Kamla Nehru Mahavidyalaya, Nagpur

QLM 1.3.1

SYLLABUS OF VALUE ADDED/ CERTIFICATE PROGRAM OFFERED

Session 2022-23

KAMLA NEHRU MAHAVIDYALAYA, NAGPUR

Mathematics Department

"Value Added course in Vedic Mathematics"

Academic Session: 2022 – 2023 Duration: 15 days

Teaching Plan

Sr. No	Topic	Hours
1	Addition	2 Hours
2	Subtraction	2 Hours
3	Multiplication	2 Hours
4	Square and Square root	2 Hours
5	Cube and Cube root	2 Hours
6	Magic Calendar	2 Hours
7	Digital root	2 Hours
8	Osculation	2 Hours
9	Quadratic Equation	2 Hours
10	Cubic Equation	2 Hours
11	Biquadratic Equation	2 Hours
12	Division	2 Hours
13	Pythagoras Theorem	2 Hours
14	Apollonius's Theorem	2 Hours
15	Compound multiplications	2 Hours

Dr. Manjusha V. Borkar

Head, Department of Mathematics,

Kamla Nehru Mahavidyalaya, Nagpur

Dr. D.S. Badwaik

Kamla Nehru Mahavidyalaya, Nagpur

Principal
Kamla Nehru Mahavidyalaya
Sakkardara Chowk, Nagpur

KAMLA NEHRU MAHAVIDYALAYA

NAGPUR

Mathematics Department

Skill Based Certificate Course on Quantitative Aptitude(2022-23)

Syllabus

Paper I – Arithmetic Ability : (30Hours) (2 Credits)

LCM & HCF, Simplification, Average, Problems of Ages, Percentage, Ratio & Proportion, Time & Work, Time & Distance Problems, Permutation & Combination, Probability,

Paper II – Reasoning and Mental Ability :(15Hours) (1 Credits)

Series Completion A.P. & G.P., Data Interpretation, Direction sense Test, Mirror Image and Water Image, Problems on Pattern,

HEAD
DEPARTMENT OF MATHEMATICS
KAMLA NEHRU MAHAVIDYALAYA,
SAKKARDARA CHOWK, NAGPUR.

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Kamla Nehru Mahavidyalaya

Department of Environmental Science

Value Added Course (M.Sc. II)

Green Technology for Sustainable Development

Syllabus

Session: 2022-2023

Theory:

Unit I:Introduction to Green Technology & Environmental Challenges: Overview of green technology & its role in sustainability , Historical perspectives and key milestones in green technology, Identifying global environmental challenges, The role of technology in addressing environmental issues.

Unit II: Renewable Energy Sources and Energy Efficiency : Solar Energy , Wind energy, hydro energy and geothermal energy technologies. Advantages and limitations of each energy sources. Energy efficient building design and technologies, Sustainable architecture ,Energy conservation practices in industries and households.

Unit III: Green Technology in Sustainable Development : Sustainable Transportation: Electric vehicles and their impacts, Public transportation and smart mobility solutions. Sustainable Agriculture: Precision farming and agro-ecology, vertical farming and aquaponics. Waste Management and Recycling: Waste to energy technologies, circular economy principles.

Unit IV: Green material and Pollution Control Technology: Sustainable material and their application , Eco- friendly manufacturing processes, Water purification and air pollution control technologies. Monitoring and measuring environmental parameters, emerging technology in the green sector , Ethical and social considerations in green technology.

Practical:

1) Study of Renewable Energy Sources:

a) Solar b) Wind c) Hydropower d) Biomass and Bioenergy

2) Study of waste to energy processes .(Methane Production)

3) Conducting energy audit for residential and commercial spaces (Identifying energy saving opportunities).

4) Hands on training on installation and maintaining solar panels.

5) Sorting and processing of recyclable material.

6) Designing and installing rainwater harvesting system .

7) Study of water purification techniques.

8) Study of practical application of sustainable construction materials.

9) Study of Setting up home automation for energy efficiency.

10) Case study on successful implementation of green technology.

11)Study of eco-friendly building material.

12) Study of E-waste management and recycling.

Kamla Nehru Mahavidyalay
Department of Music
Skill Based Certificate Course
Syllabus
Session - 2022-23

- Some Basic information
- Scales (C,D,E,F,G,A,B)
- Basic chords(major) and (minor)
- Sharp Scale [(C#, D#, (E#), f #,G#, A#, (B#)]
- Advance chords (major and minor)
- Few Songs - Hollywood or Bollywood
- Arpeggios pattern

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KAMLA NEHRU MAHAVIDYALAYA, NAGPUR

DEPARTMENT OF PHYSICS

VALUE ADDED PROGRAM

2022-2023

Name of Program: Designing Regulated and un-regulated Power Supply

SYLLABUS

In the world of electronics, power supply plays an essential role. It provides the necessary power for electronic devices to function correctly. The power supply can either be regulated or unregulated. Both regulated and unregulated power supply has their advantages and disadvantages, and it's essential to understand the difference between them to make an informed decision on which type of power supply to use. In the present value-added program go through a well-defined syllabus as follows

1. Introduction of the resistor, capacitor, Diodes, Transistor, Integrated circuits(ICs) Transformer, printed circuit board

2. Unregulated Power Supply-Regulated Power Supply, Steady and Pulsating DC Voltages Rectifiers Half-wave Rectifier, Full-wave Rectifier-Full-wave Bridge Rectifier, Filters, Series Inductor Filter Shunt Capacitor Filter Effect of Increasing Filter Capacitance-LC Filter, The CLC or Pi Filter-Bleeder Resistor-Voltage Regulation-Zener Diode Shunt Regulator, Transistor Series Voltage Regulator Controlled Transistor Series Regulator, Transistor Shunt Voltage Regulator, Transistor Current Regulator, Voltage Dividers Complete Power Supply Voltage Multipliers Half-wave Voltage Doubler, Full- wave Voltage Doubler-Voltage Tripler and Quadrupler

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DEPARTMENT OF PHYSICS

VALUE ADDED PROGRAM

2022-2023

Name of Program: 1. Basics of Instrumentations

2. Identification & Study of Electronics

When working with such heavy and dangerous equipment, getting accurate measurements can be a very difficult process. This is why instrumentation is so important. Because of the number of processes involved in modern machines, accurate instrumentation is needed to ensure that everything is operating properly. In the present value-added program go through a well-defined syllabus as follows;

1. Basics of Instrumentations

Least counts and measurements using calculation of

a) Vernier Calliper

b) Screw Gauge

c) Travelling Microscope

d) Spectrometer

e) Ammeter

f) Voltmeter, Analog Multimeter and Digital Multimeter

2. Identification and Study of Electronics Components

a) Capacitors

b) Resistors

c) Potentiometer

d) Transistor

e) Diodes

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Certificate Course on
Instrumental Methods of Analysis
Department of Chemistry

Session 2022-23

Teaching Plan for Certificate Course

Practical Session

Sr. No	Date	Duration	Name of Faculty Members	Name of Instruments (Practicals)
1.	Day-1	2.00 Hr	Ms. Snehal Pachare	Calibration, Principle & Applications of Potentiometry
2.	Day-2	2.00 Hr	Dr. R. R. Dubey	Calibration, Principle & Applications of Conductometery,
3.	Day-3	2.00 Hr	Dr. M. S. Wagh	Determination of Sound velocity by Ultrasonic Inter-ferrometer for liquids
4.	Day-4	2.00 Hr	Ms. S. S. Nagre	Callibration and Applications of UV-Visible Spectrophotometer
5.	Day-5	2.00 Hr	Ms Swati Burde	Calibration and Applications of Coloured samples by Colorimetry
6.	Day-6	1.00 Hr	Ms. Swati Burde	LCR Bridge Meter, Electrical conductivity and measurements

7.	Day-7	2.00 Hr	Dr. S. M. Gadegone	Preparation of samples by polymerization technique and Making pallets by using Hydraulic press Machine
8.	Day-8	1.00 Hr	Prof. W. B. Gurnule	Ion meter, determination of pH and ions
9	Day-9	1.00 Hr	Dr. W. B. Gurnule	FTIR Spectrophotometer, Measurements of IR frequency of different **Solid** samples for functional groups and identification of compounds(DRS System)
10	Day-10	1.00 Hr	Dr. W. B. Gurnule	FTIR Spectrophotometer, Measurements of IR frequency of **Liquid** samples
11	Day-11	1.00 Hr	Ms. Swati Burde	LCR Bridge meter, Measurement of electrical conductivity
12	Day-12	1.00 Hr	Ms. Swati Nagare	Analysis of samples by HPLC
13	Day-13	2.00 Hr	Dr. R. R. Dubey	TLC Techniques and Chromatography
14	Day-14	2.00 Hr	Dr. S. P. Puppalwar	PL Meter, Excitation and emission peaks of solid samples
15	Day-15	2.00 Hr	Ms. Swati Nagre	Ion-exchange and Solvent Extraction techniques
			TOTAL	**24 Hrs**

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Certificate Course on

Instrumental Methods of Analysis

Department of Chemistry

Session 2022-23

Teaching Plan for Certificate Course

Theoretical Session

Sr. No	Date	Duration	Name of Faculty Member	Topic and Sub-topics (Theory)
1.	Day-1	1.00 Hr	Prof. M. Swaminathan	3D Florescence Spectroscopy
2.	Day-2	1,00 Hr	Dr. K. A. Nandekar	TGA and Calculations of Kinetic parameters
3.	Day-3	1.00 Hr	Prof. W. B. Gurnule	HPLC Method of Analysis
4.	Day-4	1.00 Hr	Dr.Naresh Bansod	Two Roll Mills Method
5.	Day-5	1,00 Hr	Dr, Meghna Jumle	TLC Technique
6.	Day-6	1.00 Hr	Dr. S. S. Rahangdale	Electrical Conductance studies by LCR- Q meter
7.	Day-7	1.00 Hr	Ms. Swati Burade	Polarimeter, Refractometer
8.	Day-8	1,00 Hr	Dr. R. R. Dubey	FTIR Spectroscopy
9	Day-9	1.00 Hr	Ms.Snehal Parchake	Calorimetric, Principle & Applications
10	Day-10	1.00 Hr	Dr. S. Mandavgade	NMR spectroscopy

11	Day-11	1.00 Hr	Dr. S. M. Gadegone	Potentiometry and Conductoretry Methods
12	Day-12	1.00 Hr	Dr. S. S. Umare	Conductivity Measurement
13	Day-13	1.00 Hr	Dr. W. B. Gurnule	Confirmation of structure by TGA method
14	Day-14	1.00 Hr	Dr. S. S. Rahangdale	Synthesis, Characterization of Copolymer Applications
15	Day-15	1.00 Hr	Dr. M. S. Wagh	Ultrasonic Inter-ferrometer for liquids
			TOTAL	**15 Hrs**

Kamla Nehru Mahavidyalaya, Sakkardara, Nagpur

Electronics Department Organized Short term Certification Course on *"Electronics Equipment"*

(Session 2022-23)

Teaching and Practical Conducting Time Table

1. **Analog based Equipment:** Mr. Pravin M. Sontakke

Time	Day 1 Topics	Day 2 Topics	Day 3 Topics	Day 4 Topics	Day 5 Topics
12 to 1 pm	Basic Signal Structure in analog Instrumentation	Need of analog based measuring Equipment	Characteristics of analog based measuring Equipment	Properties of analog based measuring Equipment	Accuracy of analog based measuring Equipment
1to 2pm	Practical on it.	Practical on it.	Practical on it.	Practical on it.	Practical on it.

2. **Digital based Equipment:** Dr. Ashish K. Rewatkar

Time	Day 6 Topics	Day 7 Topics	Day 8 Topics	Day 9 Topics	Day 10 Topics
12 to1 pm	Need of measuring digital based Equipment	Categories of digital Instrumentation	Advance Categories of digital Instrumentation	Parameters and Advantages of digital Equipment.	Accuracy of Digital Instrumentation over analog based Instrumentation
1to 2pm	Practically demonstration on it.	Practically demonstration on it.	Practically demonstration on it.	Practical on it.	Practical on it.

3. **PLC and Microcontroller Automation based Equipment:**

Time	Dr. Ashish K. Rewatkar		Mrs. Kiran S. Ambaskar		
	Day 11 Topics	**Day 12 Topics**	**Day 13 Topics**	**Day 14 Topics**	**Day 15 Topics**
12 to1 pm	What is Microprocessor and where it is used in Instrumentation.	Microcontroller based Instrumentation.	Basic functions of PLC advantages over microcontroller	basic architecture, register basics,	counter function, ladder diagram
1to 2pm	Practical on microprocessor Programing.	Practical on microcontroller Programing.	Basic architecture, register basics timer functions and Practical on it.	Practical on it.	Practical on it.

4. **Virtual Instrumentation:** Mr. Devidas B. Sonkusare

Time	Day 16 Topics	Day 17 Topics	Day 18 Topics	Day 19 Topics	Day 20 Topics
12 to1 pm	What is Virtual Instrumentation?	Historical perspective and, Advantages of VI architecture of a virtual instrument	data-flow techniques	Graphical programming in data flow Comparison tools.	Development of Virtual Instrument using GUI.
1to 2pm	Practical based on it.	Architecture of a virtual instrument Practical.	Basic Programing on it.	Basic Programing on it.	Basic Programing on and advance tools testing Practical.

5. **Biomedical Instrumentation:** Mrs. Pratibha B. Sakhare

Time	Day 21 Topics	Day 22Topics	Day 23 Topics	Day 24 Topics	Day 25 Topics
12 to1 pm	Man-instrument basic biomedical system	Biomedical imaging techniques: MRI	X-ray tomography, Ventilators	hemodialysis machine	use of telemetry in diagnosis
1to 2pm	infrared thermometer (non-contact device), Patient monitoring system.	ultrasonic CT SCAN and practically demonstration	Biomedical instruments: Electrocardiography (ECG) and practically demonstration	cardiac pacemakers and practically demonstration	Lasers in biomedical field

6. **Communication based Equipment:** Mrs. Pratiksha S. Kuhikar

Time	Day 26 Topics	Day 27 Topics	Day 28 Topics	Day 29 Topics	Day 30 Topics
12 to1 pm	Fundamentals of antenna	Friis transmission formula, field zones	The antenna family, short dipole antenna	Broad-side and end-fire arrays	Helical beam antenna, horn antenna
1to 2pm	Antenna radiation pattern and its Practically Demonstration.	Linear, elliptical and circular polarization it's Practically Demonstration.	Antenna arrays and its types its Practically Demonstration.	Linear arrays, folded dipole, Yagi - Uda array antenna it's Practically Demonstration.	Rhombic antenna, parabolic reflectors its Practically Demonstration.

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Value Added Course
On
Computer Hardware Maintenance

Ele

2022-23

Unit – 1 **4 hrs.**

Basic computer System and Peripherals: Input and Output devices, their types and specification, CPU, Memory devices: Primary and Secondary.
Mother board: Study of Motherboard RAM, ROM, CMOS, POST, BUS (Address, Data System) Motherboard troubleshooting.

Unit – 2 **4 hrs.**

Connections of various devices such as display adapter, ports (Serial, Parallel, and USB) and modem on the mother board. Importance of CPU cooling.
Storage Devices:

a) HDD: HDD types, integrated, SCSI, Magnetic recording, Formatting (Track, Sector) Cluster, Defragmentation, Bad Sector, Jumper Setting, Common Problems and its trouble shooting, External Drive (HDD), Optical Drives.
b) FDD: FDD types and working and its related problems
c) CD and DVD drives: ROM and Writer, combo drives Mass storage devices
d) USB Devices: Hub, Pen Drives

Unit – 3 **4 hrs.**

Input Devices:

a) Keyboard: Switches, keyboard organization, key board type, wireless keyboard trouble shooting.
b) Mouse: Mouse types : Scroll and optical mouse, function connecting mouse, trouble shooting mouse
c) Ports
d) Modems

Output Devices: Printers: working of DMP, Inkjet, Laser Printer, Line Printer, Multifunction Printer and Trouble shooting

Unit – 4 **4 hrs.**

Other Output Devices:

a) Scanner: Working method and its trouble shooting
b) Plotters

Types of Software; System software, application software driver software installation, windows and other software and antivirus

Unit –5 **4 hrs.**

Boot process: setting of CMOS/BIOS setup
Power supply; operating characteristics, types and maintenance
Types of PC Desktop, Laptop, Palmtop,
PC Tools

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Computer Hardware Maintenance (Practical)

Practical Set

i. Study of devices on mother board
ii. Study of keyboard and keyboard decoder
iii. Study of video adapter and display controllers
iv. Study of floppy drives, CD, DVD, Pen Drive and Hard disk
v. Study of Multifunction Input/output controllers

Books:

1. IBM PC Advanced Troubleshooting and Repair: Robert Bernner, PHI
2. Inside the PC: Peter Norton, Techmedia Publication
3. Upgrading and Repairing PCs: Scott Mueller PHI
4. Computer Fundamentals and Introduction to IBM PC: Pankaj Nagar
5. Computer Fundamentals: P. K. Sinha, Priti Sinha, BPB Publications

The total workload for the course is 30 hrs and is divided as follows:

Theory = 20 hrs

Practical = 10 hrs

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Department of Computer Science

Academic Session 2022-2023

Certificate Course on " Web Content development and Android Programming "

TEACHING PLAN FOR CERTIFICATE COURSE

Practical Session

Practical Timing (9:15 a.m to 10:45 a.m)

Sr. No.	Date	Duration	Name of Faculties	Topic to be Taught
1	Day-1	1.30 Hr	Dr. Aruna J. Chamatkar	Demonstration about the Basics of programming Languages
2	Day-2	1.30 Hr	Mr. Devchand Sonsathi	Practical demo Web Colors, Web Icons Web Images, Layout design
3	Day-3	1.30 Hr	Mr. Devchand Sonsathi	HTML Tags, Attribute and Elements Simplest HTML Document Possible Header
4	Day-4	1.30 Hr	Mr. Devchand Sonsathi	Practically representation CSS Box model,Class & Id CSS
5	Day-5	1.30 Hr	Mr. Devchand Sonsathi	JS statement JS Output JS Comments
6	Day-6	1.30 Hr	Mr. Vikas Ravidas	jQuery getting started jQuery Selectors

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				And much more
7	Day-7	1.30 Hr	Mr. Vikas Ravidas	BS Grid Systems BS Navbar BS Buttons
8	Day-8	1.30 Hr	Prof. Sachin Y. Zade	PHP Framework version Function And its tools
9	Day-9	1.30 Hr	Prof. Sachin Y. Zade	Programming overview about OOPs .Operators. Control Statement. Looping Statement
10	Day-10	1.30 Hr	Mr. Devchand Sonsathi	PHP Syntax Version. function
11	Day-11	1.30 Hr	Mr. Dharmendra Madke	Install android studio & IDE Setup
12	Day-12	1.30 Hr	Prof. Sachin Y. Zade	Activity Life Cycle Basic of widgets and XML (Extensible Markup Language) Layout Containers
13	Day-13	1.30 Hr	Prof. Bhagyshri Jagtap	Implementation of 3rd party library
14	Day-14	1.30 Hr	Mr. Dharmendra Madke	Android Fragment Interfaces. Adapter Modal.SQLite Database API Integration
15	Day-15	2.00 Hr	Mr. Dharmendra Madke	Live Project Demonstration

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Department of Computer Science

Certificate Course on " Web Content development and Android Programming "

Time Table

Date : From Day 1 to Day 15

Theory Timing (7:45 a.m to 9:15 a.m) & Practical Timing (9:15 a.m to 10:45 a.m)

Sr. No.	Date	Time (Theory & Practical)	Name of Faculties	Topic to be Taught
1	Day-1	*7:45 a.m* to *10:45* a.m	Dr. Aruna J. Chamatkar	Introduction to IT, software , Hardwarwe, Basics of programming Languages
2	Day-2	*7:45 a.m* to *10:45* a.m	Mr. Devchand Sonsathi	Wireframing, UI & UX, Typography Web Colors, Web Icons Web Images, Layout design, Inspiration
3	Day-3	*7:45 a.m* to *10:45* a.m	Prof. Sachin Y. Zade	What is HTML5, The Doctype , HTML Tags, Attribute and Elements Simplest HTML , Document Possible, Header, Footer and Navigation
4	Day-4	*7:45 a.m* to *10:45* a.m	Mr. Devchand Sonsathi	What is CSS3? CSS Box model , Class & Id, CSS Comments and much more
5	Day-5	*7:45 a.m* to *10:45* a.m	Mr. Devchand Sonsathi	What is JS, JS statement , JS Output , JS Comments

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6	Day-6	***7:45 a.m*** to ***10:45*** a.m	Mr. Vikas Ravidas	What is jQuery jQuery getting started jQuery Selectors, jQuery events And much more
7	Day-7	***7:45 a.m*** to ***10:45*** a.m	Mr. Vikas Ravidas	BS getting started, BS Grid Systems, BS Navbar BS ButtonsAnd much
8	Day-8	***7:45 a.m*** to ***10:45*** a.m	Mr. Vikas Ravidas	What is PHP, version Function And much more
9	Day-9	***7:45 a.m*** to ***10:45*** a.m	Prof. Sachin Y. Zade	OOP's Concept, Data Types, Variables , Operators , Control Statement , Looping Statement, Basic Programs
10	Day-10	***7:45 a.m*** to ***10:45*** a.m	Mr. Devchand Sonsathi	PHP function And much more
11	Day-11	***7:45 a.m*** to ***10:45*** a.m	Mr. Dharmendra Madke	Install android studio & IDE Setup
12	Day-12	***7:45 a.m*** to ***10:45*** a.m	Mr. Dharmendra Madke	What is Android? Android Architecture, Activity Life Cycle , Basic of widgets andXML (Extensible Markup Language),Layout Containers
13	Day-13	***7:45 a.m*** to ***10:45*** a.m	Mr. Dharmendra Madke	Implementation of 3rd party library
14	Day-14	***7:45 a.m*** to ***10:45*** a.m	Dr. Aruna J. Chamatkar	Class and object ,Android Fragment, Interfaces, Adapter, Modal SQLite Database , APUI , Integration, Firebase integration
15	Day-15	***7:45 a.m*** to ***10:45*** a.m	Mr. Dharmendra Madke	Live Project Demonstration

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Syllabus of Value Added Course

on

" Digital Office Automation using Google Tools"

MCM-I

Unit-I : Google Docs and Google Drive

Word-processing using Google Docs, Toolbar, Menus, Creating of New Document, Opening, Sharing, downloading Document, Basic formatting features, Text & Paragraph Formatting, Table, Watermarks, Header and Footer, Special Character, Alignment, bullets and numbering, Spelling & Grammar, Voice Typing

Introduction to Google Drive, Managing Google Drive, Storing and sharing files and folders, Documents, Photos, Videos, Recordings, etc.

Unit-II : Google Sheets

Introduction to Google Sheets, Toolbar, Menus, Creating of New Spreadsheet, Opening, Sharing, downloading, importing spread sheet, Freeze, Group, Zoom, inserting charts,

Unit-III : Slides

Introduction to Google Slide, Toolbar, Menus, Creating of New Presentation, Opening, Sharing, downloading, importing, presentation, Slideshow, motion, inserting text, audio, video, animation, background, border and shading, bullets and numbering, transition.

Unit-IV : Gmail (Google Mail) and Google forms

Introduction to Gmail, Sending and Receiving mail, attachment, sharing, Smart email filtering system, Custom labels.

Introduction to Google forms. Creating form, quiz, linking, sharing, attachment of add-on.

Practical: Practical based on above syllabus.

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Syllabus of Value Added Course

on

" Computer Networking"

MCM-II

UNIT 1: Introduction of Networking:

Network applications, network hardware, network software, Reference models: OSI, TCP/IP, Internet, The public switched telephone Domain name space, DNS in internet, electronic mail, FTP, WWW, HTTP,SNMP, multi-media, network security, Connection oriented network - X.25,frame relay.

UNIT 2: Transmission Media:

Guided transmission media, wireless transmission THE DATA LINK LAYER: Design issues, error detection and correction, elementary data link protocols, Sliding window protocols, example data link protocols - ACCESS SUBLAYER: Channel allocations problem, multiple access protocols, Ethernet.

UNIT 3: THE NETWORK LAYER

Network layer design issues, routing algorithms, Congestion control algorithms Internetworking, , TCP/IP Networking ,Network Security Ensuring Integrity and Availability Network Management Ensuring Integrity and Availability Service.

UNIT 4:

THE TRANSPORT LAYER

Transport service, elements of transport protocol, Simple Transport Protocol, Internet transport layer protocols: UDP and TCP. THE APPLICATION LAYER: Domain name system, electronic mail, World Wide Web: architectural overview, dynamic web document and Simple Network Management Protocol, File Transfer Protocol, Simple Mail Transfer Protocol, Telnet.

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MSc-I
Syllabus of Value Added Course
On
Data Warehousing

UNIT – I :

Introduction to Data Warehousing: Data Warehouse Architectural Strategies, Data Content, Building a Data Warehouse, Performance Considerations, Crucial Decisions in Designing a Data Warehouse, Different Case Studies.

Various Technological Considerations: OLTP and OLAP Systems, Data Modeling, Managed Query Environment (MQE).

UNIT – II :

(Data Mart and Data Mining Tools) Data Mart: Data Mart, Type of Data Mart, Loading a Data Mart, Metadata for a Data Mart, Data Model for a Data Mart.

Data Mining and Tools:

Introduction, From Data Warehouse to Data Mining, Steps of Data Mining, Data Mining Algorithm, Database Segmentation, Predictive Modeling, Link Analysis, Tools for Data Mining.

UNIT – III :

(SQL Server, Components and Queries) SQL Server Architecture: SQL Server Data Storage Architecture, The Data Engine, System Databases.

SQL Components: SQL"s Basic Object, Data Types, Transact-SQL Functions, Scalar Operators Queries, Modification of Table Contents, Stored Procedures and User-Defined Functions, Views.

UNIT – IV :

(Data Integrity, User Security and Concurrency Control) Managing Data Integrity: Data Integrity Controls, Working with Constraints, DML Triggers, Principles and Authentication, Implementing Permission in SQL Server.

Backup and Concurrency Control: Transaction Architecture, Locking, Backup Types, n, Using Transaction Logs, Using Triggers, Replication Methods.

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MSC-II
Syllabus of Value Added Course
On
Data SCIENCE

Module-I

- Course overview and introduction to data science and Python
- Basic python programming
- Introduction to Numpy
- Introduction to Pandas and data-frames

Module-II

- Object-oriented programming and automation
- Data loading, cleaning, summarization
- Data aggregation and transformation
- Data visualization

Module -III

- Review of basics statistics
- Statistical and exploratory data analysis and outlier detection
- Linear Algebra Review

Module -IV

- Linear and Logistic Regression
- Feature Selection
- Data Ethics
- Project presentations

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MCA- I
Syllabus of Value Added Course
On
Cyber Security

Module 1:

Defining Cyberspace , Architecture of cyberspace, Communication and web technology, Internet, World wide web, Advent of internet, Internet infrastructure for data transfer and governance, Internet society, Regulation of cyberspace, Concept of cyber security, Issues and challenges of cyber security.

Module 2:

Apply and evaluate the cyber security needs of an organization.

Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.

Module 3:

Evaluate cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools

Design and develop security architecture for an organization.

Module 4:

Design operational and strategic cyber security strategies and policies.

Introduction to Cyber Crime Investigation Firewalls and Packet Filters, Cyber-crime and offences, Organizations dealing with Cyber-crime and Cyber security in India, Case studies

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MCA II

Syllabus of Value Added Course
On
Certificate Course on IOT

Introduction to IOT

- Understanding IoT fundamentals
- IOT Architecture and protocols
- Various Platforms for IoT
- Real time Examples of IoT
- Overview of IoT components and IoT Communication Technologies
- Challenges in IOT

2. Arduino Simulation Environment

- Arduino Uno Architecture
- Setup the IDE, Writing Arduino Software
- Arduino Libraries
- Basics of Embedded C programming for Arduino
- Interfacing Arduino with LCD

3. Sensor & Actuators with Arduino

- Overview of Sensors working
- Analog and Digital Sensors
- Interfacing of Temperature, Humidity, Motion, Light and Gas Sensor with Arduino
- Interfacing of Actuators with Arduino.
- Interfacing of Relay Switch and Servo Motor with Arduino

4. Basic Networking with ESP8266 WiFi module

- Basics of Wireless Networking
- Introduction to ESP8266 Wi-Fi Module
- Various Wi-Fi library
- Web server- introduction, installation, configuration
- Posting sensor(s) data to web server

5. IoT Protocols

- M2M vs. IOT
- Communication Protocols

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Kamla Nehru Mahavidyalaya,
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Amar Sewa Mandal's

Kamla Nehru Mahavidyalaya, Nagpur

DEPARTMENT OF BIOCHEMISTRY

In collaboration with

JEEVAN SHIKSHAN ABHIYAN

Affiliated to RTMNU, Nagpur

Syllabus

For

Certificate Course

in

Medical Laboratory Technology

Duration: 15 Days

Department of Biochemistry
Certificate Course on Medical Laboratory Technology
Syllabus

Theory

- **Pathology**
  Introduction, Human Blood Group Antigen, Abo Blood Group System And Incompatibility, Rh Blood Group And Incompatibility Antigen Coagulant

- **Clinical Pathology**
  Introduction
  Urine Analysis- Physical, Chemical and Microscopic
  Sugar Albumin, Bile Salt

- **Heamatology**
  Estimation Of Hemoglobin, Hemocytometer (Sahlis Method), Serum/Plasma (Centrifugation)

- **Microbiology**
  Common Laboratory Equipment And Uses, Microscope, Incubator, Hot Air Oven Autoclave, Anaerobic Culture Inoculation.

- **Clinical Microbiology**
  Normal Flora Of Human Body, Septicemia, Pyaemia, Food Poisoning, Opportunistic Infection

- **Biochemistry**
  Introduction To Carbohydrate, Fats, Amino Acids, Proteins

- **Immunology**
  Introduction to Immunity, Antigen and Antibody, Types Of Immunity, Antigen Antibody Reaction

- **Parasitology**
  Study Of Parasite

Practical

- Pathology
  ABO Blood Group Slide Technique And Cross Matching
- **Clinical Pathology**
  Urine Analysis- Physical, Chemical and Microscopic
  Sugar Albumin, Bile Salt
- **Heamatology**
  TLC, DLC
- **Microbiology**
  Common Laboratory Equipment And Uses, Microscope, Incubator, Hot Air Oven Autoclave, Anaerobic Culture Inoculation.
- **Clinical Microbiology**
  Standing Techniques, Simple Stain, Gram Stain, Acid Fast Staining, Antibiotic Sensitivity
- **Biochemistry**
  Test For Carbohydrates, Test For Proteins And Amino Acids
- **Immunology**
  Serology, Widal Test, VDRL Test, Agglutination Test, ELISA Test
- **Parasitology**
  Detection of Antigen/ Antibody For Malaria Parasite

Resources

1) Principles of Anatomy and physiology by Tortora and Grabowski Harper Collins College Publishers.
2) Human Physiology Vol I and II by C. C. Chaterjee, Medical Allied Agency.
3) Practical Microbiology by Dubey and Maheshwari, S Chand Publisher.
4) Textbook of Microbiology, Anant Narayan and Paniker, Orient Longman.
5) Text of Medical Laboratory Technology, Praful Godkar, Bhalani Publication (New Edition)
6) Immunology- A short course by Richard Coico and Geoffrey Sunshine, Willey Blackwell Publisher
7) Immunology by Kubey, W H Feeman Publisher.
8) Biochemistry by Lehninger, Kalyani Publication.

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Course Co-ordinator
Head , Department of Biochemistry
Kamla Nehru Mahavidyalaya, Nagpur

Dr. Dilip S. Badwaik
Principal
Kamla Nehru Mahavidyalaya
Nagpur

Principal
Kamla Nehru Mahavidyalaya
Sakkardara Chowk, Nagpur

Kamla Nehru Mahavidyalaya, Nagpur

Biotechnology Department

Session 2022-23

Organized Value-added course

"Exploring Bioinformatics and Advanced Research Methodology"

Syllabus

Module 1:

Introduction to Bioinformatics and Biological concepts, Overview of bioinformatics and its significance, biological databases and data types, Introduction to sequence, structure, and functional analysis, Molecular biology basics (DNA, RNA, proteins), Central dogma of molecular biology, Cell biology and signalling pathways

Module 2:

Sequence Analysis and Structural Bioinformatics, Sequence alignment algorithms (Pairwise and Multiple), BLAST and other sequence similarity tools, Phylogenetic analysis and evolutionary relationships, Protein structure prediction methods (Homology modelling, Ab initio prediction), Protein structure visualization and analysis tools

Module 3:

Introduction to Research Methodology and, Understanding the research process, Types of research: exploratory, descriptive, analytical, experimental, Importance of research in various fields, defining research problem and objectives, Formulating research questions and hypotheses, Types of research designs: experimental, quasi-experimental, non-experimental, observational, etc.

Module 4:

Literature Review, Importance of literature review, Searching and evaluating academic literature, Synthesizing information from various sources, Avoiding plagiarism and proper citation practices

Module 5:

Research Proposal Writing and Research publication, Components of a research proposal, writing a clear and concise research title, developing a research abstract, Outlining research methodology and expected outcomes

Module 6:

Practical Exercises and Case Studies, Hands-on data collection and analysis exercises, Critiquing research studies, Group discussions and presentations,

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KAMLA NEHRU MAHAVIDYALAYA

DEPARTMENT OF MICROBIOLOGY

CERTIFICATE COURSE "COOKERY AND FOOD PRESERVATION"

UNDER JEEVAN SHIKSHAN ABHIYAN, RTM NAGPUR UNIVERSITY

SESSION 2022-23

SYLLABUS

OBJECTIVE:

- To impart students with basic knowledge related to food safety and principle of preservations.
- To introduce students about the concept of processing and preservation of fruits and vegetables.

SYLLABUS

SR.NO.	CONTENT
1.	UNIT I
	PURPOSE AND SCOPE OF PRESERVATION • Types of preservatives • Objectives of preservation and processing • Scope of preservation industry in India INTRODUCTION OF FOOD MICROBIOLOGY • Concept Of Microorganism • Types Of Microorganism • Food Contamination And Spoilage • Used Necessity of Microbes in Food Preparations

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2.	**UNIT II** **PRINCIPLES OF FOOD FERMENTATION** • Basic of food fermentation process • Food fermentation products and beneficial microbes **PRINCIPLES OF FOOD MICROBIOLOGICAL ANALYSIS** • Sampling and preparation of microbiological analysis • Qualitative and quantitative microbiological analysis
3.	**UNIT III**
	PRINCIPLES OF FOOD PRESERVATION BY CONTROLLING MICROBIAL GROWTH • Microbial control by applying sanitation methods and temperature control • Microbial control by drying, irradiation and modified atmosphere • Microbial control by using antimicrobial preservatives and acid; applying non thermal processing and combination of methods (hurdle concept) **FUNDAMENTALS OF FOOD CHEMISTRY** • Carbohydrates, protein, fats • Vitamins and minerals
4.	**UNIT IV** **POST HARVEST CHANGES AND SPOILAGE & FOOD PROCESSING** • Importance of Microbes in Food • Signs of Contamination and Spoilage In Food • Introduction to Disease Caused by Spoiled Food Contamination of Different Food **FOOD PROCESSING** • Milk and Milk Processing • UHT Milk • Dairy Products-Curd, Yogurt,Bread and role of other ingredients
5.	**UNIT V**
	FOOD SAFETY • Key terms , factors affecting food safety Recent concern Food laws standards and regulations

	• Food additives and contaminants Hygiene and Sanitation • HACCP

PRACTICALS

- Introduction to basic microbiology, laboratory practices, sterilization, media preparation
- Culturing and sub-culturing of microorganism
- Staining and microscopic examination of bacteria, yeast and molds
- Detection of coliforms by MPN method, confirmed and completed tests
- Detection of effects of various preservatives on the suppression of microbial growth.
- Detection of common dairy pathogen dairy/ (E.Coli/B. Cerus/Salmonella/Listeria) by rapid detection techniques

OUTCOME:

- Upon successful completion of this course student should be able to:

  ¬ Explain the interactions between microorganisms and the food environment, and factors influencing their growth and survival.

  ¬ Explain the significance and activities of microorganisms in food.

  ¬ Describe the characteristics of foodborne, waterborne and spoilage microorganisms, and methods for their isolation, detection and identification.

- Job placements in dairy, quality control and food industries.

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DEPARTMENT OF MICROBIOLOGY

VALUE ADDED CERTIFICATE COURSE

SYLLABUS OF

"HEALTH AND HYGIENE"

SESSION: 2022-2023

The course is designed to provide a complete guidance on health and hygiene systems, guidelines for implementing and role of government and public in maintaining a healthy life. At the end of the course the student shall be able to understand –

- The importance of health and hygiene in life
- The importance of nutrition for a healthy life
- Different health care programmers of India
- Basic concept of health impact assessment as a means of assessing the policies, plans and projects using quantitative and qualitative techniques
- Importance of community and personal health & hygiene measures
- Importance of food, social tenets, mental condition, physical activity on health

Learning Objectives:

- To provide knowledge on different health indicators and types of hygiene methods
- To impart knowledge on different health care programmes taken up by India
- To create awareness on community health and hygiene
- To enrich knowledge on communicable and non-communicable diseases and their control
- To aware the student on the importance of food, social strategies, mental status and physical activities on health
- To introduce different community-based mobile apps on health to student and thereby to the community

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Learning / Course Outcomes: On completion of this course, the students will be able to understand -

- What is a healthy diet
- How can we use available information to optimize our diet?
- Can nutrition be used for a healthy life?
- Is there a one-size-fits-all "good" diet or should we individualize our dietary goals?
- Disaster management and responsiveness of public in pandemic and epidemicdiseases
- Assess the impact of policies on health and hygiene Health measures to considerwhile travelling
- Awareness in public through digital media viz., mobile apps

Unit I: Basics of Nutrition

1. Nutrition – definition, importance, Good nutrition and mal nutrition; Balanced Diet:Basics of Meal Planning
2. Carbohydrates –functions, dietary sources, effects of deficiency.
3. Lipids –functions, dietary sources, effects of deficiency.
4. Proteins –functions, dietary sources, effects of deficiency.
5. Brief account of Vitamins- functions, food sources, effects of deficiency,
6. Macro and micro minerals –functions, effects of deficiency; food sources of Calcium,Potassium and Sodium; food sources of Iron, Iodine and Zinc
7. Importance of water– functions, sources, requirement and effects of deficiency.

UNIT: II Health Hazards: Health dynamicity

1. Definition, factors influencing health, health as a medium of socio-economic Development.
2. Diseases – Common food borne and water borne diseases (gastroenteritis, jaundice, Cholera, salmonellosis, travellers' diarrhoea and Escherichia coli infection, typhoid)

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3. Mode of transmission, causative agents, symptoms, prevention and control. Sexually transmitted infections– AIDS, genital herpes, hepatitis B, syphilis, gonorrhoea causative Agents, symptoms, modes of transmission and prevention. Dengue, chikunguniya, rat fever (general methods of mosquito control and the need to prevent mosquito breeding in and around our homes).

4. Lifestyle habits – excessive usage of T.V., computer, mobile phones, two wheelers, and their impacts on health. Lack of physical exercise and its deleterious effects on the body and mind.

Unit III: Hygiene

1. Hygiene – Definition; Personal, Community, Medical and Culinary hygiene; WASH (Water, Sanitation and Hygiene) programme
2. Rural Community Health: Village health sanitation & Nutritional committee (Roles & Responsibilities); About Accredited Social Health Activist (ASHA); Village Health Nutrition Day, Rogi Kalyan Samitis
3. Community & Personal Hygiene: Environmental Sanitation and Sanitation in Public places
4. Public Awareness through Digital Media - An Introduction to Mobile Apps of Government of India: NHP, Swasth Bharat, No More Tension, Pradhan Mantri Surakshit Mantritva Abhiyan (PM Suman Yojana), My Hospital (Mera aspataal), India fights Dengue, JSK Helpline, Ayushman Bhava, Arogya Setu, Covid 19AP.

UNIT IV: Adulteration of food:

1. Food hygiene – hygiene of milk, meat, fish, eggs, fruits and vegetables,.

2. Common food adulterants – harmful effects and their detection, food additives, fortification of food;

3. Food Adulteration Act and its stringent implementation.

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DEPARTMENT OF BIOTECHNOLOGY

Session 2022-23

Value-added course on

"Clinical Research"

Syllabus

UNIT I:

Introduction to clinical research

Clinical Research: An Overview, Different types of Clinical Research, Terminologies and definition in Clinical Research, Treatment research, Prevention Research, Diagnostic research, Screening research, Genetic studies and Epidemiological studies.

UNIT II :

Clinical Pharmacology: Pharmacokinetics, absorption, distribution, metabolism, and excretion of drugs., Pharmacodynamics, molecular, biochemical, and physiological effects of drugs, including drug mechanism of action, Pharmaco epidomology, Descriptive and analytical,

UNIT III:

Bioavailability- Absolute bioavailability and Relative bioavailability, time curve and dose response graphs, Bioequivalence, non-replicated or replicated, two-period, two-formulation, two-sequence crossover study.

UNIT IV:

Drug Development Process: Preclinical trail, In Vivo, In Vitro, And Ex Vivo Assays, Human Pharmacology (Phase-I, II, III & IV), Therapeutic treatment discovery, preclinical studies, clinical development and market approval.

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Kamla Nehru Mahavidyalaya, Nagpur
Department of Biochemistry
Value Added Course
Hands on training in Empirical Biochemistry
Session-2022-2023

The objective of the course "Hands on training in Empirical Biochemistry" for explaining the essentials of Biochemistry related technology to develop enthusiasm amongst students. This course intends to provide fundamental understanding and practical handling as well as research application associated with the techniques.

Learning outcome

Through this course students are exposed to biological molecules. They will acquire knowledge about qualitative and quantitative estimation of biomolecules. This skill based course introduces the students to the concepts in biophysical, biochemical and molecular techniques. Through this course students will be acquainted with the principles, applications and instrumentation used in biochemistry.

Course Content

Section I

Basic equipment used in biochemistry.

Handling of P^H meter, Colorimeter, Spectrophotometer, Weighing balance, Centrifuge, incubator oven, heating bath, Water bath, distillation assembly, autoclave, micropipettes etc.

Section II

Basic Biochemical tests

Basic biochemical tests for qualitative and quantitative estimation for Protein, Lipid, Nucleic acid and carbohydrate.

Section II

Separation techniques.

Separation of Biomolecules by using different types of separation techniques including Chromatography; Electrophoresis.

Section III

Molecular Biology Techniques

Isolation of DNA from bacteria/blood sample.
Agarose gel electrophoresis of DNA.
Visualization of DNA by UV transilluminator
Demonstration of Polymerase Chain Reaction technique.

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Department of Environmental Science

Value Added Course

Syllabus

Session: 2022-2023

Theory:

Unit I:Water Chemistry : definition, Composition, Structure, bonding of water molecule and formula, formation of hydrogen bonding, state of water and anamalous behavior of water , Solubility of gases in water, water as universal solvent.

Unit II: Water Sampling: Necessity of water sampling , Objectives, selection of sampling site, Types of water samples, Collection, Handling and preservation, sampling equipment.

Unit III: Water Quality Parameter: Classification of water quality parameters (Inorganic, Organic and nutrients, Parameters analyzed on the spot (field parameter), Data interpretation, Basic concepts, significance and measurement of DO and BOD.

Unit IV: Water resources: water availability on earth, hydrological cycle, sources of water: Surface water ground water, use of water, Water pollution: sources, effects, Control measures. Standards of drinking water quality (WHO Guideline)

Practical:

1)Water sampling for ground and surface water and its storage techniques.

2) Physical parameters (colour , Temperature ,Turbidity) for characterizing and evaluation of water quality.

3) Relative density test for sample of water.

4) Determination of hydrogen ion concentration (pH) and conductivity of water.

5) Estimation of total solid, total dissolved and total suspended solids by gravimetric method of water and waste water.

6)Estimation of chlorides of water and waste water by Argentometric method.

7) Estimation of alkalinity and acidity of water and waste water.

8)Estimation of total hardness of water and waste water.

9)Estimation of Nitrogen by Kjeldahl methods.

10)Estimation of sulphate and Phosphate in water sample.

11)Estimation of dissolved oxygen (DO) in water sample.

12) Determination of iron and manganese by spectrophotometer.

13)Determination of total coliform of water by MPN technique.

14)Determination of residual chlorine , demand and dose in a provided water sample.

15)Determination of optimum coagulant dose by Jar Test Apparatus.

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Department of Environmental Science

Value Added Course (M.Sc. I)
Environmental Monitoring & Instrumentation
Syllabus

Session: 2022-2023

Theory:

Unit I:Environmental Monitoring & Parameters : Introduction to Environmental Monitoring , importance of monitoring for sustainability, Regulatory framework and standards . Environmental parameters : Temperature, humidity and pressure measurement, Air Quality Parameters(PM, VOCs, gases), Water Quality Parameters(Physico-chemical, Demand, Nutrients, metal & organic analysis) , Soil Quality parameters (Physico-chemical , nutrients)

Unit II: Sampling Techniques & data analysis: Sampling methodology and strategies , sample collection and preservation . Data interpretation and analysis, Data visualization and statistical analysis, trend analysis and anomaly detection, Reporting and presentation of findings.

Unit III: Environmental Monitoring Instrument : Air Quality Monitoring Instruments (PM sampler and analyzers, Gas analyzer for SOx NOx &CO, Continuous emission monitoring), Water Quality Monitoring Instruments (Water quality sensors and probe ,Instruments for nutrients analysis and metal analysis eg. Colorimeter, UV- Visible spectrophotometer, Turbidity meter, pH meter, AAS),Soil and ground water Quality Instruments (Soil moisture sensor and geophysical method ,Contaminants monitoring in soil and ground water , different instruments for analysis eg. Flame photometer)

Unit IV: Noise and vibration measurement: Sound level meter and noise pollution assessment , decibel scale , intensity and frequency , different instruments use for noise measurements, Vibration sensors and impact on environment , mitigation strategies .

Practical:

1) Estimation of oil and grease from industrial water sample.

2) Determination of SPM and RSPM in ambient air by using High Volume Sampler.

3) Determination of SOx concentration in ambient air by using high volume sampler.

4) Determination of NOx concentration in ambient air by using high volume sampler.

5) Measurement of noise pollution by Noise Meter and comparison with standards.

6) Detection of metal ions by paper Chromatography

7) Demonstration of Colorimeter .

8) Demonstration of UV- Visible spectrophotometer

9) Demonstration of pH meter and conductivity meter.

10) Demonstration of Turbidity meter or Nephelometer.

11)Demonstration of Flame photometer.

12) Demonstration of Atomic Absorption Spectrophotometer.

13)Demonstration of Thin Layer chromatography

14) Demonstration of Gas Chromatography.

15) Comparison of environmental Parameters with standards (Air , Water , Wastewater disposal , Noise and Soil)

Book for References:

1) "Instrumental Method analysis" :Willered Meritand Dean,CBS publication ,New Dehli

2) "Systematic Method of Water Quality Parameter Analysis" by Ramani Bai Gopinath and G. Vanitha

3) "Drinking Water Quality Assessment and Management" by S. K. Gupta , I. C. Gupta , Scientific Publishers.

4) "Instrumental Method of Environmental Analysis" : Karan Sareen , Sarup and Sons Publishers , New Dehli

5) Instrumental Methods of Chemical Analysis : B.K. Sharma, Goel Publishing House, Meerut.

6) Standard Method for the Examination of Water and Waste Water : (APHA, AWWA, & WPCF)

7) Photo chemistry & Spectroscopy : J. P. Simmons Wiley 1971

8) Instrumental Analysis : Gurdeep Chatwal (Himalaya Publishing House , New Delhi .)

9) Instrumental Method of Chemical Analysis: Chatwal and Anand , (Himalaya Publishing House , New Delhi .)

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Kamla Nehru Mahavidyalaya

Department of Botany

Value Added Certificate Course

'FLOWER ARRANGEMENT'

2022-2023

Syllabus (Under Graduate)

UNIT I: ORIGIN OF FLOWER DESIGN AND IDENTIFCATION OF FLOWER

- Origin of flower designing
- Flower & plant Identification
- Care & handling of Cut flowers

UNIT II: TYPES & CHOICE OF FLOWERS

- Floral bouquets, baskets, wreaths.
- Table Centerpiece
- Ikebana

UNIT III: PRINCIPLES OF FLOWERS ARRANGEMENTS

- Design & balance.
- Arrangement, scale & rhythm.
- Emphasis (Focal point, harmony & unit)

UNIT IV: DIFFERENT STYLES OF FLOWER ARRANGEMENTS

- Oriental flower arrangements
- Traditions/Westren flower arrangements
- Modern Flower design.

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Department of Botany

Value Added Certificate Course

'Preservation Techniques for Plants'

2022-2023

Syllabus (Post Graduate)

M.Sc I yr

UNIT I: INTRODUCTION

- Introduction of specimens, targeting collection locations and date with permits.
- Study of types of pressed, dried and wet plant

UNIT II: ALGAL HERBARIUM

- Herbarium for algae with collection, cleaning, pressing, mounting, storage and conservation with all details

UNIT III: PTERIDOPHYTE AND FLOWERING PLANT HERBARIUM

- Herbarium for Pteridophytes and Flowering plant with collection, cleaning, pressing, mounting, drying, storage and conservation with all details.

UNIT IV: USES AND MANAGEMENT

- Key to use of Herbarium details.
- Operation and maintenance importance.

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Department of Botany

Value Added Certificate Course

'Miniature Gardens '

2022-2023

Syllabus (Post Graduate)

M.Sc II yr

UNIT I: INTRODUCTION TO MINIATURE GARDEN

- Scope and objectives of gardening
- Style of gardens: Formal, Informal, gardening tools, potting soil, types of propagation
- Principles and making of Terrarium and Kokedama.

UNIT II: TYPES AND IMPORTANCE OF MINIATURE GARNDEN

- Concept of vertical gardens, Small area greening.
- Plants suitable for office space with aesthetic value, break office monotony, air purifier.

UNIT III: LAYOUTS OF MINIATURE GARDEN AND COMPOSTING

- Importance of layout and principles in kitchen and balcony garden.
- Composting and micro greens.

UNIT IV: MINIATURE GARDEN MANAGEMENT

- Gardening management operations: soil laying, manuring, watering.
- Management of pests and diseases with complete cure.

PRINCIPAL

Wanjari Group of Institutions

Kamla Nehru Mahavidyalaya, Nagpur

Affiliated to RTM Nagpur University, Nagpur, Recognised by State Government

Re-accredited by NAAC with (A+) grade (CGPA 3.53)

Amar Seva Mandal's

DEPARTMENT OF ZOOLOGY

SESSION 2022-2023

VALUE ADDED CERTIFICATE COURSE

Aquarium Keeping and Fish Conservation: A Socio-economic and Bioaesthetic Approach (Credit-4)

Small pet stores are opening up to sell a variety of decorative fish, but aquarium keeping is by far the most popular pastime. Fish from various species are typically kept in glass tanks by aquarium hobbyists. It needs work to keep a fish tank in good shape. Through this course the students would be able take up aquarium keeping as a source of income.

Course objectives:

9. The goal of this certificate programme is to teach students the fundamentals of aquarium fabrication, setup, and maintenance.
10. Keeping ornamental fish is becoming more and more popular with the general people.
11. The goal of the aquarium fish keeping course is to familiarise the students with the construction, installation, acclimatization of fish and upkeep of an aquarium.
12. Understanding of fish biology, species compatibility, reproductive techniques and conservation.

Course outcomes:

After completion of this course, students will be able-

11. To create action oriented awareness about conservation, socio-economic and bioaesthetics.
12. Students gain knowledge about the biology and care of ornamental fish and may manage their own aquariums.
13. To provide information about different types of aquarium building and upkeep.

14. To inculcate the importance and methods of ornamental fish farming, as well as the many approaches of handling and marketing.
15. Students gains business acumen and is thereafter prepared to support themselves.

Course structure:

- Total Teaching Hours- 30 hrs

Syllabus:

Unit- I: **5 Hrs**

The potential scope of aquarium keeping: knowing types of aquaria,aquarium maintenance, setting of aquarium of different sizes (home, office, hotels, tourist centric, zoos, research laboratories etc.), estimates of money to be incurred on space, materials, skilled and unskilled man power needed and equipment's to craft aquarium.

Unit- II: **5 Hrs**

Ornamental fish farming management aspects: Ornamental fish-diseases and their management, live food culture for tropical ornamental fish, feeding for breeding and maintenance of ornamental fish and health management in ornamental fish farming.

Unit- III: **5 Hrs**

Fish breeding and rearing of egg layers: Breeding of ornamental fish with reference to selected egg layer species. Introduction to breeding of Angel fish, Zebra fish and Neon tetra.Introduction of hatchery management system for egg layers. Nursery management of egg layers with special emphasis on breeding of Gold fish, Advantages and disadvantages of ornamental fish breeding.Theoretical knowledge of transgenic fish technology globally and in India..

Unit- IV: **5 Hrs**

Conservation and future prospects in ornamental fish industries in India and abroad. Co - marketing of transgenic fishes in world and India. Filling the demand supply gap.Field visit to the local aquaria.Ornamental new dimensions in aquaculture entrepreneurship (less space and other requirement).Packaging and transport of aquarium species – export units – marketing strategy regulations for export of fish, etc.

PRACTICALS

10 Hrs

13. Preparation of an aquarium tank of suitable size.
14. Identify, classify and describe any five an aquarium fishes.
15. Study of breeding in live bearer
16. Identify and describe, aquarium decorative plants, natural food, artificial food (pallets, flakes, powders, etc.), live food organism, etc.
17. Identify and describe egg layers and transgenic fishes (any five).
18. Aquarium fish diseases

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Department of Cosmetic Technology
Value Added Course on Skin Care
Session: 2022-23
Bachelor of Cosmetic Technology Semester II

Syllabus:

15 hours

Theory:

Skin Care:

- Skin
- Structure and of Skin
- Functions of Skin
- Types of Skin
- Analysis of Skin type
- Daily Skin Care
- Specific skin care for different ages
- Skin care for Summer
- Skin care for Winter
- Skin care for Rainy season
- Diet and Exercisefor healthy skin
- Common skin problems
- Skin care products
- Skin care treatments
- Basics of Depilation

15 hours

Practical:

- Cleansing
- Toning
- Moisturizing
- Facial
- Waxing

H. O. D.
Technology

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Kamla Nehru Mahavidyalaya
Department of Cosmetic Technology
Value Added Course on Hand and Feet Care
Session: 2022-23
Bachelor of Cosmetic Technology Semester IV

Syllabus:

Theory: 15 hours

- Anatomy of Hand
- Anatomy of Feet
- Anatomy of Nail
- Basic Hand and Feet Care
- Hand and Feet Care for Summer
- Hand and Feet for Winter
- Hand and Feet for Rainy season
- DIY Hand and Feet care
- Common Hand and Feet problems
- Footwear and foot health
- Role of massage in Hand and Feet Care
- Hand and Feet massage techniques
- Importance of Exercise in Hand and Feet Care
- Remediesfor sore feet
- Nail Care

Practical:

- Manicure — 5 hour
- Pedicure — 5 hour
- Nail art — 5 hour

H. O. D.
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Kamla Nehru Mahavidyalaya
Department of Cosmetic Technology
Value Added Course on Professional Make-up Techniques
Session: 2022-23
Bachelor of Cosmetic Technology Semester VI

Syllabus:

Theory: 15 hours

- Introduction to Makeup
- Types of Makeup
- Corrective Makeup
- Makeup Tools and accessories
- Colour Theory
- Brush types and uses
- Makeup products
- Concealing
- Face-Foundation and powdering
- Lips
- Eye makeup
- Bridal makeup
- Airbrush makeup
- Fashion makeup
- Specialized makeup

Practical:

- Bridal makeup — 5 hour
- HD/3D Makeup — 5 hour
- Airbrush Makeup — 5 hour

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Kamla Nehru Mahavidyalaya
Department of Cosmetic Technology
Value Added Course on PersonalityDevelopment
Session: 2022-23
Bachelor of Cosmetic Technology Semester VIII

Syllabus:

Theory: 15 hours

- Communication Skills
- Stress Management
- Time management
- Listening ability
- Decision Making
- Problem solving
- Goal setting
- Attitude and motivation
- Self awareness
- Empathy
- Body language
- Confidence building
- Interpersonal skills
- Resilience
- Adaptability

Practical:

- Public speaking/Group Discussion — 5 hour
- Meditation — 5 hour
- Body language/Mock interviews — 5 hour

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Kamla Nehru Mahavidyalaya
Department of Cosmetic Technology
Value Added Course on Effective Writing
Session: 2022-23
Master of Cosmetic Technology Semester II

Syllabus:

Theory: 15 hours

- Introduction to Effective Writing
- Principles of Effective Writing
- Types and Stages of Effective Writing
- Notions of Correctness and Appropriateness
- Essay Writing
- Types of Essays
- Essentials of Academic Writing,
- Business Writing and its Functions
- Mechanics of Business Writing
- Business Letters and Memos
- Format of Business Letters and Memos
- Types of Business Letter
- Sales, Complaint and Adjustment Letters
- Report Writing
- Style of Report Writing

Practical:

- Essay Writing — 5 hour
- Business Letters Writing — 5 hour
- Report Writing — 5 hour

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Kamla Nehru Mahavidyalaya
Department of Cosmetic Technology
Value Added Course on Entrepreneurship Skill Development
Session: 2022-23
Master of Cosmetic Technology Semester IV

Syllabus:

Theory: 15 hours

- Theories of entrepreneurship,
- Dimensions of entrepreneurship
- Socio-economic environment and entrepreneur.
- emerging trends and social entrepreneurship
- External environmental forces, economic, social, technological and competitive factors,establishment of a new unit.
- Innovation and entrepreneurship,
- Entrepreneurial behavior and social responsibility
- Entrepreneurial development programme relevance and achievements,
- Role of government
- Small business management
- Business communication and ethics in business
- Marketing support for entrepreneurs
- Role of e-commerce in business
- Business opportunities and start-up policy
- Entrepreneurial motivation

Practical:

- Emerging Trends in Entrepreneurship Development — 5 hour
- Market Survey — 5 hour
- Project Work — 5 hour

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Kamla Nehru Mahavidyalaya
Department of Cosmetic Technology
In Collaboration with Lifelong Learning and Extension
RTM Nagpur University, Nagpur
Certificate Course in Beautification
Session:2022-23
Syllabus

Theory:

T-1. Skin Care – Basic skin care, skin types, daily skin care routine

- Cleansing
- Toning
- Moisturizing
- Theory and causes of Skin Tanning and basic information on sunscreens

T-2. Hair Care – Basic hair structure, types of hairs, hair care routine,

- Hair cleansing and Oiling
- Shampooing and Conditioning
- Hair packs for hair treatments
- Concept of Hair Colouring

T-3. Health Care and Yoga

- Diet and nutrition
- Beauty nutrients
- Exercise and Yoga- facial yogic exercises for anti-aging and anti-wrinkle effect.
- Relaxation
- Personal Hygiene

T-4. Make up

- Preparing face for make up and Advance techniques used for make
- Use of foundation, Recently launched international brands for makeup
- Eye make up
- Lip makeup
- Hairstyle
- Bridal makeup
- Party make up
- Day makeup

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Practical:

P-1. Skin Care Practical

- Skin treatment by using recent techniques

P-2. Make up

- Preparing face for make up and Advance techniques used for make
- Use of foundation, Recently launched international brands for makeup
- Eye make up
- Lip makeup
- Hairstyle
- Bridal makeup
- Party make up
- Day makeup, Office make up

P-3. Health Care and Yoga

- Exercise and Yoga- facial yogic exercises for anti-aging and anti-wrinkle effect.
- Yogasana to improve blood circulation all over body/ facial blood circulation

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Annexure I

Academic Session 2022-23

Kamla Nehru Mahavidyalaya, Nagpur

DEPARTMENT OF LIBRARY & INFORMATION SCIENCE

Syllabus

Value Added Course

on

Digital Library

Total -30 Hours (2 Credits)

Duration: 15 Days (2 hrs /Days)

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1. Introduction

Department of Library & Information Science, Kamla Nehru Mahavidyalaya creating opportunities for the students by introducing **Value Added** course of 15 Days Duration on **'Digital Library'2.**

2.Objectives:

The objectives of the Value Added course on 'Digital Library' is to train the students in the following topics

1. To clear the concept of Digital Library

3. Number of Beneficiaries (Intake): 18 Students PG Students

4. Skills to be provided:

The student should be able to get information about Digital Library.

5. Scheme of Instructions:

Theory	Practical	Total
16 Hours	**14 Hours**	**30 Hours**

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'Digital Library'

Total -30 Hours (2 Credits)

Part – I : Theory Paper

Digital Library

Total periods: 16 Max Marks: 30

Major Topics

Sr. No.	Topic	No. Of Periods Allotted
1.	Introduction To Digital Library	02
2.	Difference between Electronic, Digital & Virtual Libraries	02
3.	Objectives of Digital Libraries	02
4.	Components Of Digital Library	04
5.	Digital Library Services	04
6.	Scope of Digital Libraries.	02

Syllabus content:

Introduction To Digital Library

1.1 Concept, of Digital Library

1.2 Definition of Digital Library

1.3 Advantage & disadvantages of Digital Library

1.4 Objectives of Digital Libraries

1.5 Components Of Digital Library

1.6 Scope of Digital Libraries.

1.7 Software & Hardware required for Digital Library.

1.8 Services & examples of Digital Library

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DEPARTMENT OF BIOTECHNOLOGY

Session 2022-23

Syllabus

Unit I: Major sector

Academic
Agriculture
Pharma and health sector
Pollution control Board
Genetic Engineering
Industrial Sector (At production level)

Unit II: Opportunities in industries

Industries working experience in the area of microbial, plant, health care, Basic experience, skills.
knowledge required for the industries, Small, Big and multinational industries.
Small Scale Industrial units, advantage and
support by Govt. for SSI,
Opportunities in services provided by the industry research, Opportunities in reagents preparation, packaging and distribution. R&D in industries.
Major industrial groups in India.
International industrial organization.

Unit III: Opportunities in research

General Organizational structures of Research Institute,
Qualifications for researcher positions.
JRF, SRF, RA, PDF.
Scientist positions in Government and private research institutes.
Research outcome - Publication, Patent and technology transfer.
Training man power, Conduct of Seminar, Symposia and Workshop.
Advantages, Challenges and Risks of employment in research institute.

Unit IV: Funding agencies

Types of funding,
Government funding institutes like DBT, ICMR, CSIR, aCSIR, and UGC
Preparations of Project proposals.
Importance of research publications.
Preparation of projects and Basic requirement for funding.
Funding from Agricultural institutes, Private funding, Research grants, Collaborative research.
International funding for higher studies and Research.
International collaborations and sharing of resources across the country.

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Affiliated to RTM Nagpur University, Nagpur, Recognised by State Government
Re-accredited by NAAC with (A+) grade (CGPA 3.53)

DEPARTMENT OF COMMERCE
CERTIFICATE COURSE IN OFFICEAUTOMATION
SYLLABUS
SESSION :- 2022-2023

Sr. No.	Particulars	Duration
1	**Computer & Internet**: Desktop computers, Block diagram of a computer, Input and output devices, memory and storage devices, different ports and its uses, Different type of printers. Software: OS, Windows OS, Application software. Networking, different LAN and WAN connections, connecting to a network, testing connection, Internet, IP address, Hypertext, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Services Providers, Internet Security, Internet Requirements, Web Search Engine, Net Surfing, Internet Services.	9 Days
2	**Windows XP:** Windows concepts, Features, Windows Structure, Desktop, Taskbar, Start Menu, My Computer, Recycle Bin, Windows Accessories- Calculator, Notepad, Paint, Wordpad, Character Map, Windows Explorer, Entertainment, Managing Hardware & Software- Installation of Hardware & Software, Using Scanner, System Tools, Communication, Sharing Information between programs. **Word Processing; MS Word:** Features, Creating, Saving and Opening Documents in Word, Interface, Toolbars, Ruler, Menus, Keyboard Shortcut, Editing, Previewing, Printing,& Formatting a Document, Advanced Features of MS Word, Find & Replace, Using Thesaurus, Using Auto- Multiple Functions, Mail Merge, Handling Graphics, Tables & Charts, Coverting a word document into various formats like- Text, Rich Text format, Word perfect, HTML,PDF etc.	8 Days

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Sr. No.	Particulars	Duration
3	**Worksheet- MS-Excel:** Worksheet basics, creating worksheet, entering into worksheet, heading information, data, text, dates, alphanumeric values, saving & quitting worksheet, Opening and moving around in an existing worksheet, Toolbars and Menus, Keyboard shortcuts, Working with single and multiple workbook, working with formulae & cell referencing, Auto sum, Coping formulae, Absolute & relative addressing, Worksheet with ranges, formatting of worksheet, Previewing & Printing worksheet, Graphs and charts, Database, Creating and Using macros, Multiple worksheets- concepts, creating and using.	5 Days
4	**MS Power Point:** Creating slide show with animations. Auto content Wizard, creating a lank presentation, auto layout, 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. Resizing a text box ,Text box properties, Delete a text, Bulleted lists, Numbered lists, Adding notes, Video and Audio, Adding text Editing options, Formatting text, Replace fonts, Line spacing, Change case Spelling check, Color schemes , Adding clip art, Adding an image from a file Editing graphic, Auto Shapes, Word Art, Backgrounds, Action buttons Slide animation, Animation preview Slide transitions Slide show options Slide master Header and footer Slide numbers Date and time.	8 Days