THE COCHIN COLLEGE

Koovapadam, Kochi-2

Affiliated To Mahatma Gandhi University

Re-accredited by NAAC With B+ Grade

Fourth Cycle
NAAC Accreditation 2024

Criterion 1
Curricular Aspects

1.2 - Academic Flexibility

Metric No. 1.2.1

Number of Certificate/Value added courses offered and online courses of MOOCs, SWAYAM, NPTEL etc.

Brochure and Syllabus - 2020-2021

Submitted to

National Assessment and Accreditation Council

THE COCHIN COLLEGE
KOOVAPADAM, KOCHI-2
AFFILIATED to MG UNIVESITY, RE-ACCREDITED WITH B+ GRADE

Department of English

Value Added Course

Offered in 2020-2021

◑ Indian History

◑ Advertising and Public Relations

Apply

https://forms.gle/zJ3ApbXmTTb37KYW9

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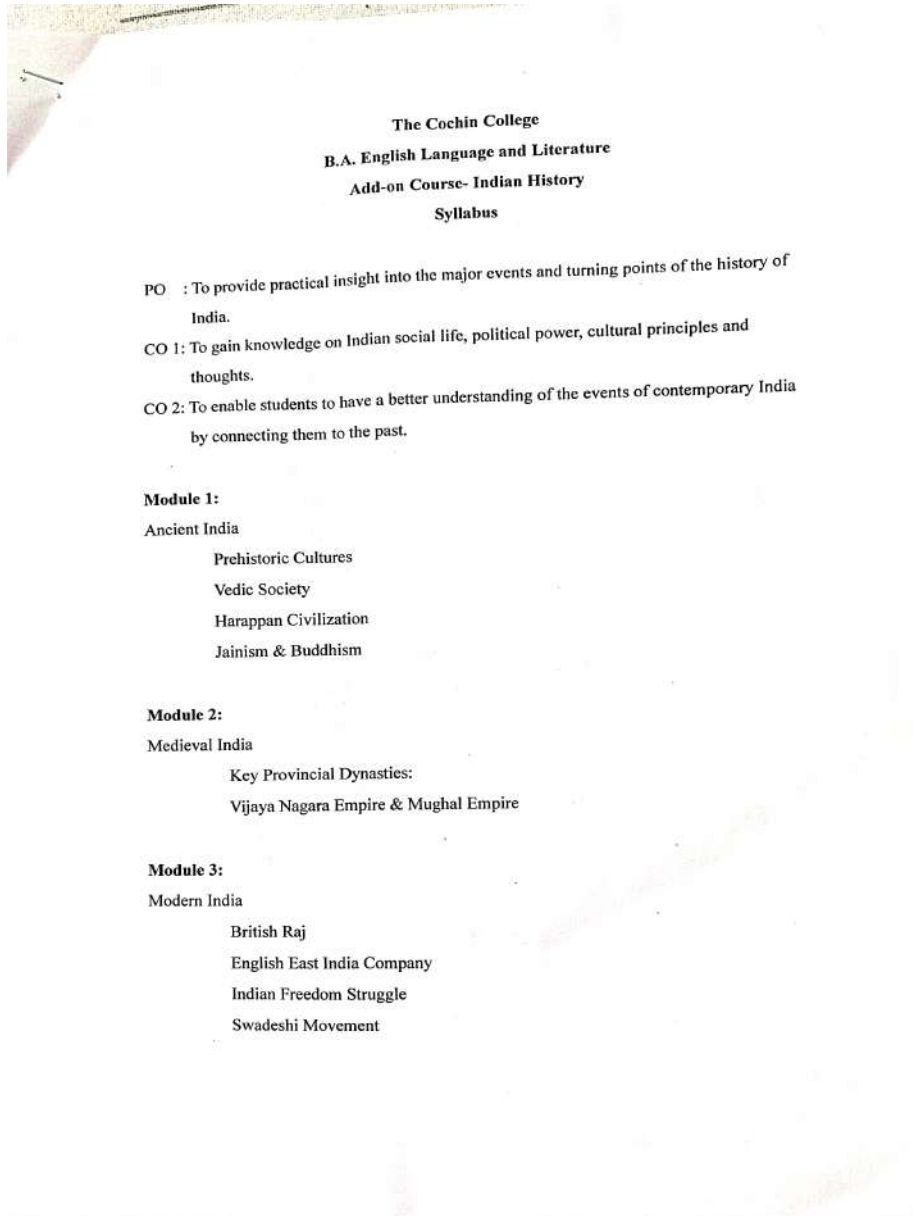
The Cochin College

B.A. English Language and Literature

Add-on Course- Indian History

Syllabus

PO : To provide practical insight into the major events and turning points of the history of India.

CO 1: To gain knowledge on Indian social life, political power, cultural principles and thoughts.

CO 2: To enable students to have a better understanding of the events of contemporary India by connecting them to the past.

Module 1:

Ancient India

> Prehistoric Cultures
>
> Vedic Society
>
> Harappan Civilization
>
> Jainism & Buddhism

Module 2:

Medieval India

> Key Provincial Dynasties:
>
> Vijaya Nagara Empire & Mughal Empire

Module 3:

Modern India

> British Raj
>
> English East India Company
>
> Indian Freedom Struggle
>
> Swadeshi Movement

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Module 4:

Economic Impacts and Social Changes

        Land Revenue Settlements

        Commercialization of Agriculture

        Social Reform Movements

        Indian Renaissance

Module 5:

Pioneers of Indian English Literature

        Rabindra Nath Tagore

        Sarojini Naidu

        Raja Rao

        R. K. Narayan

        Mulk Raj Anand

Suggested Readings:

India: From Midnight to the Millennium and Beyond by Shashi Tharoor

A History of India: From the 16th Century to the 20th Century by Thomas George Percival
    Spear

The Argumentative Indian by Amartya Sen

History of Modern India by Bipan Chandra

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THE COCHIN COLLEGE, KOCHI-2
DEPARTMENT OF ENGLISH
ADD ON COURSE

Course Year 2022-23

Course Objectives:
1.To understand the importance and process of effective Professional communication
2. To understand the concepts, objectives, and classification of advertising along with an understanding of the global and Indian history of advertising.
3. To learn the principles of producing various public relations materials, such as publicity materials, house journals, and newsletters.

Module 1 COMMUNICATION   (6 hours)
Communication Theory - Process of Communication. - Barriers of Communication - 7 Cs of communication - Mass Communication- Factors of Effective Communication - Aims and objectives of communication skill - Listening, Speaking, Reading and Writing. - Barrier to effective communication (Personal, Physical, psychological, sociological, Semantic etc)

Module 2 PSYCHOLOGY OF CONSUMER AND THEIR BEHAVIOR   (6 hours)

Significance of the Study of Psychology in Marketing & Advertising. - Consumer Behavior Models. - Environmental Influences : Cultural Values, Social Class & Status, Personal Influence, Family, Situational Influences. - Individual Differences : Involvement & Motivation, Attitudes, Personality, Values, - Psychological Processes : Learning, Perception, Attitudes. - Decision Process : Need recognition, Search, Evaluation of Alternatives, Choice. - Industrial Buyer Behavior.

Module 3 ADVERTISING   (6 hours)
Advertising : Definition and Concept, How Advertising Works, Functions of Advertising, Factors determining advertising opportunity of a product\service\idea, What a message must contain. Types and classification of Advertising Display\Classified\ Trade\Product\Financial\ Corporate, etc., Brand Management and Positioning, Creative and Campaign Concepts : An overview, Social and Economic Impact of Advertising, Advertising : Ethics, Code and Law, Brand Equity and Advertising, DAGMAR , Role of ASCI (Advertising standard council of India)

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Module 4 DEVELOPMENT OF PUBLIC RELATIONS (6 hours)

Historical Perspective. - Present status of PR and future scope. - Distinction between -PR, Propaganda, Advertising, Publicity, Marketing PR as a Management. Function and its interface with Other Managerial disciplines PR IN INDIA: - Development of PR in Indian Public sector-historical perspective. - Objectives of PR in Public sector vis-a-vis Private Sector. - Govt. Information System. - Role of PIB in PR /press relations. - Role of PR in democracy.

Module 5 INTRODUCTION TO MEDIA (6 hours)

Introduction to Media Planning, general Procedures & Problems. - Relationship among media, Advertising, sales promotion, Publicity and Consumers

Suggested Reading

Advertising and Public Relations Law-Roy L. Moore, 1998

Introduction to Public Relations and Advertising-D F du Plessis, 2000

Advertising and Public Relations Research -Donald W. Jugenheimer 2010

Post Graduate Department Of English
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DEPARTMENT OF ECONOMICS
ADD ON COURSE 2020-21

Financial Journalism (30 Hours)

Overview

The course is designed to equip students with the basic knowledge and skills necessary to report on financial matters within the Indian context. The course covers the fundamentals of financial journalism, the Indian financial system, and the practical aspects of reporting and writing on financial topics.

Course Objectives

- To understand the principles and practices of financial journalism.
- To gain knowledge of the Indian financial system and economy.
- To develop skills for reporting and writing financial news and analysis.
- To understand the ethical considerations in financial journalism.

Curriculum

Module 1: Introduction to Financial Journalism (5 Hours)

- Definition and Importance of Financial Journalism
- History and Evolution of Financial Journalism in India
- Key Concepts and Terminology in Finance and Economics
- Overview of Financial Markets and Institutions

Module 2: Understanding the Indian Financial System (5 Hours)

- Structure of the Indian Financial System

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- Role of Reserve Bank of India (RBI) and Securities and Exchange Board of India (SEBI)
- Indian Banking System and Financial Institutions
- Stock Exchanges and Market Indices
- Key Economic Indicators and Their Significance

Module 3: Reporting and Writing Financial News (5 Hours)

- Sources of Financial News
- Techniques for Financial Reporting
- Writing Financial News and Features
- Interviewing Techniques for Financial Journalism
- Analysing Financial Statements and Reports

Module 4: Specialised Areas of Financial Journalism (5 Hours)

- Corporate and Business Reporting
- Economic Policy and Government Finance
- Personal Finance and Investment Reporting
- Reporting on Financial Scandals and Investigative Journalism
- Role of Data Journalism in Financial Reporting

Module 5: Digital Tools and Platforms for Financial Journalism (5 Hours)

- Using Digital Media for Financial News
- Social Media and Financial Journalism
- Multimedia Reporting: Videos, Podcasts, and Infographics
- Leveraging Financial Databases and Analytical Tools
- Ethics and Accuracy in Digital Financial Reporting

Module 6: Ethical and Legal Aspects of Financial Journalism (5 Hours)

- Ethical Standards and Dilemmas in Financial Journalism
- Legal Considerations and Regulations
- Avoiding Conflicts of Interest
- Transparency and Accountability in Financial Reporting
- Case Studies of Ethical Issues in Financial Journalism

Assessment

- Class Participation and Attendance (10%)
- Quizzes and Assignments (30%)

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- Reporting and Writing Exercises (30%)
- Final examination (30%)

DEPARTMENT OF ECONOMICS
ADD ON COURSE 2020-21

Developing Entrepreneurship Add-on Course (30 Hours)

Overview

This add-on course in Developing Entrepreneurship is designed to equip students with the essential skills and knowledge needed to start and manage their own businesses. The course covers the fundamentals of entrepreneurship, business planning, financial management, marketing strategies, and the legal aspects of starting a business.

Course Objectives

- To understand the key concepts and principles of entrepreneurship.
- To develop skills for identifying business opportunities and creating business plans.
- To learn about financial management and funding options for startups.
- To understand marketing strategies for new ventures.
- To gain knowledge of the legal and regulatory aspects of starting and running a business.

Curriculum

Module 1: Introduction to Entrepreneurship (5 Hours)

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- Definition and Importance of Entrepreneurship
- Characteristics and Traits of Successful Entrepreneurs
- Types of Entrepreneurship (e.g., Social, Technological, Corporate)
- The Entrepreneurial Mindset
- Case Studies of Successful Entrepreneurs

Module 2: Identifying Business Opportunities (5 Hours)

- Techniques for Generating Business Ideas
- Market Research and Analysis
- Evaluating Business Opportunities
- Understanding Customer Needs and Preferences
- Feasibility Analysis and Risk Assessment

Module 3: Business Planning (5 Hours)

- Components of a Business Plan
- Writing a Business Plan: Executive Summary, Business Description, Market Analysis, Organisational Structure, Product Line or Services, Marketing and Sales Strategies, Funding Request, Financial Projections
- Presenting a Business Plan to Stakeholders
- Revising and Improving the Business Plan

Module 4: Financial Management for Entrepreneurs (5 Hours)

- Basics of Financial Management
- Understanding Financial Statements (Income Statement, Balance Sheet, Cash Flow Statement)
- Budgeting and Financial Planning
- Funding Options for Startups (Bootstrapping, Loans, Angel Investors, Venture Capital)
- Managing Cash Flow and Financial Risks

Module 5: Marketing Strategies for Startups (5 Hours)

- Developing a Marketing Plan
- Branding and Positioning
- Digital Marketing and Social Media Strategies
- Customer Acquisition and Retention
- Sales Techniques and Negotiation Skills

Module 6: Legal and Regulatory Aspects (5 Hours)

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- Understanding Business Structures (Sole Proprietorship, Partnership, Corporation, LLC)
- Registering a Business and Obtaining Licences
- Intellectual Property Rights (Patents, Trademarks, Copyrights)
- Employment Laws and Regulations
- Compliance and Ethical Considerations

Assessment

- Class Participation and Attendance (10%)
- Assignments & Seminars (40%)
- Quizzes (20%)
- Final Examination (30%)

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Brochure & Syllabus

Certificate/Value added courses offered during 2020-21

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VALUE ADDED COURSE

Department of Computer Application, The Cochin College.

ADBCA2004 : MICROSOFT EXCEL TRAINING

Duration: 30 Hours

COURSE DESCRIPTION

- This course **covers everything there is to know about Microsoft Excel**.
- From the **fundamentals,** to the **most advanced features,** after taking this class you will be able to use Microsoft Excel
- This Microsoft Excel Comprehensive course serves all ability levels - from beginners to advanced users
- BEGINNERS can begin at the beginning, work their way through the course, and master everything about Microsoft Excel

COURSE OBJECTIVE

- Master Microsoft Excel - formulas and functions - shortcuts and tips - charts and graphs
- Microsoft Excel including automation & VBA programming
- Extensive coverage of Excel functions & the Top 10 functions: SUM, IF, LOOKUP, VLOOKUP, XLOOKUP, MATCH, CHOOSE, DATE, DAYS, FIND, FINDB, INDEX, AVERAGE, COUNT
- Data management & analysis - pivot tables - get & transform - power query editor - data validation - goal seekv
- Allow you to apply what you are learning and grow your abilities with Microsoft Excel
- Data cleaning and transformation - filter & sort data - formula tracing

COURSE OUTLINE

MODULE 1 (6 Hours)
- Course orientation
- **Understanding spreadsheets**
- Understanding version
- Personalization
- Accessibility
- Course Outline
- File extensions and open with
- Course files
- Hands-On Exercises

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MODULE 2 (6 Hours)

- Introduction to writing formulas with excel
- Workbooks and worksheets
- **Useful keyboard shortcuts**
- Working with Excel files
- Autosave and auto recover
- Finding your way around Excel
- Mouse pointer awareness
- **Writing formulas**
- Relative, absolute, & mixed references
- Ranges & names
- Hands- On Exercises

MODULE 3 (6 Hours)

- Sum & average
- Max, min, documentation
- Count, countif
- Round, roundup, rounddown
- **Rand & randbetween functions**
- Concat & textjoin
- Days & now
- If
- Hands-On Exercises

MODULE 4 (6 Hours)

- The top 10 Excel functions-**SUM, IF, LOOKUP, VLOOKUP, MATCH, CHOOSE, DATE, DAYS, FIND, FINDB, INDEX**
- How to stripe rows in Microsoft Excel
- **Create a dropdown menu in Excel**
- Xlookup
- Vlookup
- Gradebook with xlookup, vlookup, & curve
- Xmatch
- Choose
- Date, year, month, day, left, mid, right, edate, datedif
- Find & findb
- Index
- Hands- On Exercises

MODULE 5 (6 Hours)

- Introduction
- Font
- Clear formats
- Format painter
- Cut, copy, paste

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- Alignment
- Inserting & deleting cells, rows, and columns
- Format cells dialog box
- Number formats
- Custom fonts
- Hands- On Exercises

Assessment of Outcomes:

- Quizzes and assignments (40%)
- Project development and implementation (30%)
- Final exam (30%)

Reference Books

"Excel 2019 Bible" by Michael Alexander, Richard Kusleika, and John Walkenbach
"Excel 2019 All-in-One For Dummies" by Greg Harvey

"Microsoft Excel Data Analysis and Business Modeling" by Wayne Winston

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VALUE ADDED COURSE

Department of Computer Application, The Cochin College.

ADBCA2005 : MACHINE LEARNING USING PYTHON
Duration: 30 Hours

COURSE DESCRIPTION

This is the most complete course online for learning about Python and Machine Learning. This course is designed for the student who already knows some programming basics and is ready to dive deeper into using those Python skills for Data Science and Machine Learning. The course will cover in detail the full data science and machine learning tech stack . The course is structured to guide you through understanding **not just how to use data science and machine learning libraries, but** *why we use them.* This course is balanced between **practical real world case studies** and **mathematical theory behind the machine learning algorithms.**

COURSE OBJECTIVE

- Appreciate the breadth & depth of ML applications and use cases in real-world scenarios.
- Import and wrangle data using Python libraries and divide them into training and test datasets
- Data preprocessing techniques, Univariate and Multivariate analysis, Missing values and outlier treatment etc
- Implement linear and polynomial regression, understand Ridge and lasso Regression,
- Implement various type of classification methods including SVM, Naive bayes, decision tree, and random forest
- Interpret Unsupervised learning and learn to use clustering algorithms
- Tuning of ML solutions, Bias-variance tradeoff, Minibatch, and Shuffling, Overfitting avoidance
- Basics of Neural Networks, Perceptron, MLP
- Build real-world solutions using MLP

COURSE OUTLINE

MODULE 1 (6 hours)
Introduction to course

-
- Anaconda Python and Jupyter Install and Setup
- Note on Environment Setup - Please read me!
- Environment Setup
-
- OPTIONAL: Python Crash Course
- Python Crash Course - Part One
- Python Crash Course - Part Two
- Python Crash Course - Part Three
- Python Crash Course - Exercise Questions
- Python Crash Course - Exercise Solutions

MODULE 2 (6 hours)

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- Machine Learning Pathway
- Introduction to NumPy
- NumPy Arrays
- Coding Exercise Check-in: Creating NumPy Arrays
- NumPy Indexing and Selection
- Coding Exercise Check-in: Selecting Data from Numpy Array
- NumPy Operations
- Check-In: Operations on NumPy Array
- NumPy Exercises
- Numpy Exercises – Solutions

MODULE 3 (6 hours)

- Introduction to Pandas
- Series - Part One
- Check-in: Labeled Index in Pandas Series
- Series - Part Two
- DataFrames - Part One - Creating a DataFrame
- DataFrames - Part Two - Basic Properties
- DataFrames - Part Three - Working with Columns
- DataFrames - Part Four - Working with Rows
- Pandas - Conditional Filtering
- Pandas - Useful Methods - Apply on Single Column
- Pandas - Useful Methods - Apply on Multiple Columns
- Pandas - Useful Methods - Statistical Information and Sorting
- Missing Data - Overview
- Missing Data - Pandas Operations
- GroupBy Operations - Part One
- GroupBy Operations - Part Two - MultiIndex
- Combining DataFrames - Concatenation
- Combining DataFrames - Inner Merge
- Combining DataFrames - Left and Right Merge
- Combining DataFrames - Outer Merge
- Pandas - Text Methods for String Data
- Pandas - Time Methods for Date and Time Data
- Pandas Input and Output - CSV Files
- Pandas Input and Output - HTML Tables
- Pandas Input and Output - Excel Files
- Pandas Input and Output - SQL Databases
- **Pandas Pivot Tables**
- Pandas Project Exercise Overview
- Pandas Project Exercise Solutions
- Introduction to Matplotlib
- Matplotlib Basics
- Matplotlib - Understanding the Figure Object
- Matplotlib - Implementing Figures and Axes
- Matplotlib - Figure Parameters
- **Matplotlib - Subplots Functionality**
- Matplotlib Styling - Legends
- Matplotlib Styling - Colors and Styles

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- Advanced Matplotlib Commands (Optional)
- Matplotlib Exercise Questions Overview
- Matplotlib Exercise Questions - Solutions

MODULE 4 (6 hours)

-
- Introduction to Seaborn
- Scatterplots with Seaborn
- Distribution Plots - Part One - Understanding Plot Types
- Distribution Plots - Part Two - Coding with Seaborn
- Categorical Plots - Statistics within Categories - Understanding Plot Types
- Categorical Plots - Statistics within Categories - Coding with Seaborn
- Categorical Plots - Distributions within Categories - Understanding Plot Types
- Categorical Plots - Distributions within Categories - Coding with Seaborn
- Seaborn - Comparison Plots - Understanding the Plot Types
- Seaborn - Comparison Plots - Coding with Seaborn
- Seaborn Grid Plots
- Seaborn - Matrix Plots
- Seaborn Plot Exercises Overview
- Seaborn Plot Exercises Solutions
- Capstone Project Solutions - Part One
- Capstone Project Solutions - Part Two
- Capstone Project Solutions - Part Three

MODULE 5 (6 hours)

- Introduction to Machine Learning Overview Section
- Why Machine Learning?
- Types of Machine Learning Algorithms
- Supervised Machine Learning Process
- Companion Book - Introduction to Statistical Learning
- Introduction to Linear Regression Section
- Linear Regression - Algorithm History
- Linear Regression - Understanding Ordinary Least Squares
- Linear Regression - Cost Functions
- Linear Regression - Gradient Descent
- Python coding Simple Linear Regression
- Overview of Scikit-Learn and Python
- Linear Regression - Scikit-Learn Train Test Split
- Linear Regression - Scikit-Learn Performance Evaluation - Regression
- Linear Regression - Residual Plots
- Linear Regression - Model Deployment and Coefficient Interpretation
- Polynomial Regression - Theory and Motivation
- Polynomial Regression - Creating Polynomial Features
- Polynomial Regression - Training and Evaluation
- Polynomial Regression - Choosing Degree of Polynomial
- Polynomial Regression - Model Deployment
- Introduction to Cross Validation
- Regularization Data Setup
- L2 Regularization - Ridge Regression Theory

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- L2 Regularization - Ridge Regression - Python Implementation
- L1 Regularization - Lasso Regression - Background and Implementation
- L1 and L2 Regularization - Elastic Net

Assessment of Outcomes:

- Quizzes and assignments (40%)
- Project development and implementation (30%)
- Final exam (30%)

Reference Books

- **"**P "Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow" by Aurélien Géronython
- Machine Learning" by Sebastian R
- Machine Learning with Python Cookbook" by Chris Albonaschka and Vahid Mirjalili

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Brochure & Syllabus
Certificate/Value added courses offered during 2020-21

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VALUE ADDED COURSE
Department of Zoology, The Cochin College.
ADZOO2004: Veterinary and Animal Care

(Total Hours - 30)

Course Outcomes

CO1 Understand the Fundamentals of Veterinary Science

CO2 Apply Veterinary Terminology and Concepts

CO3 Diagnose and Manage Animal Diseases

1: Introduction to Veterinary Science (5 hours)

   Module 1: Overview of Veterinary Science

   - History and evolution of veterinary science
   - Importance of veterinary medicine
   - Roles and responsibilities of veterinarians

   Module 2: Veterinary Terminology

   - Basic veterinary and medical terms
   - Understanding animal anatomy and physiology

2. : Animal Biology and Physiology (5 hours)

   Module 3: Basic Animal Anatomy

   - Structure of different animal species (mammals, birds, reptiles)
   - Comparative anatomy

   Module 4: Animal Physiology

   - Circulatory, respiratory, and digestive systems
   - Nervous and endocrine systems

3: Animal Nutrition and Feeding (5 hours)

   Module 5: Fundamentals of Animal Nutrition

   - Nutritional requirements of different animals
   - Types of animal feed

   Module 6: Feeding Practices and Ration Formulation

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- Diet formulation and supplementation
- Feeding schedules and methods

4: Animal Health and Disease Management (5 hours)

Module 7: Common Animal Diseases

- Infectious and non-infectious diseases
- Zoonotic diseases

Module 8: Disease Prevention and Control

- Vaccination protocols
- Quarantine and biosecurity measures

5: Veterinary Pharmacology and Therapeutics (5 hours)

Module 7: Basics of Veterinary Pharmacology

- Types of veterinary drugs
- Drug administration routes

Module 8: Common Therapeutic Practices

- Pain management and anesthesia
- Antibiotic use and resistance

Assessment

- Mid-term Exam: Multiple choice and short answer questions covering weeks 1-5 (1 hour)
- Final Exam: Multiple choice, short answer questions, and case study analysis covering weeks 6-10 (1 hour)

Recommended Textbooks and Resources

- "Veterinary Medicine: A Textbook of the Diseases of Cattle, Horses, Sheep, Pigs, and Goats" by O. M. Radostits
- "Small Animal Clinical Diagnosis by Laboratory Methods" by Michael D. Willard and Harold Tvedten
- "Animal Nutrition" by Peter McDonald, J. F. D. Greenhalgh, and C. A. Morgan
- Journals: "Journal of Veterinary Internal Medicine", "Journal of Animal Science"

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Add on Course for Academic Year 2020-21

Post Graduate and Research Department of Commerce

Digital Marketing

Hours: 30

Objective: To understand the basic Concepts of Digital marketing and the road

Map for successful Digital marketing strategies.

Program Outcome: Students will understand: Digital Marketing Concepts

The applications of digital marketing in the globalized market

Module I: Introduction to Digital Marketing –Meaning-Importance-Difference in Traditional and Digital Marketing-recent trends and current scenario of the industry –Competitive analysis-Case studies on Marketing Strategies.   (6 Hours).

Module II: Website Creation: Elements –functionality of word press-developing website-add content-using different elements into your website-Installing and Activating Plugins-The Functionality of Plugins.   (6 Hours)

Module III: Search Engine Optimisation-Introduction to SEO, How Search engine works, SEO Phases, History Of SEO, How SEO Works, What is Googlebot (Google Crawler), Types Of SEO technique, Keywords, Keyword Planner   (6 Hours)

Module IV: Web Analytics: Introduction- What's analysis?, Is analysis worth the effort?, Small businesses, Medium and Large scale businesses, Analysis vs intuition, Introduction to web analytic-Social Analytics-Google Analytics   (6 Hours)

Module V: Social Media Marketing: Fundamentals of Social Media Marketing & its significance, Necessity of Social media Marketing, Building a Successful strategy: Goal Setting, Implementation. Facebook Marketing -LinkedIn Marketing-Twitter Marketing (6 Hours)

Suggested Books:

1. Digital Marketing –Kamat and Kamat-Himalaya
2. Marketing Strategies for Engaging the Digital Generation, D. Ryan,
3. Digital Marketing, V. Ahuja, Oxford University Press
4. Digital Marketing, S.Gupta, McGraw-Hill
5. Quick win Digital Marketing, H. Annmarie, A. Joanna, Paperback edition

Dr Rikha P.G
Course Co-ordinator

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ADD ON COURSE FOR ACADEMIC YEAR 2020-2022
POST GRADUATE & RESEARCH DEPARTMENT OF COMMERCE
USAGE OF STATISTICAL TOOLS IN RESEARCH

Duration – 30 Hours

Objectives of the Course

- Introducing students to the SPSS software, its interface, data entry, and basic functions.
- Teaching students to calculate and interpret measures like Mean, Median, Mode, Standard deviation, and Variance
- Providing Practical examples and exercises that stimulate real
- World scenarios where SPSS can be applied
- Showing students how to create effective graphs, charts and plots visually represent data

Course Overview

To enable the students to analyze the data collected for research purposes.

Eligibility: Degree Level Education for B Com students

Module I: Introduction to SPSS Starting SPSS, Entering Data, Defining Variables, Loading & Saving Data files, running your first analysis, Examining & Printing Output files, Modifying Data files. (6 Hours)

Module II: Working with Data Variables and Data Representation, Transformation and Selection of Advanced Bar Data - Selecting a subset, computing a new variable, Recording a variable - Different variable. (8 Hours)

Module III: Graphing Data Graphing Basics, Bar Charts, Pie Charts & Histograms, Scatterplots, Charts. (6 Hours)

Module IV: Exploring Data Descriptive Statistics - Frequency Distribution and Percentile Ranks for Single & Multiple Variables (2 Hours)

Module V - Measures of Central Tendency and Measures of Dispersion for Single Group and Multiple Groups, Standard Scores, Pearson correlation, Simple linear regression. (7 Hours)

References

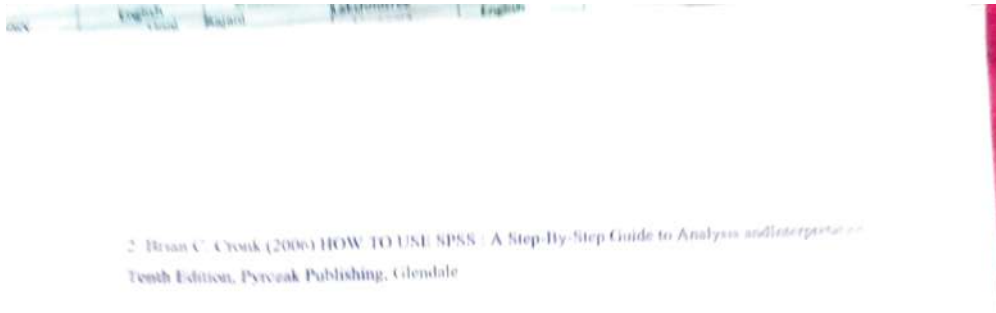1. Arthur Griffith.(2007) Statistics for Dummies, Second Edition, Wiley Publishing, Indiana.

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2. Brian C. Cronk (2006) HOW TO USE SPSS : A Step-By-Step Guide to Analysis and Interpretation, Tenth Edition, Pyrczak Publishing, Glendale

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Brochure and Syllabus

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VALUE ADDED COURSE

Department of Chemistry, The Cochin College

ADCHE2004, Nano technology and Nano materials
Duration: 30 hrs

Course Outcomes

- Understand the basic principles of nanotechnology and nanomaterials
- Explain the different types of nanomaterials and their applications in various fields
- Utilize common techniques for characterizing nanomaterials
- Ethical implications of nanotechnology and its impact on society

Module I:

- **Introduction to Nanoscience and Nanotechnology (8 hrs)**

History-Feynman's hypothesis- scales of nanosystems, Classification of nanomaterials- quantum dots-. Different types of nanomaterials. synthesis of nano particles-Various approaches. Synthesis, properties and applications of carbon nanotubes, fullerenes and quantum dots.

Module II:

- **Characterization of Nanomaterials (5 hrs)**

Important methods for the characterization of nanomaterials – Various characterization techniques [TEM, SEM, TGA, DTA, DSC, UV-Visible Spectroscopy, FT-IR, AFM and XRD]

Module III:

- **Properties of Nanomaterials (5 hrs)**

Electrical and optical properties of metal nanoparticles- electrical and optical properties of carbon nanotubes. Nanocrystals, nanolithography- optoelectronic devices- photodetectors.

Module IV:

- **Environmental Nanotechnology (5 hrs)**

Waste remediation: Nanoporous materials and their applications in water purification and adsorption of heavy metals; Pollution by nanoparticles

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Module V:

- **Applications of Nanomaterials (7 hrs)**

Nano catalysis – nanomedicines - applications in medical diagnosis, nano based drug delivery. Applications in biotechnology -nano sensors- self-assembly, nano sensor based on quantum size effects- nano biosensors- destructive applications of nanomaterials.

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BUSINESS ENVIRONMENT
COURSE CODE: ADBBA2004
Coordinator   : Jeffy Thomas

1ST YEAR 2020-23 BATCH

Course Overview

The Business Environment course provides students with a comprehensive understanding of the external factors that influence business operations and decision-making. The course covers the nature and scope of business, environmental scanning, and the interface between culture, government, and business. It also explores the economic, political, legal, and financial environments that shape business strategy and behavior.

Course Objectives

1. To learn how various factors influence market trends, demand supply dynamics, consumer behavior etc.
2. To understand the different environment in the business climate
3. To understand the various components of the competitive environment

Outcome of the course

- Equips the students with the flexibility to respond to changing conditions
- Since business environments are often changing the students can make changes to maximize opportunities in response to developments

Course Outline

1. Introduction to Business environment (15 Hours)
   Business environment- meaning and definition- concepts of business- objectives- types of business environment- environmental analysis- objectives- merits and demerits- economic environment- non economic environment- economic systems- political and legal environment- elements- social and cultural environment- impacts of culture on business- social responsibility of business- natural environment components

2. Environmental management (15 Hours)

   Environmental management- sustainable development- history- elements- challenges and strategies of sustainable development- benefits- EIA- meaning- scope- process- environment management plan- life cycle impact assessment- environmental ethics- environmental accounting- forms- environmental costs- types

Mode of Assessment

- Exam: Comprehensive exam covering all course topics

Reference books

1. Business and environment by Dr. S pavithra

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2. Basics of environment management by Praveen Khandve

3. Environmental management text and cases by Balakrishna Moorthy

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DEPARTMENT OF BUSINESS ADMINISTRATION

VALUE ADDED COURSE

Name of the course	: Stock Trading
COURSE CODE	ADBBA2006
Duration of the course	: 30 hrs.
Strength	: 30
Coordinator	: Betna Rodrigues

Course Overview

The stock trading course helps in building a broader understanding on the topics such as basics of stock trading, technical analysis, fundamental analysis, risk management and help you learn the tricks to grow your wealth.

Course Objective

- Familiarize the students with the basic terminologies of share market and its application.
- Guide the students in understanding fundamental concept.
- Develop the skill to take right entry and exit of stocks at right point of time.

Course Outcome

- Understand overall share market.
- Identify the investment options and take appropriate decisions.
- Develop skill of Stock trading.

Course Outline

Module 1: An Overview of capital market   (10 hours)
Primary market – Secondary market – Depositories – Private Placement of share – Buyback of shares – Issue mechanism

Module 2: Stock Market   (10 hours)
History - Membership and Organizations - Governing Body – Functions of Stock exchange – Online trading – Demat and depository – Role of SEBI, Recognized Stock exchange in India – Derivatives on Stock: Meaning, Types.

Module 3: Trading In Stock Market   (10 hours)
Pattern of Trading and settlement – An overview of security Analysis – Fundamental, Economic and Technical Analysis – Activities of brokers and broker charges – Speculation and its types – National Securities Depository LTD – Central securities Depository LTD.

Mode of Assessment

Comprehensive assessment covering all course topics

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Reference

1. "Trading Fundamentals" by Vivek K Negi
2. "Capital market and investment management" by Dr. Dibin Sekharan

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VALUE ADDED COURSE
Department of Chemistry (SF), The Cochin College
ADCSF2002: Nanotechnology in Biomedical Field
Duration 30 Hours

Course Description:

This course provides an overview of the application of nanotechnology in various aspects of biomedical research and healthcare. Students will explore the principles of nanotechnology, nanomaterials synthesis, and their applications in drug delivery, imaging, diagnostics, and therapeutics.

Prerequisites:

Knowledge of atomic and molecular structures, chemical bonding, thermodynamics, and quantum mechanics forms the basis of nanotechnology.

Week 1: Introduction to Nanotechnology in Biomedicine (6 hours)

- Overview of nanotechnology and its relevance to biomedical applications.
- Fundamentals of nanomaterials: nanoparticles, nanotubes, and nanocomposites.
- Challenges and opportunities in the use of nanotechnology in medicine.

Week 2: Nanomaterials Synthesis and Characterization (6 hours)

- Techniques for nanomaterials synthesis: bottom-up and top-down approaches.
- Characterization methods for nanomaterials: microscopy, spectroscopy, and diffraction.
- Case studies on the synthesis and characterization of nanomaterials for biomedical applications.

Week 3: Nanoparticles in Drug Delivery (6 hours)

- Principles of drug delivery systems and their challenges.
- Role of nanoparticles in drug delivery: passive and active targeting strategies.
- Design considerations for nanoparticle-based drug delivery systems.

Week 4: Nanotechnology in Imaging and Diagnostics (6 hours)

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- Nanoparticles for biomedical imaging: contrast agents, fluorescent probes, and magnetic nanoparticles.
- Applications of nanotechnology in diagnostic techniques: biosensors, lab-on-a-chip, and point-of-care devices.
- Case studies on the use of nanotechnology in medical imaging and diagnostics.

Week 5: Nanotechnology in Therapeutics and Regenerative Medicine (6 hours)

- Nanoparticle-based therapies: targeted drug delivery, gene therapy, and photothermal therapy.
- Nanotechnology-enabled regenerative medicine: tissue engineering and stem cell therapies.
- Ethical considerations and future perspectives in nanotechnology-based biomedical interventions.

Assessment:

- Weekly assignments and quizzes (40%)
- Mid-term exam (20%)
- Final project (30%)
- Class participation and presentation (10%)

Textbook:

"Nanomedicine: Principles and Applications" by Robert A. Freitas Jr. and G. Avinash.

References:

- "Nanotechnology in Medicine: Basic Concepts and Applications" by Brigita Urbancic and Ales Iglic.
- "Nanostructures for Drug Delivery" edited by Ecaterina Andronescu and Alexandru Mihai Grumezescu.
- "Nanobiotechnology in Diagnostics" edited by Ali Demir Sezer.

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Strategic Management

Duration: 30 hours

Course Overview

This course provides tools to develop and implement business strategies. Key areas include competitive analysis, strategy formulation, implementation, and evaluation, aimed at enhancing strategic thinking and decision-making skills

Course Objectives

1. Understand the fundamentals and importance of strategic management.

2. Analyze internal and external environments to identify strategic opportunities and threats.

3. Develop skills to formulate and implement effective strategies.

Course Outcomes ;

1.This course provides a foundational understanding of strategic management concepts, frameworks, and practices.

2.Students will learn to formulate, implement, and evaluate strategies to achieve organizational objectives and maintain a competitive advantage.

Module 1 - Introduction to Strategic Management (10 hours)

* Definition and Importance of Strategic Management
*Levels of Strategy: Corporate, Business, and Functional
*Vision, Mission, and Objectives
 *Strategic Management Process
*Environmental Analysis: PESTEL and SWOT

Module 2 - Strategy Formulation and Implementation (10 hours)

*Business-Level Strategies: Cost Leadership, Differentiation, Focus
*Corporate-Level Strategies: Diversification, Mergers and Acquisitions

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*Organizational Structure and Design
*Resource Allocation and Budgeting
*Leadership and Corporate Culture

Module 3 - Strategy Evaluation and Contemporary Issues (10 hours)

*Importance of Strategic Control
*Performance Measurement: Financial and Non-Financial Indicators
*Digital Transformation and Strategy
*Sustainability and Corporate Social Responsibility (CSR)
*Strategic Management in SMEs

Assessment Procedure

1.Final Exam-Comprehensive test of knowledge.

References

1."Competitive Strategy" by Michael E. Porter

2."Good Strategy Bad Strategy" by Richard Rumelt

3."Strategic Management: Concepts and Cases" by Fred R. David and Forest R. David

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TOXICOLOGY

Course Overview

This 30-hour certificate course in toxicology provides a detailed introduction to the study of the adverse effects of chemicals on living organisms. Designed for students, healthcare professionals, and individuals interested in the field, the course covers fundamental concepts, methods of assessment, and practical applications of toxicology.

Course Objectives

1. Understand the Basics: Introduce the fundamental principles and history of toxicology.
2. Mechanisms of Toxicity: Explore how toxins affect biological systems at the molecular, cellular, and organ levels.
3. Toxicokinetics: Study the absorption, distribution, metabolism, and excretion of toxins.
4. Toxicological Testing Methods: Learn about various methods used to assess toxicity.
5. Risk Assessment: Understand the principles and processes involved in evaluating the risk posed by toxic substances.
6. Regulatory Toxicology: Familiarise with the laws and regulations governing the use and control of toxic substances.
7. Case Studies and Applications: Analyse real-world cases and practical applications in the field of toxicology.

Course Outline

1. Introduction to Toxicology (3 hours)
   - Definition and scope of toxicology
   - Historical perspectives and development of the field
   - Importance and applications of toxicology
2. Mechanisms of Toxicity (5 hours)

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- Cellular and molecular mechanisms
- Organ-specific toxicity
- Biochemical and physiological effects of toxins

3. Toxicokinetics (5 hours)
   - Absorption, distribution, metabolism, and excretion (ADME) of toxicants
   - Factors affecting toxicokinetics
   - Dose-response relationships

4. Toxicological Testing Methods (5 hours)
   - In vitro and in vivo testing methods
   - Acute, sub-chronic, and chronic toxicity tests
   - Alternative testing methods and ethical considerations

5. Risk Assessment and Management (4 hours)
   - Hazard identification
   - Dose-response assessment
   - Exposure assessment and risk characterization
   - Risk management and communication

6. Regulatory Toxicology (4 hours)
   - Laws and regulations related to toxic substances (e.g., REACH, TSCA)
   - Role of regulatory agencies (e.g., EPA, FDA)
   - Compliance and safety standards

7. Case Studies and Practical Applications (4 hours)
   - Analysis of real-world toxicological incidents
   - Practical exercises and risk assessment simulations
   - Current issues and challenges in toxicology

Mode of Assessment

- Quizzes: Weekly quizzes to assess understanding of the material (30% of the final grade).

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- Assignments: Practical assignments and case studies (40% of the final grade).
- Final Exam: Comprehensive exam covering all course topics (30% of the final grade).

Reference Books

1. "Casarett and Doull's Essentials of Toxicology" by Curtis D. Klaassen and John B. Watkins III
2. "Principles and Methods of Toxicology" by A. Wallace Hayes and Claire L. Kruger
3. "Introduction to Toxicology" by John Timbrell
4. "Basic Toxicology: Fundamentals, Target Organs, and Risk Assessment" by Frank C. Lu and Sam Kacew
5. "Toxicology: A Case-Oriented Approach" by John Joseph Fenton
6. "Molecular, Clinical and Environmental Toxicology" edited by Andreas Luch

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Mathematics in Statistics

Course Objective:

- Provide a foundational understanding of the mathematical concepts used in statistics.

- Develop skills to apply mathematical techniques to solve statistical problems.

- Equip students with the knowledge to pursue advanced studies or careers in statistics and related fields.

Prerequisites:

- Basic knowledge of algebra and calculus.

- Familiarity with basic statistical concepts (mean, median, mode, variance, etc.).

- Basic programming skills (preferably in R or Python).

Course Structure (30 hours, Week-wise and Session-wise):

Week 1: Introduction to Probability (5 hours)

- Session 1 (1 hour): Introduction to Statistics and Probability Theory

- Session 2 (2 hours): Probability Axioms, Conditional Probability, and Independence

- Session 3 (2 hours): Discrete Random Variables and Probability Distributions

Week 2: Continuous Random Variables (5 hours)

- Session 4 (2 hours): Continuous Random Variables and Probability Density Functions

- Session 5 (2 hours): Expectation, Variance, and Moments

- Session 6 (1 hour): Common Continuous Distributions (Normal, Exponential, etc.)

Week 3: Joint Distributions and Transformations (5 hours)

- Session 7 (2 hours): Joint, Marginal, and Conditional Distributions

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- Session 8 (2 hours): Functions of Random Variables and Transformation Techniques

- Session 9 (1 hour): Covariance and Correlation

Week 4: Sampling Distributions and Estimation (5 hours)

- Session 10 (2 hours): Sampling Distributions and the Central Limit Theorem

- Session 11 (2 hours): Point Estimation and Properties of Estimators

- Session 12 (1 hour): Methods of Estimation (Method of Moments, Maximum Likelihood Estimation)

Week 5: Hypothesis Testing (5 hours)

- Session 13 (2 hours): Hypothesis Testing Framework and Types of Errors

- Session 14 (2 hours): Common Tests (Z-test, T-test, Chi-Square Test)

- Session 15 (1 hour): Power and Sample Size Calculations

Week 6: Regression Analysis (5 hours)

- Session 16 (2 hours): Simple Linear Regression and Least Squares Estimation

- Session 17 (2 hours): Multiple Regression and Model Selection

- Session 18 (1 hour): Residual Analysis and Model Diagnostics

Week 7: Advanced Topics and Applications (5 hours)

- Session 19 (2 hours): Introduction to Non-parametric Statistics

- Session 20 (1 hour): Bayesian Statistics Basics

- Session 21 (2 hours): Practical Data Analysis using Statistical Software (R or Python)

Evaluation:

1. **Assignments (30%)**: Weekly problem sets and data analysis tasks to reinforce the concepts learned in each session.

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2. **Midterm Exam (20%)**: A written exam covering the material from the first half of the course.

3. **Final Exam (20%)**: A written exam covering the material from the entire course.

4. **Final Project (30%)**: A comprehensive project that involves data collection, analysis, and interpretation using the techniques learned. Students will present their projects in the final session.

**Refrences*: *

1.   "Mathematical Statistics with Applications" by Dennis Wackerly, William Mendenhall and Richard L.Scheaffer

2.   "Probability and statistics for Engineers and Scientists" by Ronald E Walpole, Raymond H. Myers,Sharon L. Myers and Keying E. Ye

3.   " Introduction to Probability and statistics" by William Mendhall and Robert

J.Beaver 4. "Statistical Inference" by George Casella and Roger L. Berger

This course structure provides a comprehensive introduction to the mathematical foundations of statistics, blending theoretical concepts with practical applications and data analysis exercises. The evaluation methods ensure a thorough assessment of students' understanding and ability to apply the material.

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VALUE ADDED COURSE
Department of Physics, The Cochin College.
ADPHY2003: Introduction to HTML
Duration: 30 Hours

Course Outline

Session 1: Introduction to HTML (4 hours)**

Topics:

 - What is HTML?

 - History and evolution of HTML

 - Basic structure of an HTML document

 - Common HTML tags: `<html>`, `<head>`, `<body>`, `<title>`, `<h1>` to `<h6>`, `<p>`, `<a>`, `<img>`, `<div>`, `<span>`

 - Creating your first HTML page

- Activities:

 - Hands-on practice: Writing and viewing HTML code in a browser

 - Creating a simple web page

 - Basic exercises on using common HTML tags

Session 2: HTML Elements and Attributes (4 hours)

- Topics:

 - HTML elements and their attributes

 - Global attributes: `id`, `class`, `style`, `title`

 - Block-level vs. inline elements

 - Formatting text with HTML

 - Lists: ordered, unordered, and definition lists

 - Forms and input elements

- Activities:

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- Creating and styling text elements

- Building lists (ordered, unordered, and definition lists)

- Creating a basic form with input elements

Session 3: Multimedia Elements and Semantic HTML (4 hours)

- Topics:

  - Inserting images and videos

  - Using audio elements

  - Introduction to semantic HTML

  - Common semantic elements: `<header>`, `<footer>`, `<section>`, `<article>`, `<aside>`, `<nav>`

  - Advantages of using semantic HTML

- Activities:

  - Embedding multimedia elements (images, videos, audio)

  - Building a web page using semantic elements

  - Practical exercises on using semantic HTML

Session 4: Advanced HTML Features (4 hours)

- Topics:

  - Tables and their structure

  - Forms and form validation

  - HTML APIs: Geolocation, Drag and Drop, Web Storage

  - Introduction to HTML5 features

- Activities:

  - Creating and styling tables

  - Building complex forms with validation

  - Using HTML APIs in practical examples

Session 5: Building a Complete Website (4 hours)

- Topics:

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  - Planning and designing a website

  - Structuring content using HTML

  - Implementing navigation

  - Optimizing for accessibility and SEO

  - Final project overview

- Activities:

  - Developing a complete website project

  - Peer review and feedback sessions

  - Presenting the final project

Resources

- Textbook:- "HTML and CSS: Design and Build Websites" by Jon Duckett

- Online Resources:

  - W3Schools: HTML Tutorials

  - Mozilla Developer Network (MDN): HTML Documentation

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VALUE ADDED COURSE
Department of Physics, The Cochin College.
ADPHY2004: Exploring Quantum Physics
Duration: 30 Hours

Module 1 : Conceptual ground   (3 hours)

Comments on studying QM - Pioneering Experiments - "Deriving" the Schrödinger Eq. - Spreading of quantum wavepackets - Meaning of the wave function - Continuity Equation - Observables; Operators; Expectation Values - Time Independent Schrödinger Eq - Superposition; Dirac Notation; Representations

Module 2 : Path Integral   (3 hours)

Introduction - Propagator - Derivation - Classical Limit - Quantum corrections to diffusion - Quantum corrections to diffusion; Localization

Module 3 : Quantum wells to cooper pairs   (3 hours)

Electron in a Box - Finite Potential Well - Bound state in a 1D shallow potential - Bound states in a delta potential - The phenomenon of superconductivity - Quantum Statistics - Two-particle Schrödinger equation - The Cooper problem - time propagation of a wavepacket

Module 4 : Quantum Oscillators   (3 hours)

Quantizing the classical oscillator - Creation/annihilation operators - Generating the energy spectrum - Harmonic oscillator wave-functions - Collective modes; Goldstone theorem - Classical phonons in an oscillator chain - Quantum oscillator chain - Deriving phonon spectrum; Bogoliubov transform

Module 5 : The simplest atom   (3 hours)

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Introduction to optical spectra - Cracking the hydrogen code - Classical hydrogen atom: angular momentum - Classical hydrogen atom - The Bohr model of the atom - Applications of the Bohr Model - Simple constructive techniques - Gaussians and the variational theorem

Module 6 : The bouncing ball   (3 hours)

Variational Estimates and Applications - Hydrogen atom: variational and virial theorems - Use of Special Functions - The Bouncing Ball - Basic Properties of Angular Momentum Operators - Basic Commutation Relations - Angular Momentum as an Effective Potential - Angular Momentum and Runge-Lenz Vector

Module 7 : Rotation and spin   (3 hours)

Rotation and Dipole Moments of Molecules - Atomic and Molecular Polarizabilities: Perturbation Theory - Atomic and Molecular Polarizabilities: Perturbation Theory -

Polarizability of the Hydrogen Atom - The Spectra of Hydrogen Isotopes - Introduction to gauge potentials - magnetic fields - Impossibility of magnetism in classical mechanics - The Dirac Equation - Basics - The Dirac Equation - Spin - Spin and Antimatter in Material Systems

Module 8 : Quantum Gas and time dependence   (3 hours)

Bose-Einstein condensation in theory - Bose-Einstein condensation in experiment - Degenerate Fermi-Dirac gases - Current research in quantum gases - ime-dependent Schrödinger Eq.; general remarks - Sudden perturbations; quantum quenches

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Department of Botany

Add On Course 2020-2021

ADBOT2003-FLORICULTURE

SYLLABUS

Add-On Course Syllabus: Floriculture (30 Hours)

Course Objectives:

- Understand the diversity and classification of flowering plants.
- Learn about propagation techniques and cultural practices in floriculture.
- Gain hands-on experience in greenhouse management and crop production.
- Develop skills in post-harvest handling, packaging, and marketing of cut flowers.
- Explore the economic significance and trends in the floriculture industry.

Course Outline:

Module 1: Introduction to Floriculture (3 hours)

   Definition, scope, and importance of floriculture.

Module 2: Propagation and cultivation techniques in Floriculture (10 hours)

   o Seed propagation, cutting, division, and tissue culture methods.
   o Importance of controlled environments in floriculture.
   o Greenhouse structures, heating, cooling, and humidity control.

Module 3: Soil and Disease Management and Fertilization in Floriculture (7 hours)

   o Soil types, soil fertility, and nutrient requirements for flowering plants.
   o Common pests and diseases affecting flowering plants.

Module 4: Crop Production and Cultural Practices (5 hours)

   o Crop scheduling, spacing, and planting techniques.
   o Pruning, training, and growth regulation of flowering plants.

Module 5: Harvesting and Post-Harvest Handling (5 hours)

   o Techniques for harvesting cut flowers at optimal stage.
   o Post-harvest handling, grading, packaging, and storage requirements.

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