Meter | **11** |

**References:**


1. Mobile Repairing Book in Hindi by Nitin Kothari
2. Mastering Mobile Learning by Chad Udell, Gary Woodill

**Computer Networking**

**Course Code: U-ADC-434-N**

**Duration: 45 Hrs**

**Learning Objectives:**

1. Build an understanding of the fundamental concepts of computer networking.
2. Familiarize the student with the basic taxonomy and terminology of the computer networking area.
3. Introduce the student to advanced networking concepts, preparing the student for entry Advanced courses in computer networking.
4. Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.

**Course Outcomes:**

After completing this course student will be able to:

1. Understand basic computer network technology, Data Communications System and its components and different types of network topologies and protocols.
2. Enumerate the layers of the OSI model and TCP/IP
3. Identify the different types of network devices and their functions within a network and install network devices.
4. Understand and building the skills of subnetting and routing mechanisms.
5. Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **UNIT I**<br>**1 Basic Information of Network**<br>Introduction and classification of Network, Functional block diagram of Network.<br>**2 Identification of Network Parts**<br>Introduction of network parts like Cable, Network Switch, Router, Connector, Network Tools, Wall Rack, Modem, Wifi Dongle, Add-On Cards. | **12** |
| 2 | **UNIT II**<br>**1 Installation of computer Network**<br>Building your own Network with all parts, Network Topology, Cable Crimping, Connections and other<br>**2 Network Setting**<br>IP Address Setting, testing of connectivity, Sharing Device and Data, Testing<br>**3 Uses of Internet** | **10** |

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|---|---|---|
| | Remote Access, Drivers Downloading, Uses of sharing Software with internet | |
| 3 | **UNIT III**<br>**1 Information of CCTV Network**<br>Introduction and classification of CCTV Network, Functional block diagram of CCTV Network<br>**2 Identification of CCTV Network Parts**<br>Types of Cable, DVR, NVR, Mouse, Monitor, HDD, Power and Video Connectors and other<br>**3 Installation CCTV Setup**<br>Installation of Online and offline setup, Security of CCTV Network. | **13** |
| 4 | **UNIT IV**<br>**1 Troubleshooting**<br>Fault Finding and Troubleshooting of Network and CCTV Network<br>**2 Virus Removal**<br>Installation of Antivirus software and Activation, Scanning Data recovery, password Recovery. | **10** |

**References:**


1. Computer Systems and Networking Guide: A Complete Guide to the Basic Concepts in Computer Systems, Networking, IP Subnetting and Network Security by Hans Weber
2. Data and Computer Communications by William Stalling

**Training in Beauty Therapy**

**Course Code: U-ADC-434-B**

**Duration: 45 Hrs**

**Learning Objectives (LOs):**

1. To provide basic knowledge of the Natural Hurbs & Plants and Cosmetics.
2. To understand the various Make-up Pattern.
3. To learn organizing Fashion Show Program and beauty trend programs.
4. To identify the Skin types & Hair types for special treatment.

**Course Outcomes (COs) :**

After successful completion of the course, students will be able to:

1. Work As Fashion Show Stylist, Cosmetology instructor & Beauty Magazine Writer.
2. Start her Own Franchise Independently or in Collaboration With Lakme, L'Oreal, VLCC.
3. Work As Make-up Artist in the fashion Industry & Film Industry.
4. Work As Professional Trainer For The New Learners.
5. Do Ayurvedic Cosmetology and Sale Natural Hurbs & Plants Which Can Be Incorporated into Skin & Hair Care.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **UNIT I: INTRODUCTION**<br>1.1 Threading one eyebrow with different shapes (kinds of shapes)<br>1.2 Hair Style advanced with Decoration<br>1.3 Bleach All Types<br>1.4 Mehendi Arabian & bridal Sparkle<br>1.5 Rangoli Advanced stager<br>1.6 Facial Advanced with Training & Rubber pack<br>1.7 Wax two type chocolate & diamond 1.8 Skin treatment herbal treatment | **12** |
| 2 | **UNIT II: SKIN TREATMENT**<br>2.1 Manicure with Hot Spa<br>2.2 Pedicure with cold spa<br>2.3 Hair cutting & make up Advance | **10** |

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|---|---|---|
| 3 | **UNIT III: HAIR CUTTING AND MAKE-UP**<br>3.1 Study on hair<br>3.2 Make up advanced specialty pan<br>3.3 Sari wearing 20 types | **10** |
| 4 | **UNIT IV: SKIN AND HAIR TREATMENT**<br>4.1 Study on skin<br>4.2 Treatment hair problems<br>4.3 Dandruff Study<br>4.4 Head massage<br>4.5 Pimple removing study<br>4.6 Practices on treatment<br>4.7 Hair coloring<br>4.8 Bridal | **13** |

**References:**


1. Complete Beauty Parlor Course by Aastha
2. Beauty Salon Employee Manual

**Soft Skills**

**Course Code: U-ADC-540-S**

**Duration: 45 Hrs**

**Learning Objectives:**

1. Develop effective communication skills (spoken and written) and presentation skills.
2. Conduct effective business correspondence and prepare business reports which produce results.
3. Become self-confident individuals by mastering inter-personal skills, team management skills, and leadership skills.
4. Develop broad career plans, evaluate the employment market, identify the organizations to get good placement, match the job requirements and skill sets.
5. Take part effectively in various selection procedures adopted by the recruiters.

**Course Outcomes**:

After completion of this course students will be able to

1. Acquire significance of soft skills in professional and inter-personal communications and all-round development of personality.
2. Understand Technical Communication and Non-Verbal Communication
3. Acquire Soft skills like comprise pleasant and appealing personality traits as self-confidence, positive attitude, emotional intelligence, social grace, flexibility, friendliness and effective communication skills.
4. Take part effectively in various selection procedures adopted by the recruiters

| ***Sr No*** | ***Contents*** | ***Hrs*** |
|---|---|---|
| 1 | **Unit: 1) Management & Leadership**<br>1. Advanced Leadership Skills<br>2. Coaching & Mentoring<br>3. Conflict & Difficult People Management<br>4. Management Skills Improved<br>5. New Managers Boot Camp | **9** |
| 2 | **Unit: 2) Administration & Secretarial**<br>2.1) Professional Secretarial Skills<br>2.2) Executive Personal Assistant<br>2.3) Professional Telephone Skills | **9** |

| | | |
|---|---|---|
| 3 | **Unit: 3) Communication & Productivity**<br>3.1) Proactive Time Management<br>3.2) Productive Communication in the Workplace<br>3.3) Progressive Teamwork Workshop<br>3.4) Relationship Building essentials<br>3.5) Rewarding Negotiation Skills<br>3.6) Unique Customer Service | **9** |
| 4 | **Unit: 4) Personality Development & Interview Skill**<br>4.1) Facilitator Boot Camp<br>4.2) High Impact Presentation Skills<br>4.3) Personal Branding Workshop | **9** |
| 5 | **Unit: 5) Basic Computer Knowledge**<br>5.1) Knowing computer<br>5.2) Operating Computer using<br>5.3) Understanding Word Processing<br>5.4) Using Spread Sheet<br>5.5) Introduction to Internet, WWW and web browsers<br>5.6) Communications and Collaboration<br>5.7) Making PPT presentation<br>5.8) Financial Literacy for banking Applications | **9** |

**References:**


1. Soft Skills by Ajay R. Tengse, Orient Black Swan Pvt.Ltd, Hyderabad, India.2015
2. Seven habits of highly effective peoples by Stephen Covey, Simon & Schuster; India Only edition
3. Marketing Management by Philip Kotler, Pearson Education; Fifteenth edition
4. Effective Communication Skills by Dr. KulBhushan Kumarand R.S. Salaria, Khanna Book Publishing co.(p)LTD, NewDelhi

**Advanced Soft Skills**

**Course Code: U-ADC-434-S**

**Duration: 45 Hrs.**

**Learning Objectives:**

1. Develop effective communication skills (spoken and written) and presentation skills.
2. Conduct effective business correspondence and prepare business reports which produce results.
3. Become self-confident individuals by mastering inter-personal skills, team management skills, and leadership skills.

**Course Outcomes:** After completion of this course Students will be able to-

1. Understand the theoretical concept relating to Team Building.

2. Know the concept Stress Management.

3. Apply the gained knowledge for Time Management and Multi-Tasking.

| ***Sr No*** | ***Content*** | ***Hrs*** |
|---|---|---|
| **1** | **Unit I: Team Building and Art of Negotiation**<br>1.1 Nature of the team<br>1.2 Professional goals of the members of the group<br>1.3 Building relation and interpersonal communication<br>1.4 Negotiation and Ways of negotiating<br>1.5 Power of language and non-verbal communication | **12** |
| **2** | **Unit II: Dress for Success and Table Manners**<br>2.1 Proper attire as per the situation<br>2.2 One's self, how to project one's self in the right frame and spirit.<br>2.3 Professional meetings over lunch/dinner<br>2.4 Basics of the table manner. | **11** |
| **3** | **Unit III: Organizing Meetings and Stress Management**<br>3.1 Call the meeting and organize a meeting in the smooth manner<br>3.2 Design the agenda and prepare minutes of the meeting<br>3.3 Kinds of stress and reason/s of stress<br>3.4 Handling Stressful situation at a workplace. | **11** |
| **4** | **Unit IV: Telephone etiquettes and Time Management**<br>4.1 Telephonic etiquettes and tone and pitch of the voice<br>4.2 Voice mail<br>4.3 Goal setting<br>4.4 Time-schedule. | **11** |

**References:**


1. Soft Skills by Ajay R. Tengse, Orient Black Swan Pvt.Ltd, Hyderabad, India.2015
2. Seven habits of highly effective peoples by Stephen Covey, Simon & Schuster; India Only edition
3. Marketing Management by Philip Kotler, Pearson Education; Fifteenth edition
4. Effective Communication Skills by Dr. KulBhushan Kumarand R.S. Salaria, Khanna Book Publishing co.(p)LTD, NewDelhi

**Soil Science, Fertilizer and micro nutrients**

**Course Code: U-ADC-334-S**

**Duration: 45 Hrs**

**Learning Objective:**

1. Familiarize students with, Properties and Composition of Soils, Effects of modern agro – technology and pesticides on soil
2. To know the Classification and types of fertilizers, Bracketing technology of fertilizers
3. To Understand Properties and Uses of Micro- nutrients, Plant Growth promoters and hormones

**Course Outcomes:**

After successful completion of the course the students will be able to:

1. Familiarize students with, Properties and Composition of Soils, Nitrogen fixation, and Soil reclamation etc.
2. They Understands about Essential fertility requirement of the Nitrogenous, Phosphate Fertilizers.
3. know about Gibberellins, Auxins, Cytokinin, Ethylene

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit- I Soil Science**<br>Importance of Soil formation, Properties and Composition of Soils, Soil profile, Organic matter in soil, Soil micronutrients, Acid and Alkaline soil, Absorption of toxic metal and chemicals by soil, Effects of modern agro –technology and pesticides on soil, Nitrogen fixation, and Soil Reclamation, Study on N, P, K, and S transformations, Leaching, Run off, Absorption of water and ground water. | **12** |
| 2 | **Unit-II Fertilizers**<br>Classification and types of fertilizers, Essential fertility requirement of the Nitrogenous fertilizers: Ammonium nitrate, Urea, Calcium Cyanamide, Calcium Ammonium Nitrate, Sodium Nitrate, Ammonium Chloride: Introduction, Raw materials,<br>Manufacture, Action of as a fertilizer.<br>Phosphate fertilizers: Normal super phosphate, Triple Super Phosphate, Ammonium Phosphate. Potassic fertilizers, bracketing technology of fertilizers, Mixed fertilizers and<br>positions of Fertilizer Industries in India. | **11** |

| | | |
|---|---|---|
| 3 | Unit-III **Micronutrient**<br>Micro nutrients Definition, Types, Properties and Uses of Micro-nutrients, Manufacture of Micronutrients,<br>Deficiency and Reclamation. | **11** |
| 4 | **Unit IV Plant Growth promoters and hormones**<br>a) Gibberellins b) Auxins<br>c) Cytokinins d) Ethylene | **11** |

**References:**


1. Soil Fertility and Fertilizers by Havlin and Nelson
2. Soil Science: An Introduction by Indian Society of Soil Science

**Applied Optics**

**Course Code: U-ADC-334-A**

**Duration: 30 Hrs**

**Learning Objectives:**

The course aims to understand:

1. The basic principle behind the laser.
2. The construction and working of some lasers with its characteristics.
3. The principal of light propagation through a fibre.
4. Describing various types of optical fibre.

**Course Outcomes:**

On completion of this course, students will be able to:

1. Develop an understanding of the working principle of LASERs.
2. Prepare skill to perform Laser and Optical Fiber experiment.
3. Apply theoretical knowledge to perform practical.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit I: Lasers**<br>Lasers, Spontaneous and stimulated emissions, Theory of laser action, Einstein's coefficients (only formula), light amplification, Characteristics of laser beam, He-Ne laser, Semiconductor lasers (Working only), Ruby laser, CO2 laser etc. | **5** |
| 2 | **Unit II: Fiber Optics**<br>Optical fibers and their properties, Principal of light propagation through a fiber, The numerical aperture, Acceptance cone and acceptance angle, Attenuation in optical fiber and attenuation limit, Single mode and multimode fibers. | **5** |
| 3 | **Experiments on Lasers and Optical Fibers:**<br>a. Determination of the data track spacing of the Compact Disc (CD) by laser.<br>b. To find the width of the wire by laser.<br>c. Setting of Michelson interferometer.<br>d. Determine unknown wavelength of given source using Michelson interferometer.<br>e. Observation of total internal reflection of light through transparent bar and finding the refractive index of transparent bar.<br>f. Electrical to optical characteristics of OFC.<br>**g.** To determine numerical aperture of given OFC. | **20** |

**References:**


1. Optics- Brijlal Subramanyam
2. An introduction to laser - Avadhanalu
3. Fibre optics- S. K. Sarkar

**R-Software-I**

**Course Code: U-ADC-334-R**

**Duration: 30 Hrs**

**Learning Objectives:**

1. Expand R by installing R packages
2. Read Structured Data into R from various sources
3. Understand the different data types and data structures in R
4. Use of R as Data Visualization Tool

**Course Outcomes:**

At the end of this Course, the student will be able to:

1. Show the installation of R Programming Environment.
2. Utilize and R Data types for developing programs.
3. Make use of different R Data Structures.
4. Develop programming logic using R Packages.
5. Analyse the datasets using R programming capabilities.

| *Sr No* | *Name of Content* | *Hrs* |
|---|---|---|
| 1 | **Unit 1 Basic fundamentals**<br>Installation and use of software, data editing, use of R as a calculator, functions and assignments.<br>Use of R as a calculator, functions and matrix operations, missing data and logical operators. | **7** |
| 2 | **Unit 2: Looping Statements and Data Management**<br>conditional executions and loops, data management with sequences. Data management with repeats, sorting, ordering, and lists. | **8** |
| 3 | **Unit 3: String Handling**<br>Vector indexing, factors, Data management with strings, display and formatting, Data management with display paste, split, find and replacement, manipulations with alphabets, evaluation of strings, data frames. | **7** |

| | | |
|---|---|---|
| 4 | **Unit 4**: **Data Visualization**<br>Data frames, import of external data in various file formats, statistical functions, compilation of data. Graphics and plots, statistical functions for central tendency, variation, skewness and kurtosis, handling of bivariate data through graphics, correlations, programming and illustration with examples. | **8** |

**References:**


1. The art of R Programming by Norman Matloff
2. The Book of R by Tilman M. Davies
3. R for Data Science by Hadley Wickham
4. Discovering Statistics using R Andy Field

**Clinical Haematology**

**Course Code: U-ADC-334-R**

**Duration: 30 Hrs**

**Learning Objective:**

1. To understand Perform staining and counting technique for identification of different type of blood cells.
2. To understand collection methods of blood sample.
3. To understand separation techniques of blood sample components.
4. To understand diagnosis of different blood related diseases.

**Learning Outcomes:**

After completion of this course students shall be able to:

1. Perform staining and counting technique for identification of different type of blood cells.
2. Collect blood sample by different methods.
3. Separate different components of blood
4. Estimation of Hb from blood samples
5. Diagnosis of various blood diseases like anaemia

| *Sr No* | *Contents* | *Hrs.* |
|---|---|---|
| 1 | **UNIT – I The components of blood**<br>Plasma<br>Red blood cells<br>White blood cells<br>Platelets<br>Collection of Blood<br>Criteria for sample collection<br>Collection of capillary blood (Peripheral Blood) blood by skin punctures<br>Collection of venous blood by Venipuncture,<br>Collection of arterial blood,<br>**Practical:**<br>Collection Blood by Skin puncture and Venipuncture.<br>Separation of Blood components Plasma, Serum and Corpuscles | **8** |
| 2 | **UNIT – II Haemoglobin**<br>Structure and function of Haemoglobin<br>Anemia Causes, Effect and Control<br>Types of anemia<br>Causes and Symptoms of anemia<br>Control measure of anemia<br>Diagnosis of anemia<br>**Practical** | **7** |

| | | |
|---|---|---|
| | Estimation of Haemoglobin | |
| 3 | **UNIT – III. Haemopoiesis, erythropoiesis and leucopoiesis**<br>Practical:<br>Complete Blood Count (CBC)<br>RBC Counting<br>WBC Counting<br>Platelet count and Hamatocrit | **8** |
| 4 | **UNIT – IV Blood** Clotting<br>Mechanism of Clotting<br>Extrinsic and Intrinsic Mechanism<br>Blood cholesterols and Urea and Creatine<br>**Practical:**<br>Clotting and bleeding time of blood.<br>Study of Blood Smear for differential WBC Count - Preparation and Staining of smears,<br>Counting Methods, Morphology of White cells, Types of White Cells, Abnormalities in<br>morphology of blood cells and related diseases.<br>Determination of differential WBC Count by blood Smear. | **7** |

**References:**


1. Medical Laboratory Technology - Ramnik Sood
2. Medical Lab Technology Vol. I, II & III – Kanai Mukherjee
3. Hand Book of Medical Technology - Mrs. Chitra
4. Medical Laboratory Technology – A. Ananthanarayan
5. Manual for Laboratory Technician of Primary Health by Minister of Health
6. Human Physiology Vol. I & II – C. C. Chatterjee

**Pesticides and Insecticides**

**Course Code: U-ADC-434-P**

**Duration: 30 Hrs**

**Learning Objectives:**

1. To familiarize the students with Classification of pesticides, History of pesticides, innovation of pesticides chemistry.
2. To understand the concept of Insecticides, Manufacturing processes of some pesticides: Lindane (BHC), DDT, Parathion, Phorate.

**Course Outcomes:**

1. Students will understand the concept, Chemical nature of pesticides, History of pesticides etc.
2. They will know the Manufacturing processes of some pesticides: like Lindane (BHC), DDT, Parathion, Phorate.

| ***Sr No*** | ***Contents*** | ***Hrs*** |
|---|---|---|
| 1 | **Unit I: Pesticides**<br>Definition, importance & general classification of agrochemicals. Classification of pesticides on chemical nature and according to target species, mode of action.<br>Introduction: History of pesticides, innovation of pesticides chemistry, development of pesticides. | **5** |
| 2 | **Unit II: Chemistry of Pesticides**<br>Brief introduction to classes of pesticides, structure, chemical name, physical<br>properties, chemical properties, synthesis, degradation, metabolism, formulations, mode of action, uses, toxicity (acute and chronic toxicity in mammals, birds, aquatic species etc.), methods of analysis. | **5** |
| 3 | **Unit II: Insecticides**<br>Introduction, Acephate, Bifentrin, Buprofezin, Cartap hydrochloride, Chlorpyriphos, Decamethrin, Dimethoate, Endosulfan, Fenvalerate, Imidacloprid, Indoxacarb, Methomyl, Monocrotophos, Parathion-methyl, Propoxur, Pyrethrin, Quinolphos, Temephos, Thiamethoxam, Manufacturing processes of some pesticides: Lindane (BHC), DDT, Parathion, Phorate. | **5** |
| 4 | **Practical:**<br>Estimation of available chlorine in bleaching powder<br>Determination of bulk density of pesticidal WP/WDG/Dust/SP.<br>Determination of copper from Bordeaux mixture as fungicides by iodometric titration.<br>Estimation of Organophosphorus insecticide residues in soil by visible spectroscopic.<br>Separation and detection of pesticide by thin layer chromatography.<br>Determination of emulsion stability and cold test of pesticide.<br>Synthesis of pesticides/analogs | **15** |

**References:**

1. Pesticides, Insecticides, Fungicides and Herbicides with Formulae & Processes, By H. Panda, NIIR Project Consultancy Services (2003).

2. Pesticide Chemistry and Toxicology, By Dileep K. Singh, Bentham Science Publishers (2012).

**HTML Programming**

**Course Code: U-ADC-434-H**

**Duration: 30 Hrs**

**Learning Objectives:**

1. Create static web sites using HTML5, CSS3, BOOTSTRAP4, JS
2. Create Responsive web pages with form validation
3. Effective Use of Visual Studio Code editor

**Course Outcomes:**

After successful completion of this course, students should be able to –

1. Design basic programming structures to implement functionality for web page designing.
2. Develop static websites.
3. Develop responsive websites with Bootstrap.
4. Develop websites independently.

| *Sr No* | *Name of Content* | *Hrs* |
|---|---|---|
| 1 | Overview of HTML | 2 |
| 2 | My first HTML program | 2 |
| 3 | Elements-Tags-Attributes in HTML | 3 |
| 4 | Formatting Tags in HTML | 2 |
| 5 | Styles and CSS in HTML | 2 |
| 6 | Lists in HTML | 2 |
| 7 | Tables in HTML | 2 |
| 8 | Phrase Tags in HTML | 2 |
| 9 | Doc type and Head Section | 2 |
| 10 | Embedding Images | 2 |
| 11 | Embedding Audio and Video | 2 |
| 12 | Block Elements and Layouts | 2 |
| 13 | Forms in HTML | 3 |
| 14 | More on Forms | 2 |

**References:**


1. Start Here Learn HTML5, Faithe Wempen, Microsoft Publication
2. HTML and CSS Design and Build Websites, John Duckett, Willy Publications
3. JavaScript 2.0: The Complete Reference, Second Edition by Thomas Powell and Fritz Schneider
4. Internet & Web Development, Soma Das Gupta, Khanna Publishing House Online W3schools.com

**Mushroom Cultivation**

**Course Code: U-ADC-434-M**

**Duration: 30 Hrs**

**Learning Objectives:**

1. This Course will provide an adequate hand on experience for the students towards an independent handling and Culture capability of edible mushrooms.
2. This course-built students as a trainer for farmer or entrepreneur in the area of mushroom cultivation.

**Course Outcomes:**

After completion of this course students will be able to

1. Understand Mushroom Biology, Classification and techniques
2. Describe the basic biology of mushrooms and differentiate between different mushroom species.
3. Learn various methods of mushroom cultivation, including indoor and outdoor techniques.
4. Choose appropriate mushroom species for cultivation based on environmental conditions and market demand.
5. Demonstrate proficiency in inoculating substrates with mushroom spawn and creating their own spawn.

| *Sr No* | *Name of Content* | *Hrs* |
|---|---|---|
| 1 | **Unit: I Cultivation System & Farm design:** Fundamentals of cultivation system small village unit & larger commercial unit. Principles of mushroom farm layout-location of building plot, design of farm, bulk chamber, composting platform, equipment's & facilities, Pasteurization room & growing rooms. | **6** |
| 2 | **Unit: II Compost & Composting:** Principles of composting, machinery required for compost making, materials for compost preparation. Methods of Composting-Long method of composting (LMC) & Short method of composting (SMC). | **6** |
| 3 | **Unit: III Spawn & Spawning:** Facilities required for spawn preparation, Preparation of spawn substrate, preparation of pure culture, media used in raising pure culture, culture maintenance, and storage of spawn. | **6** |

| | | |
|---|---|---|
| 4 | **Unit: IV Casting materials & Case running:**<br>Importance of casing mixture, Quality parameters of casing soil, different types of casing mixtures, commonly used materials. | **6** |
| 5 | **Unit: V Cultivation of Button, Oyster and Straw Mushrooms:** Collection of raw materials, compost & composting, spawn & spawning, casing & case run, cropping & crop management, picking & packing. Visit to relevant Labs/Field Visits | **6** |

**References:**


1. Mushroom Cultivation, Tripathi, D.P.(2005) Oxford & IBH Publishing Co. PVT.LTD, New Delhi.
2. Mushroom Production and Processing Technology, Pathak Yadav Gour (2010) Published by Agrobios (India).
3. A hand book of edible mushroom, S.Kannaiyan& K.Ramasamy (1980). Today & Tomorrows printers & publishers, New Delhi
4. Handbook on Mushrooms, Nita Bahl, oxford & IBH Publishing Co.

**Production of Fertilizer**

**Course Code: U-ADC-434-B**

**Duration: 30 Hrs**

**Course Objectives:**

1. To create awareness about organic farming
2. To inculcate skills for mass production of bio fertilizers
3. To promote self-employment
4. To eco-friendly and sustainable Agri practices

**Course Outcomes:**

After completion of this course students will be able to:

1. do organic farming
2. inculcate skills for mass production of bio fertilizers
3. do self-employment
4. do eco-friendly and sustainable Agri practices

| *Sr No* | *Contents* | *Hrs.* |
|---|---|---|
| 1 | **Unit I Organic farming and importance of bio fertilizers** Organic Farming, Vermicomposting, Integrated Pest Management (IPM), Bio-Fertilizers and Their Use in Agriculture | **8** |
| 2 | **Unit II Free living nitrogen fixing bacteria** Study of Azotobacter and Azospirillum **Technique/skill-** Isolation, characterization, Mass production and Quality control | **7** |
| 3 | **Unit III Study of legume inoculants-Study of Rhizobium Technique/skill-**Isolation, characterization, Mass production and Quality control | **8** |
| 4 | **Unit IV Study of Phosphate solubilizing bacteria Technique/skill-** Isolation of PSB and characterization Maintenance of microbes | **7** |

**References:**


1. Kannaiyan, S. (2003). Biotechnology of Bio fertilizers, CHIPS, Texas.
2. Mahendra K. Rai (2005). Hand book of Microbial bio fertilizers, The Haworth Press, Inc. New York.
3. Reddy, S.M. (2002) Bio inoculants for sustainable agriculture and forestry, Scientific Publishers.

**Fruits and Fruit Processing**

**Course Code: U-ADC-540-F**

**Duration: 45 Hrs**

**Course Objectives:**

1. To Develop skills and making the students become self-reliable and employable besides giving them an edge when they seek employment in other Government and private sectors.
2. To pass out of the college with their degrees, they also are equipped with additional skills to meet the challenges in future.
3. To know about various fruit product and their processes.
4. To gain knowledge about fruit nutritional value for health.
5. To know about various preservative techniques of fruits.

**Course Outcome:**

1. Students are able to know the nutrition value of fruits.
2. Students are able to prepare fruit products.
3. Students are able to understand fruit harvesting and preservation techniques.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit I: A) Biology, Biochemistry, Nutrition, and Microbiology**<br>1. Physiology and Classification of Fruits.<br>2. Biochemistry of Fruits and Fruit Products.<br>3. Flavor of Fruits and Fruit Products and their Sensory Qualities.<br>4. Microbiology of Fresh and Processed Fruits.<br>5. Nutritional Quality of Fruits.<br>**B) Postharvest Handling and Preservation Technologies**<br>1. Postharvest Storage Systems: Biology, Physical Factors, Storage, and Transport.<br>2. Freezing Preservation of Fruits.<br>3. Conventional Thermal Processing and Preservation.<br>4. Dehydration Preservation of Fruits.<br>5. Developments in Minimal Processing of Fruits.<br>6. Aseptic Processing and Packaging.<br>7. Food Additives in Fruit Processing. | **12** |

| | | |
|---|---|---|
| 2 | **Unit II: A) Processed Fruit Products and Packaging**<br>1. Manufacturing Fruit Beverages and Concentrates.<br>2. Manufacturing Jams and Jellies.<br>3. Fresh-Cut Fruits.<br>4. Fruit and Fruit Products as Ingredients.<br>5. Developments in Packaging of Fresh Fruits and Fruit Products.<br>**C) Processing Plant, Safety, and Regulations**<br>1. Fruit Processing Plants and Equipments.<br>2. Fruit Processing Waste Management.<br>3. Microbial Safety and Sanitation of Fruits and Fruit Products.<br>4. Fresh and Processed Fruits: Safety and Regulations. | **13** |
| 3 | **Practical:**<br>1-2. Preparation of Wine from different fruits. (Grapes, Orange)<br>3. Processing of Citrus Juices.<br>4. Preparation of Amla Candy.<br>5-7. Production, Processing and Quality of Guava, Mango and Papaya.<br>8. Preparation of Jam and Jellies from different fruits.<br>9. Visit to Fruit cultivated farm. | **20** |

**References:**


1. Handbook of Fruits and Fruit Processing by Nirmal K. Sinha, Jiwan S. Sidhu
2. Fruit And Vegetable Preservation: Principles and Practices by Srivastava

**Food Fermentation Techniques**

**Course Code: U-ADC-540-T**

**Duration: 45 Hrs**

**Course objectives**

1. To explain the advantages and health benefits of fermented foods
2. To demonstrate the role of microorganisms in production of fermented daily foods
3. To develop skills and techniques for production of fermented food products.

**Course Outcomes**

After successful completion of this Skill Enhancement Course students will

1. acquire the knowledge about role and application of microbial techniques and
2. skills in production and safe handling of fermented foods.

| ***Sr No*** | ***Contents*** | ***Hrs*** |
|---|---|---|
| 1 | **Unit I: Fermented Foods and Probiotic Foods**<br>Definition, types, advantages and health benefits. | 5 |
| 2 | **Unit II: Milk Based Fermented Foods**<br>Dahi, Yogurt, and cheese: Preparation of inoculums, types of microorganisms and production process. | 6 |
| 3 | **Unit III: Vegetable Based Fermented Foods**<br>Pickels, Sauerkraut: Microorganisms and production process. | 8 |
| 4 | **Unit IV: Grain Based Fermented Foods**<br>Bread, Idli and Dosa: Microorganisms and production process. | 10 |
| 5 | **Practical**<br>1. Isolation of bacteria from fermented food materials - Dahi, / Yogurt/ Pickles<br>2. Isolation of fungi from fermented food materials – Cheese/ Bread<br>3. Preparation of inoculum for milk based fermented foods<br>4. Production of Pickle / Idli | 16 |

**References:**


1. Handbook of food and fermentation technology by .Hui YH, Meunier-Goddik L, Josephsen J
2. Advances in Fermented Foods and Beverages by Holzapfel
3. A comprehensive dairy microbiology by Yadav JS, Grover, S and Batish VK

**Web Page Development**

**Course Code: U-ADC-540-W**

**Duration: 45 Hrs**

**Learning Objectives:**

1. Create static web sites using HTML5, CSS3, BOOTSTRAP4, JS
2. Create Responsive web pages with form validation
3. Effective Use of Visual Studio Code editor

**Course Outcomes:**

After successful completion of this course, students should be able to –

1. Design basic programming structures to implement functionality for web page designing.
2. Develop static websites.
3. Develop responsive websites with Bootstrap.
4. Develop websites independently.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **UNIT I: Introduction to HTML5**<br><br>Formatting text by using tags, using lists and backgrounds. Creating hyperlinks and anchors, Creating tables, creating simple table, specifying the size of the table, specifying the width of the column, merging table cells, using tables for page layout, Formatting tables, applying table borders, applying background and foreground fills, changing cell padding, spacing and alignment, creating user forms creating basic form, using check boxes and radio buttons creating lists, additional input types in HTML5, Incorporating sound and video, Audio and video in HTML5, HTML multimedia basics, embedding video clips, incorporating audio on web page, Image Mapping. | **10** |
| 2 | **UNIT II: CSS3**<br><br>Introduction to CSS, how does CSS work? syntax, identification and grouping of elements, selectors, colors, background, fonts, text, links, lists, tables. CSS Box model, Margin, Padding, Border, height and width, | **13** |

| | | |
|---|---|---|
| | floating elements, positioning of elements, align, dropdowns, navigation bar, counters, Image gallery. | |
| 3 | **UNIT III: Java Script, Bootstrap**<br>Introduction to Client-Side Scripting, Introduction to Java Script, JavaScript Types, Variables in JS, Operators in JS, Conditional statements, Java Script Loops, JS Popup Boxes, JS Events, JS Arrays, Working with Arrays, JS Objects, JS Functions, Document and its associated objects, Document, Link, Area, Anchor, Image, Applet, Layer Events and Event Handlers, Using Java Script in Real-time, Validation of Forms. What is Bootstrap? Basic Bootstrap Pages, Bootstrap Grid System, Grid Classes, and Basic Structure of a bootstrap Grid, Equal Columns and Unequal Columns. Typography, Table, Images, Wells, Alerts Button, Button groups, Badges/Labels Progress Bars, Pagination, pager, List groups, Panels, Drop Down, Collapse, Tabs/Pills, Navbars | **12** |
| 4 | **UNIT IV: Development of Website**<br>Website should contain minimum five web pages. Website may contain Java script for validation, Bootstrap for responsiveness. | **10** |

**References**


1. Start Here Learn HTML5, Faithe Wempen, Microsoft Publication
2. HTML and CSS Design and Build Websites, John Duckett, Willy Publications
3. JavaScript 2.0: The Complete Reference, Second Edition by Thomas Powell and Fritz Schneider
4. Internet & Web Development, Soma Das Gupta, Khanna Publishing House
5. W3schools.com

**Pharmaceutical Chemistry**

**Course Code: U-ADC-540-P**

**Duration: 45 Hrs**

**Learning Objectives:**

1. The objective of this course is to make students aware about:
2. Basic knowledge of synthetic methods
3. Advantages & disadvantages of drugs and vitamins

**Course Outcomes:**

1. By the end of the course, the students will be able to:
2. Understand the preparations methods of different drugs
3. Apply acquired knowledge for drug analysis

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit–I Drugs & Pharmaceuticals**,<br>Drug discovery, design and development, Basic Retrosynthetic approach. Synthesis of the representative drugs of the following classes: analgesics agents, antipyretic agents, antiinflammatory agents (Aspirin, paracetamol, ibuprofen), antibiotics (Chloramphenicol); antibacterial and antifungal agents (Sulphonamides; Sulphanethoxazol, Sulphacetamide, Trimethoprim); antiviral agents (Acyclovir), Central Nervous System agents (Phenobarbital, Diazepam), Cardiovascular (Glyceryltrinitrate), antilaprosy (Dapsone), HIV-AIDS related drugs (AZT- Zidovudine).<br>Fermentation Aerobic and anaerobic fermentation. | **12** |
| 2 | **Unit–II Medicinal values**<br>Medicinal Values of haldi , azadirachtin (neem), vitamin C and antacid (ranitidine). | **13** |
| 3 | Practical<br>1. Preparation of Aspirin and its analysis.<br>2. Preparation of magnesium bisilicate (Antacid).<br>3. Preparation of paracetamol.<br>4. Analysis of vitamin-C colorimetrically.<br>5. Estimation of sulpha drug by TLC | **20** |

**References:**


1. A Textbook of Pharmaceutical Chemistry by Ghosh Jayshree
2. A Text Book of Pharmaceutical Chemistry by Dr M P Bhagat

**Renewable Energy Harvesting**

**Course Code: U-ADC-640-R**

**Duration: 45 Hrs**

**Learning Objectives:**

1. The objective of this course is to acquire basic understanding of process, limitations of fossil fuels (coal, petroleum and natural gas) and necessity of harnessing alternate energy sources such as solar, wind, biomass etc.
2. To initiate non-conventional energy conversion system with solar, wind, biomass, fuel cell etc.
3. To commerce inter connection of energy source to grid, stand alone and hybrid system.

**Course Outcomes:**

Upon successfully studying this course, students will:

1. Know about the energy demand of the world, nation and available resources to fulfil them.
2. Apply solar energy in thermal and electrical power generation considering energy crisis, environmental and social benefits.
3. Understand the operation of electrical energy generation using biomass, tidal, wind, solar and interconnection with grid.
4. Find the importance of wind-based energy generation along with its design, analysis and comparison.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit-I Energy**<br>Energy, man and energy, importance of energy in 21st century energy trend, and conversion of energy form different source into electrical energy. Types of renewable energy sources: Solar energy, bio energy, hydrothermal energy, wind energy, ocean energy, nuclear energy | **10** |
| 2 | **Unit II: Solar Energy**:<br>Systems of solar energy, parameters to be expected, and calibration of solar spectrum (solar radiation at the surface of earth), applications of solar energy: solar photovoltaic system, merits and limitation of solar photovoltaic system, solar cooker, solar water heater. | **10** |

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|---|---|---|
| 3 | **Unit-III: Energy storage**: Battery, supercapacitor, fuel cells (principle, operation, and formulae therein), photocatalysis, Electro catalysis. | **5** |
| 4 | **Laboratory Exercises (Any Five of the following):**<br>1) To study I-V Characteristics of Solar cell.<br>2) To study Solar cell colour sensitivity.<br>3) To determine Solar constant.<br>4) To study Characteristics of Solar cooker.<br>5) To study the effect of Dust Accumulation on PV Panel.<br>6) To study Characteristics of Solar Collector.<br>7) Measurement of energy and power density of capacitor<br>8) Estimation of ORE and HRE over potentials of given electrode material | 20 |

**References**


1. Energy technology, non-conventional renewable and conventional-S. Rao and Dr. Parulkar.
2. Non-conventional energy sources by G. D. Rai
3. Solar energy: Principal of thermal collection and storage- S. P. Sukhatme

**Python Programming**

**Course Code: U-ADC-640-P**

**Duration: 30 Hrs**

**Learning Objectives:**

1. To understand why Python is a useful scripting language for developers.
2. To learn how to install Python, start the Python shell
3. To define the structure and components of a Python program.
4. To learn to perform basic calculations, print text on the screen and perform simple control flow operations using if statements and for loops.

**Course Outcomes:**

After Completion of this course students will be able to

1. Work in python environment
2. Write functions in python to solve mathematical problems

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit-1**<br><br>Introduction to Python and Basic Concepts in python Introduction to python: What is python? , Applications of Python, Why Python? Installation of python, First program in Python, Comments and Docstrings in Python. Variable and data types, Operators in python. File Handling: working with open, read, write, append modes of file Conditional Statements: Indentation in python, if, if-else, nested if-else statements | **15** |
| 2 | **Unit-2**<br><br>Looping Statements, Control statements, String Manipulations Looping Statements: for loop, while loop, Nested loops Control Statements: break, continue and pass String Manipulations: Accessing strings, Basic operations, String slices, Functions and methods | **15** |

**References:**

1 Introducing python - Bill Lubanovic

2. Machine Learning (in Python and R) For Dummies - John Paul Mueller

3. Core Python Programming – Dr. R.Nageswara Rao.

4. Python Cookbook - David Beazley and Brian K. Jones

**Cosmetics and Chromatography**

**Course Code: U-ADC-640-C**

**Duration: 30 Hrs**

**Learning Objectives:**

1. To provide basic knowledge of the Various Cosmetics.
2. To understand the various Bleaching, Mehendi, Rangoli techniques.
3. To learn organizing Various Occasions & Celebration programs on beauty trends.

**Course Outcomes:**

After successful completion of the course, students will be able to:

1. Get Good Paying Job as A Beautician.
2. Start Their Own Shop of Cosmetics, Jwellery & Related Articles.
3. Do Job As Nail Care Artist, Hair Cut Stylist & Personal Beauty.
4. Do Independent Work of Bleaching, Mehendi, Rangoli & Waxing.
5. Do Make-up Of The Client's For Various Occasions & Celebrations Advanced.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **UNIT I: INTRODUCTION**<br>1.1 Threading<br>1.2 Hair Style [SIX Types]<br>1.3 Bleach<br>1.4 Mehendi<br>1.5 Rangoli<br>1.6 Facial<br>1.7 Waxing a. hand b. Leg | **7** |
| 2 | **UNIT II: SKIN TREATMENT**<br>2.1 Manicure<br>2.2 Pedicure<br>2.3 Practice all Unit I | **8** |
| 3 | **UNIT III: HAIR CUTTING AND MAKE-UP**<br>3.1 Different Types of Hair<br>3.2 Advanced Type Hair Styles | **8** |

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|---|---|---|
| | 3.3 Make-Up a. Simple b. Different Occasions<br>3.4 Saree wearing - 10 types. | |
| 4 | **UNIT IV: SKIN AND HAIR TREATMENT**<br>4.1 Skin Treatment [all Types of skin]<br>4.2 Hair Treatment [all Types of Hair]<br>4.3 Dandruff Treatment<br>4.4 Pimple Treatment<br>4.5 Hair Falling Treatment<br>4.6 Final Touch<br>4.7 Practice | **7** |

**References:**


1. Complete Beauty Parlor Course by Aastha
2. Beauty Salon Employee Manual

**Bee Keeping and Honey Processing**

**Course Code: U-ADC-640-B**

**Duration: 30 Hrs**

**Learning Objectives:**

1. To inculcate importance of Bee keeping and honey processes in relation with entrepreneurship development.
2. To give students knowledge about various techniques of Bee keeping and honey processing and its marketing to make them self-sustainable after graduation.
3. To teach techniques of construction of Bee Hives and its maintenance.
4. To teach students about Honey production and health related problems with Honey bees. Importance of honey.

**Course Outcomes:**

1. Understand the basics of beekeeping, including the importance of bees in pollination and honey production.
2. Gain knowledge of bee anatomy, life cycles, and behavior to better understand hive management.
3. Learn how to set up and maintain beehives, including hive construction, placement, and regular inspections.
4. Recognize common bee diseases and pests, and develop skills to prevent and treat them to maintain healthy bee colonies.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **UNIT I: Introduction to Apiculture**<br>scope, importance History of bee keeping: Definition, Bee keeping In India. Traditional bee keeping, Modern beekeeping, Apiculture development in India -. Role of Central Honey Bee Research & Training Institute<br>**Practical-**:<br>To study the morphology of Honeybees and Identification of different species To Study different stages in life cycle of Honey bees.<br>Bee flora – Flora used in bee keeping and floral calendar | **15** |
| 2 | **UNIT – II Honey Bee morphology, Anatomy and Life cycle**<br>Basic concepts of morphology of Honey bees – Difference in indigenous, exotic, Life cycle. Parthenogenesis. Honey bee species and identification. Origin, systematics and distribution of honey bees. Bee identification. Social organization in honey bees: Colony life and social organization – Queen, drone, worker.<br>**Practical:** Bee keeping unit - Handling of frames with colonies Introduction of parts of Bee box, types & Tools used in Bee keeping. Identification of Queen cells, Drone cells and Brood | **15** |

**References:**


1. Storey's Guide to Keeping Honey Bees: Honey Production, Pollination, Health by Malcolm T. Sanford
2. The Complete Book on Beekeeping and Honey Processing by NPCS Board of Consultants & Engineers.

**Disaster Management**

**Course Code: U-ADC-334-D**

**Duration: 30 Hrs**

**Learning Objectives:**

1. To know the concept of disaster & Disaster Management.
2. To understand the phases of disaster management
3. To familiarize students with causes and effects of disaster.
4. To acquaint with National and Disaster Management Act 2005.
5. To enrich students with procedure and practical training of the disaster management.

**Course outcomes:**

After Successful completion of the course, students will be able to:

1. To know the concept of disaster & Disaster Management.
2. To understand the phases of disaster management
3. To familiarize students with causes and effects of disaster.
4. To acquaint with National and Disaster Management Act 2005.
5. To enrich students with procedure and practical training of the disaster management

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit 1 Introduction to Disaster**<br>1. Concept of Hazard, Disaster and Vulnerability<br>2. Meaning, definition of disaster and type of disaster<br>3. Disaster profile of India – mega disaster & lesson learnt<br>4. Causes and effects of disaster (Practical Examples) | **8** |
| 2 | **Unit 2 Disaster management**<br>1. Meaning and definition and phases of Disaster management<br>2. Disaster management<br>i) Pre-Disaster Management<br>ii) During Disaster Management<br>iii) Post Disaster Management | **7** |
| 3 | **Unit 3 Disaster Management in India**<br>3.1. Organizations involved in disaster management<br>3.2. Disaster Management structure in India<br>3.3. National guidelines or plans on disaster management<br>3.4. Disaster Management Act, 2005 | **8** |

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| 4 | **Unit 4 Disaster Management and Practical Response.**<br>4.1. Disaster Specific Training (For : Earthquake, Flood, Lightening, Road Accident etc.)<br>4.2. Fire Fighting : Fire demonstration, used fire extinguishers, fire equipment's<br>4.3. First aid for First Responders<br>4.4 Field Visit : Response Agencies & Disaster Affected area, Vulnerable areas etc. | **7** |

**References:**


1. Concept and Practice in Disaster Management Col (Retd) P. P. Marathe
2. Disaster Management Dr.Akhilesh K. Pandey
3. Practical Disaster Management Col (Retd) P. P. Marathe
4. Disaster Management: Future challenges and Opportunities by Jagbir Singh, K. W. Publishers Pvt. Ltd.
5. Disaster Management: J. P. Singhal, Laxmi Publications.
6. Disaster Management Act 2005, Publisher by Govt. of India.
7. National Disaster Management Policy, 2009, GoI

**Business Ethics**

**Course Code: U-ADC-334-B**

**Duration: 45 Hrs**

**Learning Objectives:**

1. To know the concept of Ethics and Business Ethics.
2. To understand the Business Ethics in marketing.
3. To familiarize students with privacy issues.
4. To enrich students with internet Crime & Computer Abuse.

**Course Outcomes:**

After completing the course, the students will be able to

1. Understand factors influencing in business ethics.
2. Acquaint student with strategies for pricing new product and product line.
3. Provide the knowledge of conflicts of interest.
4. Understand the ethical issues in IT.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit 1: Introduction to Business Ethics**<br>1.1 Meaning, Definition of Business Ethics<br>1.2 Objectives and Nature of Business Ethics<br>1.3 Need and Importance of Business Ethics<br>1.4 Types of Ethics<br>1.5 Scope of Business Ethics<br>1.6 Factors Influencing Business Ethics | **10** |
| 2 | **Unit 2: Ethical Aspects in Marketing**<br>2.1 Introduction, Meaning & Definition of Marketing<br>2.2 Marketing Mix in Business Ethics<br>2.3 Ethics in Personal Selling, Ethical & Social Issues in Advertising<br>2.4 Ethics and Regulations in Pricing<br>2.5 Strategies for Pricing New Products & Product Lines | **12** |

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|---|---|---|
| | 2.6 Ethics in International Marketing | |
| 3 | **Unit 3: Ethics in Human Resource Management**<br>3.1 Privacy Issues- Introduction, Values of Privacy, Definition, Privacy in Socialization<br>3.2 Restructuring & Layoffs<br>3.3 Sexual Harassment<br>3.4 Human Quality Development<br>3.5 Conflicts of Interest & It's Types, Managing Conflicts of Interest | **13** |
| 4 | **Unit 4: Ethics and Information Technology**<br>4.1 Ethical issues in Information Technology<br>4.2 Attacks on Computer systems & Computer Viruses<br>4.3 Internet Crime & Computer Abuse<br>4.4 Software packages and Computer Crime Prevention<br>4.5 Effect of Threat from Computer Crimes & Health Risks | **10** |

**References:**


1. Business Ethics & Corporate Social Responsibilities by S.P.Mathur, New Age
2. Business Ethics – Ethical decision making and cases by O.C.Ferrel, Business Ethics – by Saurabh Agrawal, S.B.P.D. Publishing House
3. Business Ethics – by Shailendrakumar & Alok kumar Rai, Cengag
4. Business Ethics & Corporate Social Responsibility by T. N. Chhbra, Sun India Publications.

**GST**

**Course Code: U-ADC-640-G**

**Duration: 45 Hrs**

**Learning Objectives:**

1. To provide basic knowledge of the Goods and Services Tax.

2. To understand the various legal provisions of GST law.

3. To learn about Input Tax Credit system of GST.

4. To identify the special provisions like reverse charge mechanism, etc. under GST Law

**Course Outcomes:**

On completion of this course, the students will be able to –

1. Understand various basic terminologies under GST.

2. Calculate and file GST return as required under GST Act.

3. Independently manage and advice traders about maintenance of various statements and accounts under GST.

4. Do registration, cancellation and revocation under GST for supply of goods and services.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit I Introduction to Goods and Service Tax**<br>1.1 Introduction, History, Overview of GST, Problems in Indirect Tax Structure before GST.<br>1.2 Need for Tax Reforms, Objectives for introduction of GST, Constitutional Amendments, Taxes and Duties Subsumed under GST, Silent features of dual GST system.<br>1.3 Short Title, Extent and Commencement.<br>1.4 Administrative Structure under GST<br>1.5 Some important definitions : Goods, Services, Money, India, Union Territory, Person, Business, Consideration, Aggregate Supply. | **12** |
| 2 | **Unit II Meaning and scope of supply**<br>2.1 Meaning and scope of supply<br>2.2 Schedule I<br>2.3 Schedule II<br>2.4 Schedule III<br>2.5 Meaning of Related Person and Distinct Person | **10** |

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|---|---|---|
| 3 | **Unit III Special Provisions under GST**<br>3.1 Levy of, and exemption from Tax<br>3.2 Provisions of Registration<br>3.3 Special provisions relating to taxability in case of resident<br>3.4 Cancellation of registration<br>3.5 Revocation of cancellation of registration<br>3.6 Composition Scheme under GST | **13** |
| 4 | **Unit–IV Returns and Payment under GST**<br>4.1 Time of Supply of Goods<br>4.2 Time of Supply of Services<br>4.3 Change in rate of Tax in respect of Supply of Goods or Services<br>4.4 Value of Taxable Supply<br>4.5 Eligibility and Conditions for Taking Input Tax Credit | **10** |

**References:**

1. Model GST Law, GST Council Secretariat, November 2016

2. Model GST Rules, GST Council Secretariat, November 2016

3. www.Taxguru.com

**Office Management**

**Course Code: U-ADC-540-O**

**Duration: 45 Hrs**

**Learning Objectives:**

**This Office automation training course aims to**

1. provide new users with the essential skills needed to create, edit and print professional looking documents using text, covering simple mail merge.
2. to create presentations using PowerPoint and spreadsheets
3. Particular emphasis is placed on developing accurate and well-designed documents.

**Course Outcomes:**

Upon successful completion of this course, students should be able to**:**

1. Work with the basic features of Word like creating, editing, formatting and printing document.
2. Able to work effectively with the page layout of document.
3. Use the Mail Merge Wizard to perform mail merges.
4. Work with a Spreadsheet, Charts, perform basic Calculations Create effective presentations, Apply Designs to Enhance the looks of the
5. Presentation, print a Presentation Design a simple database with related tables.

| ***Sr No*** | ***Contents*** | ***Hrs*** |
|---|---|---|
| 1 | **Unit 1: Word Processing**<br>Introduction, Features, Creating, Saving and Opening Documents in Word, Interface, Toolbars, Ruler, Menus, Keyboard Shortcut, Editing, Previewing, Printing, formatting a Document, Find & Replace, Using Thesaurus, Using Auto Multiple Functions, Mail Merge, Handling Graphics, Tables & Charts, Converting a word document into various formats like- HTML, PDF etc | **12** |
| 2 | **Unit II Spreadsheet**<br>Introduction, Worksheet basics, creating worksheet, heading information, data, text, dates, alphanumeric values, saving worksheet. Toolbars and Menus, Keyboard shortcuts, working with single and multiple workbooks, working with formula & cell referencing, Auto sum, Absolute & relative addressing, Worksheet with ranges, formatting of worksheet, Previewing & Printing worksheet, Graphs | **10** |

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|---|---|---|
| | and charts, Creating and Using macros, Multiple worksheets- concepts, creating and using Multiple worksheets. | |
| 3 | **Unit III: Presentation**<br>Creating slide show with animations. Auto content Wizard, creating a blank presentation, autolayout, Power point screen: screen layout and Views, insert a new slide, applying design, template, changing slide layout, reordering and hiding slides, slide show and editing custom slide. Text box, Lists, adding notes, Video and Audio, Color schemes, adding clip art, adding an image from a file Editing graphic, AutoShapes, WordArt, Backgrounds, Action buttons Slide animation preview Slide transitions Slide show options Slide master Header and footer Slide numbers Date and time. | **10** |
| 4 | **Unit IV: Database**<br>Access basics, Database concepts and terminology, Creating Databases, Using the table wizard, working in design view, Working with Fields and Records: Changing the Design of a table, Adding and deleting records, Closing a database and Access. | **13** |

**References:**

1. R. K. Chopra and Priyanka Gauri, Office Management, Himalaya Publishing House, Mumbai.

**Aptitude & Reasoning I**

**Course Code: U-APR-601**

**Duration: 30 Hrs**

**Learning Objectives:**

This course is designed to suit the need of the outgoing students and to acquaint them with frequently asked patterns in quantitative aptitude and logical reasoning during various examinations and campus interviews.

**Course Outcomes:**

On successful completion of the course the students will be able to:

1. Understand the basic concepts of quantitative ability.
2. Understand the basic concepts of logical reasoning Skills  Acquire satisfactory competency in use of reasoning.
3. Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning Ability.
4. Compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc. Syllabus.

| ***Sr No*** | ***Contents*** | ***Hrs.*** |
|---|---|---|
| 1 | **Unit 1: Quantitative Ability (Basic Mathematics)**<br>Number Systems<br>LCM and HCF<br>Decimal Fractions<br>Simplification<br>Square Roots and Cube Roots<br>Average<br>Problems on Ages<br>Surds & Indices<br>Percentages<br>Problems on Numbers | **8** |
| 2 | **Unit II: Quantitative Ability (Applied & Engineering Mathematics)**<br>Logarithm<br>Permutation and Combinations<br>Probability<br>Profit and Loss<br>Simple and Compound Interest | **7** |

| | | |
|---|---|---|
| | Time, Speed and Distance<br>Time & Work<br>Ratio and Proportion<br>Area<br>Mixtures and Allegation | |
| 3 | **UNIT – III Data Interpretation**<br>Data Interpretation<br>Tables<br>Column Graphs<br>Bar Graphs<br>Line Charts<br>Pie Chart<br>Venn Diagrams | **8** |
| 4 | **UNIT – IV Logical Reasoning (Deductive Reasoning)**<br>Analogy<br>Blood Relation<br>Directional Sense<br>Number and Letter Series<br>Coding – Decoding<br>Calendars<br>Clocks<br>Venn Diagrams<br>Seating Arrangement<br>Syllogism<br>Mathematical Operations | **7** |

**References:**


1. A Modern Approach To Verbal & Non Verbal Reasoning By R S Agarwal
2. Analytical and Logical reasoning By Sijwali B S
3. Quantitative aptitude for Competitive examination By R S Agarwal
4. Analytical and Logical reasoning for CAT and other management entrance test By Sijwali B S
5. Quantitative Aptitude by Competitive Examinations by Abhijit Guha 4 th edition
6. https://prepinsta.com/
7. https://www.indiabix.com/
8. https://www.javatpoint.com/

**Aptitude & Reasoning II**

**Course Code: U-APR-614**

**Duration: 30 Hrs**

**Learning Objectives:**

This course is designed to suit the need of the outgoing students and to acquaint them with frequently asked patterns in quantitative aptitude and logical reasoning during various examinations and campus interviews.

**Course Outcomes:**

On successful completion of the course the students will be able to:

1. Understand the basic concepts of quantitative ability.
2. Understand the basic concepts of logical reasoning Skills  Acquire satisfactory competency in use of reasoning.
3. Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning Ability.
4. Compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc. Syllabus.

| *Sr No* | *Contents* | *Hrs.* |
|---|---|---|
| 1 | **Unit 1: Quantitative Ability (Basic Mathematics)**<br>Number Systems<br>LCM and HCF<br>Decimal Fractions<br>Simplification<br>Square Roots and Cube Roots<br>Average<br>Problems on Ages<br>Surds & Indices<br>Percentages<br>Problems on Numbers | **8** |
| 2 | **Unit II: Quantitative Ability (Applied & Engineering Mathematics)**<br>Logarithm<br>Permutation and Combinations<br>Probability<br>Profit and Loss<br>Simple and Compound Interest<br>Time, Speed and Distance | **7** |

| | | |
|---|---|---|
| | Time & Work<br>Ratio and Proportion<br>Area<br>Mixtures and Allegation | |
| 3 | **UNIT – III Data Interpretation**<br>Data Interpretation<br>Tables<br>Column Graphs<br>Bar Graphs<br>Line Charts<br>Pie Chart<br>Venn Diagrams | **8** |
| 4 | **UNIT – IV Logical Reasoning (Deductive Reasoning)**<br>Analogy<br>Blood Relation<br>Directional Sense<br>Number and Letter Series<br>Coding – Decoding<br>Calendars<br>Clocks<br>Venn Diagrams<br>Seating Arrangement<br>Syllogism<br>Mathematical Operations | **7** |

**References:**


1. A Modern Approach To Verbal & Non Verbal Reasoning By R S Agarwal
2. Analytical and Logical reasoning By Sijwali B S
3. Quantitative aptitude for Competitive examination By R S Agarwal
4. Analytical and Logical reasoning for CAT and other management entrance test By Sijwali B S
5. Quantitative Aptitude by Competitive Examinations by Abhijit Guha 4 th edition
6. https://prepinsta.com/
7. https://www.indiabix.com/
8. https://www.javatpoint.com/

**Personality Development & Interview Techniques - I**

**Course Code: U-PDI-714**

**Duration: 30 Hrs**

**Learning Objectives:**

1. The programme aims at grooming the participants through sensitizing them about proper behaviour, socially and professionally, in formal and informal circumstances.
2. To build self-confidence
3. To build enhance self-esteem.
4. To improve overall personality of the participants.

**Course Outcomes:**

After successful completion of this course student are able to

1. Write resume
2. Groom corporate habits
3. Face frequently asked interview questions
4. Understand the importance of respect as a critical corporate value
5. Create the right impression in Interviews

| ***Sr No*** | ***Content*** | |
|---|---|---|
| **Introduction** | Introducing the connect with work programme | What is in it for me? Understanding the objective of the CWW programme |
| **Interview Skills** | Online Image | Building a strong impression online and sustaining online credibility |
| | Self-Awareness | To Know your personality through an MBTI |
| | Grooming | To study corporate grooming habits (The right attire) |
| | Body Language | To imbibe the right body language fora professional environment |
| | Confidence | To increase self-belief and faith inone's own abilities |
| | Interview FAQs | Learn to face frequently asked interview questions |

| | | |
|---|---|---|
| | Resume | To build a strong profile through effective resume writing |
| | Rejections | To understand how to handle interview rejections and come back from set-backs |
| | Teaching Hrs: 12 | |
| **Corporate Readiness** | Values | An introduction to values in a corporate environment |
| | Ownership | To learn how to be accountable and own tasks, projects etc. |
| | Respect | To understand the importance of respect as a critical corporate value |
| | Teamwork | To understand collaboration and its importance in the corporate world |
| | Auto didactism | To leverage self-learning and self-directed education |
| | Flexibility | To learn how to be flexible while playing multiple roles |
| | Time Management | To improve effectiveness at work and achieve a balance |
| | Stress Management | To understand how stress can be managed and to lower depression |
| | Positive Attitude | To take the step towards positive success by adapting the right approach |
| | LinkedIn (Profile Management) | To gain knowledge on LinkedIn account management and tips to enhance a profile |
| | SWOT Analysis | To Self evaluate and analyze strengths and areas of improvement |

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|---|---|---|
| | Teaching Hrs: 10 | |
| **Mock Interviews & Group Discussions** | In basket simulation (Learning Application) | Group Discussion rules and enhance Public Speaking skills (Group Discussion) |
| | | Tips to handle Interviews and be able to create the right impression (Mock Interviews) |
| | Teaching Hrs: 08 | |

**References:**


1. Personality Development Handbooks by D. P. Sabharwa
2. Develop Self-Confidence, Improve Public Speaking by Dale Carnegie

**Android Operating System**

**Course Code: U-ADC-334-A**

**Duration: 45 Hrs.**

**Course Outcome:**

1. Student should write xml code to design android controls
2. Students also able to write java programs with object-oriented features,
3. Students should create their own packages and able to access created packages.

| ***Sr No*** | ***Content*** | ***Hrs.*** |
|---|---|---|
| 1 | Unit –I: Android History and Scope<br>Chapter 1. Introduction to Android<br>1.1 Need of Mobile Application<br>1.2 Introduction to Android<br>1.3 Types of Mobile Applications<br>1.4 Android Versions<br>Chapter 2. Android Architecture<br>2.1 Android Architecture<br>2.2 Linux Kernel<br>2.3 Dalvik Virtual Machine | **11** |
| 2 | UNIT –II: IDE's and Java Basic<br>Chapter 3. Android IDE's & Components<br>3.1 Various IDE for Android<br>3.2 Installation of Android<br>3.3 Android Virtual Device<br>3.4 Android Components<br>Chapter 4. Introduction to Java<br>4.1 Introduction & History of Java<br>4.2 Java Applications<br>4.3 Java Architecture | **12** |

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|---|---|---|
| 3 | Unit – III: Java Programming<br>Chapter 5. Programming Basics<br>5.1 Variable, Constants<br>5.2 Hello World Program<br>5.3 Classes & Inheritance<br>5.4 Interface | **10** |
| 4 | Unit –IV: -Packages & UI Designing<br>Chapter 6. Java Packages& Threads<br>6.1 Packages<br>6.2 Thread<br>6.3 Exception Handling<br>6.4 Method Overloading<br>Chapter 7. XML & Json<br>7.1 Tag, Attribute<br>7.2 XML<br>7.3 Json | **12** |

**Mobile Application Development**

**Course Code: U-ADC-434-A**

**Duration:30 Hrs**

**Learning Objectives:**

1. Learn Designing of android application, writing java code, joining xml with java
2. Testing application on real mobile device or virtual device,
3. Perform Database connectivity

**Course Outcome:**

After Completion of this course student will be able to

1. Design xml controls, join xml controls with java object, run app on real mobile device, create services.
2. Works with different java android classes like Location Manager, Sensor Manager, SQLite Open Helper etc.
3. Get job of Android developer or xml-android app UI designer.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit-I: Android Basic**<br>What is Android?<br>Activity Life Cycle<br>Call Back Methods<br>Logcat usage<br>Android Application Structure<br>AndroidManifest.xml, , < uses-sdk><br>First Sample Android Application<br>Activity Registration<br>Activity & Intent | **5** |
| 2 | **Unit-II: Android Widgets**<br>Linear Layout, Relative Layout<br>Button, Edit Text, Text View<br>Event Handling<br>Radio Button, Checkbox<br>**Image View**<br>Seek Bar, Progress Bar<br>Switch<br>Analog Clock, Digital Clock<br>List View<br>WebView | **5** |

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|---|---|---|
| 3 | **Unit-III: Android Menus &Database Connectivity**<br>Alert Dialog<br>Prompt Dialog<br>Android Menus<br>Toast Notification<br>Custom Toast<br>Android Services<br>SQL Commands<br>SQLiteOpenHelper Class<br>SQLite Based Application | **10** |
| 4 | **Unit- IV :- Telephony & Mini Projects**<br>Telephony Manager<br>Phone Call<br>Send SMS<br>Sensor Manager<br>Torch App<br>Media Player<br>Voice To Text Conversion | **10** |

**References: -**


1. Learning Android, OREILLY By Marko Gargenta
2. Android Application Development by Pradeep Kothari

**Good Laboratory Practices**

**Course Code: U-ADC-334**

**Duration: 30 Hrs**

**Learning Objectives:**

1. Prepare students for practical study in life science laboratories.
2. Students able to handle safely every laboratory facility and know troubleshoot measures during laboratory processes.
3. Student able to keep, analyse laboratory data with accuracy.
4. Objective in minimization of Errors related with handling of laboratory material and work becomes more accurate and precise.

**Course outcomes**

After completion of this course students will be able to

1. Safely practice basic laboratory procedures and protocols in future lab situations.
2. Maintain laboratory records compliant with current industry standards.
3. Maintain Healthy, safe and secure environment at work place

| *Sr No* | *Content* | *Hrs* |
|---|---|---|
| 1 | **Unit I: Introduction**<br>Introduction to GLP, History, Scope, Fundamental points of GLP (Resources Characterization, Rules, Results, Quality assurance) Practical<br>Standard Operating Procedures | **8** |
| 2 | **Unit II: General Rules/Protocols for Lab Safety measures**<br>General Rules/Protocols for Lab Safety measures, Precaution and Safety in handling of chemicals, Laboratory tools, Glassware and instruments, Internal and External Audit,<br>Practical<br>Preparation of Standard Solution and Buffers<br>Demo and Maintenance of Internal and External Audit | **7** |
| 3 | **Unit III: Levels of Laboratories**<br>Levels of Laboratories, Log Book Maintenance, Basic SOPs for instrument handling and Maintenance<br>**Practical**<br>Calibration of Instruments:<br>PH meter, colorimeter, spectrophotometer, water bath, Distillation assembly, Burette, Pipette etc. | **8** |

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| 4 | **Unit IV: Keeping data records**<br>Keeping data records, its analysis by using statistical and mathematical tools. Result analysis and its interpretation.<br>Practical<br>Use of Microsoft word, Excel. (For Data entry, calculation and graphical representation)<br>Use of internet and emails | **7** |

**References:**


1. Handbook Good Laboratory Practices-World health organization (WHO)
2. Life science protocol manual (2018)-DBT star college scheme
3. Guidelines for good laboratory practices-Indian council of medical research, New Delhi (2008)

**Algal Cultivation Technology**

**Course Code: U-ADC-434-A**

**Duration: 30 Hrs**

**Learning objective:**

1. To learn collection, maintenance and preservation of algal culture.
2. The study of basic and applied area concerning with these micro-creatures.

**Course outcome:**

After completion of this course students will be able to

1. More learned about the micro and microorganism, its method of isolation to identification, screening and chromatographic identification of concerned products.
2. More learned and would develop skills and would enhance the attitude about the study of existing biodiversity and its utility to present demand areas.

| *Sr No* | *Content* | *Hrs* |
|---|---|---|
| 1 | **Unit I Introduction to Algae**<br>**Theory**:<br>Introduction to Algae, Life cycle of Algae, Role Algae in Ecosystem.<br>**Practical**:<br>1. Collection & Microscopic observation of algae.<br>2. Quantification of collected algae. | **8** |
| 2 | **Unit II Techniques for cultivation of Algae in laboratory**<br>**Theory**:<br>Techniques for cultivation of Algae in laboratory, seed culture & its maintenance. Designing of photobioreactor and Raceway Ponds for algal cultivation & its application.<br>**Practical:**<br>1.Isolation, Identification of economic important algae.<br>2.Inoculam development pilot scale production | **7** |
| 3 | **Unit III Algal Biotechnology**<br>**Theory:**<br>Algal Biotechnology – potential of microalgae for SCP, carotene, Biofertilizer, Biodiesel; Principles of mass cultivation of microalgae and its Economic Importance. | **8** |

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| | **Practical:**<br>1. Qualitative estimation of protein from algae.<br>2.Chromatographic separation of essential biomolecules from algae. | |
| 4 | **Unit IV Business economics for algal cultivation**<br>**Theory**<br>Business economics for algal cultivation, production and processing and Futuristic approaches in algal biotechnology.<br>**Practical**<br>1.Visit to industry actively engaged in algal technology.<br>2.Project report on algal technology.<br>3. Study of Spirulina production and its products. | **7** |

**References:**


1. Algal Biotechnology by Mihir Kumar Das
2. Algal Culturing Techniques By: Robert A. Andersen

**Biofertilizer - I**

**Course Code: U-ADC-540-B**

**Duration: 45Hrs**

**Learning Objectives:**

1. To make the students to understand role of bio-fertilizers and its mechanism of action in agriculture.
2. To make the students understand the basic principles of production of different biofertilizers as per need of agriculture.
3. To make the students understand the basic concepts of mechanism of action of nitrogen fixing and phosphate solubilizing bacteria.
4. To teach isolation, characterization, mass inoculum production and field application of bio-fertilizers.

**Course Outcomes**:

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

1. Explain isolation and role of various soil bacteria in bio-fertilizer production.
2. Describe production steps and specific requirements for each bio-fertilizers
3. Restore the soil fertility by performing the sustainable agriculture practices via organic farming
4. Apply the knowledge gained to generate opportunities of self-employability.

| *Sr No* | *Content* | *Hrs* |
|---|---|---|
| 1 | **Unit I Overview of biofertilizers**<br>General account about the microbes used as bio-fertilizer – Rhizobium– isolation, identification, mass multiplication, carrier-based inoculants, Actinorrhizal symbiosis.<br>Practical 1: Isolation and characterization of Rhizobium<br>Practical 2: Mass production and carrier-based inoculum preparation of Rhizobium | **10** |
| 2 | **Unit II Isolation and production of biofertilizers**<br>Azospirillum: isolation and mass multiplication – carrier-based inoculant, associative<br>effect of different microorganisms. Azotobacter: classification, characteristics – crop response to Azotobacter inoculum, maintenance and mass multiplication.<br>Practical 1: Isolation and characterization of Azospirillum and Azotobacter<br>Practical 2: Mass production and carrier-based inoculum preparation of Azospirillum and Azotobacter | **12** |

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| 3 | **Unit III Algal fertilizers**<br>Cyanobacteria (blue green algae), Azolla and Anabaena azolla association, nitrogen fixation, factors affecting growth, blue green algae and Azolla in rice cultivation.<br>Practical 1: Isolation and characterization of Cyanobacteria from water bodies<br>Practical 2: Production of Cyanobacteria based flakes | **13** |
| 4 | **Unit IV PSB production**<br>Phosphate solubilizing microbes (anyone / consortia) - Isolation, characterization,<br>mass inoculum production, field Application<br>Practical 1: Isolation and characterization of PSM from soil<br>Practical 2: Mass production and carrier-based inoculum preparation of PSB | **10** |

**References:**


1. A Textbook of Biotechnology- Dubey, R.C., (2005) S.Chand & Co, New Delhi.
2. Biotechnology Kumaresan, V. (2005), Saras Publications, New Delhi.
3. Vermiculture and Organic Farming Sathe, T.V., (2004) Daya publishers.
4. Soil Microbiology Subha Rao, N.S. (2000), Oxford & IBH Publishers, New _Delhi.
5. Bio-fertilizers and organic _Farming Vayas,S.C, Vayas, S. and Modi, H.A. (1998) AktaPrakashan, Nadiad
6. Biotechnology of Biofertilizers Kannaiyan, S., (2003), CHIPS, Texas.
7. Hand book of Microbial Biofertilizers Rai, M.K., (2005), The Haworth Press, Inc. NewYork

**Biofertilizer - II**

**Course Code: U-ADC-640-B**

**Duration: 45 Hrs**

**Learning objectives:**

1. To explain the role of genetically engineered micro-organisms for improvement of bio fertilizers.
2. To understand Socio-economic constraints in organic farming
3. To understand the Quality control of bio-fertilizers
4. To distinguish Lab to land application of bio-fertilizers

**Course Outcomes:**

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

1. Describe productions steps and specific requirements for biofertilizers
2. Produce composting from various resources and study recycling.
3. Make skilled manpower for biofertilizer industry.
4. Perform field experiment to check efficacy of biofertilizers.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| **1** | **Unit I: Biofertilizer**<br>Current and future needs,<br>Use of Genetically Engineered Micro-organisms for improvement of biofertilizers, Indigenous technology based Biofertilizers and its advantages over standard Biofertilizers<br>**Practical 1:** Survey of Biofertilizer products in market<br>**Practical 2:** Introduction to GMO and Indigenous Technology | 10 |
| **2** | **Unit II: Component of organic farming system Manures**<br>Compost, FYM, biogas slurry, sewage and sludge, green manures, biofertilizers. Role of manures. Socio-economic constraints in organic farming, Integrated nutrient management.<br>**Practical 1:** Production of compost from various resources<br>**Practical 2:** C, N, P and K analysis of organic manure | 12 |
| **3** | **Unit III: Standards for commercial production of biofertilizers**<br>Quality control of biofertilizers. Packaging, labelling and storage of Biofertilizers, Certifications for commercial Biofertilizer units, Effect of storage on efficacy of Biofertilizers.<br>**Practical 1:** Effect of storage on efficacy of Biofertilizer<br>**Practical 2:** QC tests of Biofertilizers | 13 |

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| **4** | **Unit IV: Lab to land application of Biofertilizers**<br>Designing and implementation of Pot experiments, field applications to check efficacy of Biofertilizers, Nodulation experiment, Application of Randomized block design for field experiments. Awareness program among surrounding community for Biofertilizers use.<br>**Practical 1:** Designing of pot experiments for efficacy study of Biofertilizers **Practical 2**: Designing of field experiment to efficacy study of Biofertilizers | 10 |

**References:**


1. A Text book of Biotechnology Dubey, R.C., (2005) S.Chand & Co, New Delhi.
2. Biotechnology- Kumaresan, V. (2005), Saras Publications, New Delhi.
3. Vermiculture and Organic Farming Sathe, T.V., (2004), Daya publishers.
4. Soil Microbiology, Subha Rao, N.S. (2000), Oxford & IBH Publishers, New _Delhi.
5. Bio-fertilizers and organic _Farming Vayas,S.C, Vayas, S. and Modi, H.A. (1998)Akta Prakashan, Nadiad
6. Bioetchnology of Biofertilizers- Kannaiyan, S., (2003), CHIPS, Texas**.**

**Advanced Computer Network**

**Course Code: CER-CAN-1**

**Duration: 30 Hrs**

**Learning Objectives:**

1. To build an understanding of the fundamental concepts of computer networking.
2. To familiarize the student with the basic categorization and terminology of the
3. computer networking area.
4. To introduce the student to advanced networking concepts

**Course Outcomes:**

After successful completion of this course students should be able to:

1. Independently understand basic computer network technology.
2. Understand and explain Data Communications System and its components.
3. Identify the different types of network topologies and protocols.
4. Identify the different types of network devices and their functions within a network.
5. Understand and building the skills of sub netting and routing mechanisms

| Sr. No. | Contents | Hrs |
|---|---|---|
| 1 | **Unit I Course** Introduction.<br>Client Server Concept.<br>Network Topologies.<br>Components and Physical Media. | 7 |
| 2 | **Unit II Introduction of Wireless Network.**<br>Comparison between Wired and Wireless Network.<br>Why we use Wireless Network.<br>Disadvantages of Wireless Network.<br>Radio Frequencies signal (RF Signals) | **8** |
| **3** | **Unit III Types of Wireless Networks**.<br>Requirement to create wireless Network.<br>Wi-Fi (Wireless Fidelity)<br>Bluetooth<br>Li-Fi | **7** |

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|---|---|---|
| **4** | **Unit IV 2G and 3G Network.**<br>4G and 5G Network.<br>Security Options in Wireless Network.<br>IEEE Wireless Standards.<br>Ad-hoc and Sensor Network. | **8** |

**References:**


1. Computer Networks by Andrew S Tanenbaum
2. Data and Computer Communications by William Stallings

**Programming with Python**

**Course Code: CER-PWP-2**

**Duration: 30 Hrs**

**Learning Objectives:**

1. To acquire programming skills in core Python.
2. To be aware about the data types, looping structure
3. To be able to know the use of string, lists, dictionary and tuples
4. To learn the concepts of Exception handling and file handling
5. To acquire Object Oriented Skills in Python
6. To use Graphical User Interface for the application development.

**Course Outcomes:**

1. After successful completion of this course, students will be able to –
2. Write python programs that use strings, lists, tuples and dictionaries
3. Demonstrate the concepts of Object-Oriented Programming using python programs
4. Write python programs that stores and manipulates data using file handling functions
5. Develop Windows applications with Graphical User Interface.

| ***Sr No*** | ***Contents*** | ***Hrs*** |
|---|---|---|
| 1 | **Week 01**<br>Course, Introduction, What Is Python?, Python Features, Downloading, Installing, Running, Python Working with Python(IDLE), Basic Syntax, First Python Program, Variable and Data Types, Operator | 7 |
| 2 | **Week 2:**<br>Conditional Statements: If, If- else, Nested if-else Looping Statements: For, While, Nested loops Control Statements: Break, Continue, Pass<br>Working with Strings: Accessing Strings Basic Operations String slices Function and Methods | 8 |
| 3 | **Week 3:**<br>Working with Lists: Introduction Accessing list Operations Function and Methods Working with Tuple: Introduction Accessing tuples Operations Functions and Methods Working with dictionaries: Introduction Accessing values in dictionaries Properties | 7 |
| 4 | **Week 4:**<br>Working with Functions: Defining a function Calling a function Types of functions Function Arguments Exception Handling: Exception Exception | 8 |

| | | |
|---|---|---|
| | Handling Except clause Try? finally clause OOPs concept: Class and object Attributes Inheritance Overloading Overriding Data hiding | |

**References:**


1. Core Python Programming- Dr. R Nageswara Rao (Dreamtech Press)
2. Core Python Programming – Wesley J. Chun, Printice Hall PTR, First edition.
3. Learning To Program with Python - Richard L. Halterman.

**Software Development Using .NET**

**Course Code: CER-STN-3**

**Duration: 30 Hrs**

**Learning Objectives:**

1. To understand the principles of OOP and create and use classes and objects in C#.
2. To learn how to handle exceptions and errors in C# using try-catch blocks.
3. To gain an understanding of the .NET Framework architecture.
4. To create graphical user interfaces (GUI) using WinForms, WPF, or ASP.NET for web applications.
5. Connect to databases using ADO.NET or Entity Framework.

**Course Outcomes:**

After Completion of this course students will be able to

1. Design and implement object-oriented solutions and apply principles of encapsulation and polymorphism effectively.
2. Identify and handle exceptions in C# programs using try-catch blocks.
3. Navigate and utilize the .NET Framework to access pre-built classes.
4. Create Windows applications with user-friendly interfaces using WinForms or WPF.
5. Connect to databases using ADO.NET or Entity Framework.
6. Develop applications that can perform basic CRUD (Create, Read, Update, Delete) operations on a database.

| Sr. No. | Content | Hrs |
|---|---|---|
| 1 | **Unit I Introduction**<br>Course Introduction<br>Software development life cycle<br>Introduction to .net<br>.net framework | 7 |
| 2 | **Unit II Introduction of Visual Studio IDE**<br>Hello world program<br>Windows Form Application<br>Message Box | 8 |

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| 3 | **Unit III**<br>Use of Text Box, Button and Label<br>Input Validation<br>Use of Combo Box, List Box<br>Use of Date Time picker, Timer<br>Play Audio/Video | 8 |
| 4 | **Unit IV**<br>Database Architecture<br>Data Set, Data Adapter, Data Reader class<br>Database Connectivity<br>Show Database table record in Data Grid View<br>Insert/Update/Delete operation on Database. | 7 |

**References:**


1. Programming in C# A Primer - Second Edition By – E Balagurusamy
2. .net 4.0 programming black book by Kogent Learning Solutions Inc.
3. C# 2010 programming black book by Kogent Learning Solutions Inc.

**Cyber Security & Ethical Hacking**

**Course Code: CER-CSEHC-1**

**Duration: 30 Hrs**

**Learning Objectives:**

1. To understand importance of Cyber Security in daily life and also in co-operative world.
2. To learn basic concepts to secure confidential, private data.
3. To learn basic ethical hacking techniques and know about the Cyber laws.

**Course Outcomes:**

After completion of this course students will be able to

1. Understand the need of protecting and securing important data.
2. Use countermeasures for security problems.
3. Use different techniques to keep systems and information secure from intruders.
4. Use kali Linux OS for hacking.

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit–I Introduction to cyber security and Networking concepts**<br>Defining computer security, Types of hackers and their working, Common technical keywords, Tools and Techniques<br>Basics of Network, Network fundamental-network interface/network adapter, Types of networks, Port scanning, Domain name, DNS | **7** |
| 2 | **Unit II Ethical hacking and Security techniques and cyber laws**<br>Identity attacks-Anonymox, Tor browser, MAC address, Steganography.<br>Email security, Malware security, Password cracking, Sniffing, Phishing, other types of attacks Wireless hacking, Android phone hacking. | **8** |
| 3 | **Lab Work: (10 Hrs.)**<br>1) Collecting IP address and other metadata.<br>2) Creating phishing pages and detecting such pages.<br>3) Applying password policies and cracking password.<br>4) Reinstalling browser extensions.<br>5) Detecting malware files.<br>6) Implementing security for Wi-Fi. | **15** |

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|---|---|---|
| | 7) Android attacks and implementing security.<br>8) Implementing encryption on email.<br>9) Implementing encryption on data. | |

**References:**


1. Hacking: The Art of Exploitation by Jon Erickson
2. The Hacker Playbook by Peter Kim

**Diploma in Vocal Light Music**

**Course Code: CER-VLM-1**

**Duration:45Hrs**

**निष्कर्ष :**

1. सुगम संगीत गायनामधुन व्यवसायीक कलावंत निर्माण होतील .
2. सुगम संगीत गीतप्रकार व त्या त्या कलाप्रकाराच्या अनुशंगाने विद्यार्थ्यांमध्ये गायन करण्याची क्षमता निर्माण होईल .
3. संगीतातील विविध राग व तालाची माहिती अभ्यासता येईल .
4. सुगम संगीतातील विविध गीतप्रकार गाता येतील.
5. सभागायनाच्या माध्यमातून विद्यार्थ्यांमध्ये स्वतंत्र गायन करण्याची क्षमता निर्माण होईल .
6. विविध कलावंताच्या चरित्राचा अभ्यास करून विद्यार्थ्यांना एक प्रेरणा मिळेल .
7. विद्यार्थ्याला संगीत मैफिलीचे रसगृहण मंचप्रदर्शन, संगीत मैफिलीची बातमी तयार करण्याची क्षमता निर्माण होईल

| ***Sr No*** | ***Contents*** | ***Hrs*** |
|---|---|---|
| 1 | प्रात्यक्षिक पेपर क्र . १<br>१ स्वरअलंकार<br>२ व्याख्या : संगीत , नाद , स्वर , अरोह , अवरोह पक्कड , राग , सप्तक ,शुद्धस्वर, तिवृस्वर , कोमलस्वर,<br>चलस्वर, अचलस्वर, वर्ज्यस्वर , वादी , संवादी ,अनूवादी , थाट, ताल ,मात्रा खंड , आवर्तन , ठेका , सम , काल ,<br>टाळी , लय इ .<br>३ राग : काफी, बागेश्री ,यमन , वृंदावनी सारंग बिहाग, दुर्गा , भैरवी ,भुप<br>४ ताल : दादरा , कहेरवा, रूपक , झपताल त्रिताल , एकताल<br>५ गीतप्रकार : लक्षणगीत , तराणा | **12** |
| 2 | प्रात्यक्षिक पेपर क्र . २<br>१ चित्रपटगीते<br>२ भावगीते<br>३ भक्तिगीते / अभंग<br>४ नाटयगीते<br>५ कराओके सिंगिंग | **11** |
| 3 | प्रात्यक्षिक पेपर क्र . ३<br>१ समुहगीते<br>२ युगलगीते<br>३ महाराष्ट्राच्या लोककला :<br>- पोवाडा<br>- गोंधळ<br>- भारूड | **11** |

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| | - कव्वाली<br>- पारंपरिक भजन<br>- लोकगीत | |
| 4 | प्रात्यक्षिक पेपर क्र . ४<br>१ सभागायन<br>२ प्रकल्प लेखन<br>पेपर क्र . ५ लेखी<br>१ सुगम संगीतातील विविध गीतप्रकाराची माहिती<br>२ वाद्यवर्गीकरण<br>३ चरित्र :<br>१) सुधीर फडके<br>२) लता मंगेशकर<br>३)भिमसेन जोशी<br>४ निबंध : दैनंदिन जीवन व संगीत<br>५ संगीत मैफिलीचे रसगृहण<br>६ मंचप्रदर्शन , कलावंतांची मुलाखात व संगीत कार्यक्रमाची बातमी तयार करणे.<br>७ प्रात्यक्षिक पेपर क्र. १ मधील सर्व ताल लिपीबद्ध करणे<br>८ प्रात्यक्षिक पेपर क्र. १ मधील सर्व रागांची संपूर्ण शास्त्रीय माहिती | **11** |

**References:**

1. Essence of Hindustani Classical Music Vocal Tradition by Shardanand Sinha (2018).

**Self Defence and Karate Training**

**Course Code: CER-SDKT-1**

**Duration: 30Hrs**

**Learning Objectives:**

The Self Defence and Karate Training aims at developing the self-confidence and physical fitness of the students.

**Course Outcomes:**

After completion of this course students will be able to

1. Improve physical and mental health
2. Build self-esteem and strengthen self-confidence
3. Improve your academic performance by raising your level of energy, focus and concentration
4. Learn and master self-defense techniques

| *Sr No* | *Contents* | *Hrs* |
|---|---|---|
| 1 | **Unit–I: Physical Fitness:**<br>Training imparts physical exercise from toe to eyes for physical and mental development. | 8 |
| 2 | **Unit–II: Kicks:**<br>Training imparts types of kicks with different levels for defense | **7** |
| 3 | **Unit–III: Punches and Blocks:**<br>Training includes punches and blocks with different levels for attack and self defense | **8** |
| 4 | **Unit–IV: Techniques of Self Defense:**<br>Training imparts foot work, blocking, counter attack, bending and dodging | **7** |

**References:**

1. Karate Kudos: Learning Shotokan Way of Martial Arts by Tamanna Mishra (2020)

**Yog Pranayam and Dhyan Dharana**

**Course Code: CER-YPDD-1**

**Duration: 30 Hrs**

**Learning objectives:**

1. To acquaint student with the Practical knowledge of Yogasana, Kriya, Bandhas, Mudra, Meditation and Pranayama etc.
2. To enable student to become competent and committed professionals willing to perform as Yoga trainer.
3. To make student to use competencies and skills needed for becoming an effective Yoga trainer
4. To enable student to understand the types of the types of Yoga

**Learning Outcomes:**

After completion of this course students will be able to

1. develop conceptual understanding of Traditional Yoga.
2. enhance knowledge of Yoga Sutra.
3. enhance and apply the knowledge of Asthang Yoga for the wellbeing of people.
4. develop and apply knowledge of Gyan Yoga, Karma Yoga, and Bhakti Yoga.
5. select and demonstrate different yogic activities like Asanas, Pranayamas and Shudhi
6. Kriyas for promotion of health.

| ***Sr No*** | ***Contents*** | ***Hrs*** |
|---|---|---|
| 1 | Unit–I: Introduction<br>i) Definitions of Yoga, Meaning, Aim, Concepts and misconcepts.<br>ii) Preparation for Yoga Practice – place, time, food, dress, rules and regulations, limitations etc.<br>iii) Schools of Yoga - Introduction of the following Schools of Yoga.<br>a) Raja yoga – meaning, limbs, powers, kaivalya etc.<br>b) Hathayoga – meaning, limbs, important texts, practise etc.<br>c) Karmayoga – Karma and character, duty, non-attachment etc.<br>d) Bhaktiyoga – meaning, aids to bhakti, basic disciplines of bhakti, gauni bhakti, para bhakti, bhavas etc.<br>e) Jnanayoga –meaning, adhikari, sadhana catustaya, methods of practice, attaining realization etc. | 8 |

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|---|---|---|
| 2 | Unit–II: Basis of Yoga Philosophy and Astanga Yoga<br>i) Evolution Theory of Sankhya and Yoga.<br>ii) Astanga Yoga - Yama, Niyama, Asana, Pranayama.<br>iii) Astanga Yoga - Pratyahara, Dharana, Dhyana, Samadhi. | **7** |
| 3 | Unit–III: Introduction to Kriyas, Asanas.<br>i) Shatkriyas – according to Hatha Pradipika and Gheranda Samhita.<br>ii) Asanas – according to Hatha Pradipika and Gheranda Samhita. | **8** |
| 4 | Unit–IV: Introduction to Pranayamas, Bandha & Mudra,<br>Meditation Techniques.<br>i) Important Pranayamas – eight.<br>ii) Important Bandhas – Three.<br>iii) Important Mudras - 25.<br>iv) Meditation Techniques | **7** |

**References:**


1. Swami Digambarji: Hathayoga pradeepika SMYM Samiti, Kaivalyadhama, Lonavala, 1998.
2. Swami Omananda Teertha: Patanjala Yoga Pradeepa, Gita Press, Gorakhpur, 2013.

**Certificate Course in GIS**

**Course Code: CER-GIS-1**

**Duration: 30 Hrs**

**Learning Objectives:**

1. To introduce the concepts and components of Geographic Information system (GIS) to the students.

2. To make the students aware about the geographical data like spatial and non-spatial and components of maps.

**Course Outcomes:**

1. The students will understand the concepts and components of GIS.

2. The students will come to know the types of geospatial data and can prepare maps.

| ***Sr No*** | ***Contents*** | ***Hrs.*** |
|---|---|---|
| 1 | Theory and Lab course in Arc View GIS<br>Introduction to Arc View and its Utility. | **6** |
| 2 | Spatial data input- registration, screen digitization, editing etc. | **6** |
| 3 | Working with Arc View project, View, Tables, Charts, Layout, and Script etc. | **6** |
| 4 | Spatial analysis- Geo-processing wizard, Attribute and Spatial queries. | **6** |
| 5 | Practical with GPS | **6** |

## References:


1. GIS reference material volume I by Roy P.S. published by IIRS 2000.
2. Elements of practical Geography by R.L. Singh published by Kalyani publisher 1979.
3. Map Interpretation by Ramamurthy K. Rex. Printer Madras 1982.
4. Geographical Interpretation of Indian Topographical Maps by Tamaskar B.G. and Deshmukh U.M. Orient Longman, 1974
5. Introduction to GIS by Kang-Stung-Chang, published by Tata McGraw Hill publication.com.2002.
6. An introduction to GIS by Heywood I. Cornelius S. Carrer S. published by Pearson Education Pvt. Ltd. 2002.
7. The GIS book by Korte G.B. Published by onward press 2001.