

Department of Biotechnology

22UBT406L	CELL CULTURE AND MOLECULAR BIOLOGY LAB	Credits: 01
0:0:2 - N _L : N _T : N _P		CIE Marks: 50
Total Hours/Week: 02		SEE Marks: 50

<ol style="list-style-type: none"> 1. Callus Induction Technique- Stock preparation, Media preparation. 2. Explants preparation and inoculation technique. 3. Development of suspension culture from callus 4. Animal cell culture techniques 5. Study of absorption spectra of nucleic acids. 6. UV Vis survival curve of bacteria. 7. Agarose gel electrophoresis. 8. Isolation of genomic DNA from plant sources. 9. Isolation of plasmid DNA from E. coli. 10. Estimation of DNA by diphenyl method. 11. Estimation of RNA by orcinol method. 12. Purity of nucleic acids by UV-Vis Spectrophotometer. 13. Standard Operating Procedure for Centrifuge and Gel Documentation Unit. 	
Reference Books *	
<ol style="list-style-type: none"> 1. Sadashiva and Manickam, (2017), Biochemical Methods, (2nd Edition), W.H. Freeman 2. R.A. Dixon & Gonzales, (1995), Plant Cell Culture: A Practical Approach by IRL Press. (2nd Edition), 3. Sambrook& Russell, (2002), Molecular Cloning, (3rd Edition), Cold Spring Harbor Lab. 	
Course Outcomes**	
After completion of the course student will be able to	
<ol style="list-style-type: none"> 1. Conduct and analyze the growth of plant and animal cells by plant and animal tissue culture techniques. 2. Apply absorption spectra and analyze SOP for various lab equipments. 3. Conduct and analyze the concentration and purity of DNA. 4. Conduct observations and experiments including Genomic DNA/plasmid DNA /RNA/protein. 	

Course Outcomes	Programme Outcomes (POs)												Program Specific Outcomes (PSOs)		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	2	2	1	3	1	-	-	-	-	-	1	1	3	1
CO2	1	2	2	1	3	2	-	-	-	-	-	1	1	3	1
CO3	1	2	2	1	3	1	-	-	-	-	-	1	1	3	1
CO4	2	2	3	2	3	2	-	-	-	-	-	1	1	3	1

21UBT523C/21UBT623C	ENVIRONMENTAL STUDIES	01 - Credits (1: 0 : 0)
Hours / Week : 01		CIE Marks : 50
Total Hours : 15		SEE Marks : 50

UNIT – 1	04 Hrs.
<p>Natural Resources: Human activities and their impacts. EIA, Renewable Energy: Solar energy, Wind energy, Hydropower, Tidal energy, Ocean thermal energy, Geo thermal energy, Biomass energy, Biogas, Biodiesel, Bioethanol, Hydrogen as fuel. Non renewable Energy: Coal, Petroleum, Natural gas, Nuclear energy.</p>	
UNIT – 2	04 Hrs.
<p>Environmental Pollution: Water pollution, water quality standards, water borne diseases, Fluoride problem, Air pollution, Noise pollution. Effect of electromagnetic waves. Sustainable future: Concept of sustainable development, threats to sustainability, strategies for sustainable development. Environment economics – concept of green building, Circular Economy.</p>	
UNIT – 3	03 Hrs.
<p>Current Environmental Issues of concern: Greenhouse Effect- Greenhouse gases and Global Warming, Climate change, ozone layer depletion, Acid rain, Eutrophication Environmental policy legislation rules & regulations</p>	
UNIT – 4	04Hrs.
<p>Fundamentals of Waste management: Solid waste management: Sources, classification, characteristics, collection & transportation, disposal, and processing methods. Hazardous waste management and handling. Concept of waste water treatment, Bioremediation. Industrial waste management (Case studies: Cement, plastic, chemical, E–waste, food & construction industry waste management).</p>	
REFERENCES	

1. Benny Joseph "Environmental Studies" Tata McGraw Hill, 2005
2. Dr. D. L. Manjunath, "Environmental Studies" Pearson Education, 2006
3. Koushik and Koushik "Environmental Science & Engineering" New Age International Publishers, New Delhi, 2006
4. Meenakshi "Environmental Science & Engineering" Pranticce Hall of India, 2006

COURSE OUTCOMES

After completion of the course the students shall be able to,

- Ability to recognize natural resources and its uses.
- Able to understand pollution and its effects on environment and to implement sustainable future in the work place.
- Ability to understand current environmental issues.
- Able to apply the waste management techniques in various fields

Course Outcomes	Program Outcomes												Program Specified Outcomes		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO 1	-	1	-	-	-	2	3	-	-	-	-	3	1	-	-
CO 2	2	-	-	-	-	-	3	-	-	-	-	3	1	-	-
CO 3	-	2	-	-	-	2	2	-	-	-	-	3	1	-	-
CO 4	-	-	-	1	-	2	2	1	-	-	-	3	1	-	1

Question Paper Pattern for SEE:

Question is of Objective type

Duration of exam is 1 hour.

50 questions covering all the four units. Each question carries one mark

21UBT601C	BIOPROCESS AND BIOREACTION ENGINEERING	Credits: 03
L:T:P – 3:0:0		CIE Marks: 50
Total Hours/Week: 03		SEE Marks: 50

UNIT-I	10 Hrs.
<p>Kinetics of Homogeneous reactions:</p> <p>Basic Concepts of Bioreaction and bioprocess engineering, Concentration dependent term of a rate equation, Rate Constant. Representation of elementary reaction and non-elementary reactions, Kinetic Models of Non elementary Reactions, Testing Kinetic Models. Temperature-dependent term of a rate equation: Temperature dependency from Arrhenius law, Collision theory, Transition state theory, Thermodynamic approach, Activation Energy.</p>	
UNIT-II	10 Hrs.
<p>Interpretation of Batch Bioreactor Data:</p> <p>Constant volume batch reactor, Integral method of analysis of data -first order, second order, zero order reactions, fractional life, homogenous catalysed reactions, irreversible reaction in series, irreversible reactions in parallel, reactions of shifting order, autocatalytic reactions, reversible reactions, differential method of analysis of data.</p>	
UNIT-III	10 Hrs.
<p>Ideal Bioreactor and bioprocess models:</p> <p>Ideal Batch Reactor, General features of reactors, Basic design equation, relation between Concentration and conversion, Batch cycle time, Space-Time and Space-Velocity, Mixed flow reactor, Plug flow Reactor, Holding time and space time for flow reactors</p> <p>Design for Single Reactions: Size comparison of single reactors. Growth kinetics quantification Unstructured models for microbial growth- Substrate limited growth-models with growth inhibitors, product formation kinetics. Monod kinetics</p>	
UNIT-IV	10 Hrs.
<p>Analysis of Bioreactors:</p> <p>Various types of reactors for immobilised cell and enzyme systems, Multiple reactors like CSTR in series /CSTR in Parallel; MFR in series/ MFR in Parallel, PFR in series/ PFR in parallel, Reactors of</p>	

different types in series, Challenges and issues in bioprocess industries- mixing, interphase mass and heat transfer, Bioreactor instrumentation and control, bioreactor considerations for animal cell cultures and plant cell cultures.

Reference Books *

1. Scott Fogler, H (2016) Elements of Chemical Reaction Engineering, 6th edn., Prentice Hall India Pvt. Ltd.
2. Levenspiel O (2006) Chemical Reaction Engineering, Wiley Eastern, 3rd edn, New Delhi.
3. Kargi and Shuler (2015) Bioprocess Engineering. 3rd edn., Prentice Hall PTR.
4. Bailey J E and Ollis DF (2010) Biochemical Engineering Fundamentals, 2nd edn. Mc Graw- Hill.
5. Charles D. Holland (1990) Fundamentals of Chemical Reaction Engineering, John Wiley and Sons.
6. Pauline M Doran., Bioprocess Engineering Principles, 2nd Edition, Academic Press, USA, 2013.
7. Tapobrata Panda., Bioreactors: Analysis and Design, 1st Edition, Tata McGraw Hill Education Private Limited, New Delhi, 2011.
8. Indian Standards Institution, Code for Unfired Pressure Vessels, IS – 2825.
9. Bhattacharya, B.C, Introduction to Chemical Equipment Design, CBS Publications, 1985.
10. Perry's Chemical Engineers Handbook. 7th Edition Mc Graw Hill Publications

Course Outcomes**

After completion of the course student will be able to

1. Understand the basic concept of reaction engineering to solve bioprocess problems
2. Predict the order and rate of the different reactions.
3. Analyze the batch bioreactor data for different reactions.
4. Apply the suitable bioreactor for different biochemical reactions.

* Books to be listed as per the format with decreasing level of coverage of syllabus

** Each CO to be written with proper action word and should be assessable and quantifiable

Course Outcomes	Programme Outcomes (POs)												Program Specific Outcomes (PSOs)		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	2	3	3	2	2							2	2		
CO2	2	3	2	3	1							2	2		
CO3	2	3	3	2	2							2	2		
CO4	2	3	3	3	1							2	2		

21UBT603C	BIOTRANSFORMATION AND ENZYME TECHNOLOGY	Credits: 3
L:T:P - 3-0-0		CIE Marks: 50
Total Hours/Week: 3		SEE Marks: 50

UNIT-I	10 Hrs.
<p>Enzyme action: Mechanism of enzyme action. Derivations of K_m value (Michaelis-Menton constant), Lineweaver-Burk plot., Enzyme inhibition and kinetics</p> <p>Multi-Substrate Reactions: Introduction to enzyme catalyzed reaction Ping-pong mechanism, Sequential mechanism (ordered and random), Enzyme models - Host guest complexation chemistry</p>	
UNIT-II	10 Hrs.
<p>Enzymatic Techniques: Strategies of purification of enzymes: choice of source, methods of homogenization, Criteria of purity: tests for purity, tests for catalytic activity, active site titrations, Molecular weight determination and characterization of enzymes.</p> <p>Immobilization of enzymes: Techniques of enzyme immobilization; design and configuration of immobilized enzyme reactions, Kinetics of immobilized enzymes, immobilized enzymes in bioconversion processes(uses). The design and construction of novel enzymes</p>	

UNIT-III	10 Hrs.
<p>Enzymes of biological importance: Enzyme pattern in diseases like in Myocardial infarctions (SGOT, SGPT, & LDH) Acetylcholinesterase, angiotensin converting enzyme (ACE), 5'- nucleotidase (5NT), glucose-6-phosphate dehydrogenase (GPD). Use of isozymes as markers in cancer.</p>	
UNIT-IV	10 Hrs.
<p>Industrial uses of enzymes: Enzymes used in detergents, use of proteases, leather and wool industries; methods involved in production of glucose syrup from starch (using starch hydrolyzing enzymes). Uses of lactase in dairy industry, glucose oxidase and catalase in food industry. Uses of proteases in food industries.</p>	
Reference Books *	
<ol style="list-style-type: none"> 1. Trevor Palmer (2008). Enzymes: Biochemistry , Biotechnology, Clinical Chemistry. Horwood Publishing Ltd, East-West Press, 5th Edition. 2. David L. Nelson and Michael Cox (2017). "Lehninger Principles of Biochemistry" –7th Edition. 3. Nicholas C. Price and Lewis Stevens (2009). Fundamentals of Enzymology, Oxford university Press, 3rd edition. 4. James R Hanson (2017). "An Introduction to Biotransformation in Organic Chemistry" 5th edition , Oxford university Press, 5. Daniel L. Purich, Melvin I. Simon, John N. Abelson (2009). Contemporary Enzyme Kinetics and Mechanism" Academic press, 3rd edition. 6. K. Faber (2018). Biotransformations in Organic: Springer- Verlag. 4th Edition,. 7. Bailey and Ollis (2017). "Biochemical Engineering Fundamentals", Mcgraw Hill 2nd Ed. 	
Course Outcomes**	
<p>After completion of the course student will have the ability</p> <ol style="list-style-type: none"> 1. To understand mechanism of enzyme and its reactions. 2. To know enzymatic techniques to characterize the enzymes and apply the techniques of immobilization of enzymes. 3. To understand the importance of enzymes in diagnostics. 4. To apply knowledge of using enzymes in detergent, wool, leather and food industries. 	

* Books to be listed as per the format with decreasing level of coverage of syllabus

** Each CO to be written with proper action word and should be assessable and quantifiable

Course Outcomes	Programme Outcomes (POs)												Program Specific Outcomes (PSOs)		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	1	1	3	1	-	2		-	-	-	-	1	3	2	-
CO2	3	3	2	2	-	3	2	-	-	-	-	-	3	1	-
CO3	3	2	-	2	-	2	-	-	-	-	-	-	3	3	-
CO4	2	3	1	1	-	2	4	-	-	-	-	-	3	1	-

Department of Artificial Intelligence and Machine Learning

22UAI305C	Python for Data Science(I) L:T:P:2:0:2	03-Credits
Hrs/Week: 02+02		CIE Marks:50
Total Hours: 40 (30 L+20 P)		SEE Marks:50

UNIT - I	07 Hrs
<p>Introduction to Data Science: Definition of Data Science, working process of Data Science works, Data Science uses, Tools for data science</p> <p>Introduction to NumPy: Understanding Data Types in Python: A Python Integer Is More Than Just an Integer, A Python List Is More Than Just a List, Fixed-Type Arrays in Python, Creating Arrays from Python Lists, Creating Arrays from Scratch, NumPy Standard Data Types, The Basics of NumPy Arrays: NumPy Array Attributes, Array Indexing: Accessing Single Elements, Array Slicing: Accessing Subarrays, Reshaping of Arrays, Array Concatenation and Splitting. Computation on NumPy Arrays: Universal Functions, The Slowness of Loops, Introducing UFuncs, Exploring NumPy's UFuncs, Advanced Ufunc Features. Aggregations: Min, Max, and Everything in Between. Sorting Arrays: Fast Sorting in NumPy: np.sort and np.argsort.</p>	
UNIT - II	08 Hrs
<p>Data Manipulation with Pandas: Installing and Using Pandas, Introducing Pandas Objects, The Pandas Series Object, The Pandas DataFrame Object, The Pandas Index Object. Data Indexing and Selection : Data Selection in Series, Data Selection in DataFrame. Handling Missing Data, Trade-Offs in Missing Data Conventions, Missing Data in Pandas, Operating on Null Values. Hierarchical Indexing: A Multiply Indexed Series, Methods of MultiIndex Creation, Indexing and Slicing a MultiIndex. Rearranging Multi-Indices, Data Aggregations on Multi-Indices. Combining Datasets: Concat and Append, Recall: Concatenation of NumPy Arrays, Simple Concatenation with pd.concat. Combining Datasets: Merge and Join, Relational Algebra, Categories of Joins, Specification of the Merge Key, Specifying Set Arithmetic for Joins, Overlapping Column Names: The suffixes Keyword Example: US States Data. Aggregation and Grouping: Planets Data, Simple Aggregation in Pandas, GroupBy: Split, Apply, Combine. Pivot Tables: Motivating Pivot Tables, Pivot Tables by Hand, Pivot Table Syntax Example: Birthrate Data. High-Performance Pandas: eval() and query(), Motivating query() and eval(): Compound Expressions, pandas.eval() for Efficient Operations, DataFrame.eval() for Column-Wise Operations, DataFrame.query() Method.</p>	
UNIT - III	07 Hrs
<p>Visualization with Matplotlib: General Matplotlib Tips, Importing matplotlib, Setting Styles,</p>	

50% change in syllabus

As
H.O.D. AI & ML
B.E.C. Bagalkot

show() or No show()? How to Display Your Plots, Saving Figures to File. Simple Line Plots: Adjusting the Plot: Line Colors and Styles, Adjusting the Plot: Axes Limits, Labeling Plots. Simple Scatter Plots: Scatter Plots with plt.plot , Scatter Plots with plt.scatter, plot Versus scatter: A Note on Efficiency. Visualizing Errors: Basic Error bars, Continuous Errors. Density and Contour Plots: Visualizing a Three-Dimensional Function, Histograms, Binnings, and Density, Two-Dimensional Histograms and Binnings: Customizing Plot Legends: Choosing Elements for the Legend, Legend for Size of Points, Multiple Legends. Customizing Colorbars: Customizing Colorbars Example: Handwritten Digits. Multiple Subplots: plt.axes: Subplots by Hand, plt.subplot: Simple Grids of Subplots, plt.subplots: The Whole Grid in One Go, plt.GridSpec: More Complicated Arrangements. Customizing Ticks: Major and Minor Ticks, Hiding Ticks or Labels, Reducing or Increasing the Number of Ticks. Customizing Matplotlib: Configurations and Stylesheets , Plot Customization by Hand, Changing the Defaults: rcParams, Stylesheets. Three-Dimensional Plotting in Matplotlib: Three-Dimensional Points and Lines, Three-Dimensional Contour Plots, Wireframes and Surface Plots, Surface Triangulations. Geographic Data with Basemap: Map Projections, Drawing a Map Background, Plotting Data on Maps Example: California Cities Example: Surface Temperature Data. Visualization with Seaborn: Seaborn Versus Matplotlib, Exploring Seaborn Plots, Example: Exploring Marathon Finishing Times.

UNIT - IV

08 Hrs

Version Control System: Why Do We Need a Version Control System? Fundamentals of Git Git installation and setup basic local Git operations creating a repository, cloning a repository, making and recording changes, staging and committing changes, viewing the history of all the changes, undoing changes, Git Branching and merging Basic Creating and switching to new branches, Switching between branches, Merging local branches together, GitHub - Basics of distributed git - Account creation and configuration - Create and push to repositories - versioning - Collaboration - Migration, Create repository – named mini project-1 Push the same to GitHub.

Containers: Why containers? What is a docker? How docker works? Components of docker - Docker container - Docker client - Docker daemon - Docker image - Docker registry Install docker on desktop and start the docker tool. Publish the container in Registry, Docker file Docker image Commands to create docker file. Build docker image with docker file create docker container from docker image Run the docker container


H.O.D. AI & ML
B.E.C. Bagalkot

Text Books:

1. Jake VanderPlas ,”Python Data Science Handbook”, 2017. O’Reilly Media, Inc., 1005 Gravenstein Highway North, Sebastopol, CA 95472. ISBN: 978-1-4919-1205-8
2. Giuseppe Bonaccorso, “Machine Learning Algorithms”, Second Edition, ISBN: 978-1-78934-799-9, Packet Publishing Ltd., Birmingham,UK.
3. Peter Norvig and Stuart J. Russell, “Artificial Intelligence: A Modern Approach”, third edition, ISBN:978-93-325-4351-5, pearson , 2021.(Chapter 12 and Chapter 13)
4. Marco Peixeiro, Time Series Forecasting in Python, October 2022, Manning Publications, ISBN: 9781617299889

Reference books:

1. Tom Mitchel, “Machine Learning “, International Edition 1997, McGraw Hill Education.

e-Resources and other Digital Material:

1. <https://www.tutorialspoint.com/numpy/index.htm>
2. https://www.tutorialspoint.com/python_pandas/index.htm
3. <https://www.w3schools.com/python/numpy/default.asp>
4. <https://www.geeksforgeeks.org/what-is-exploratory-data-analysis/>
5. <https://www.ibm.com/topics/exploratory-data-analysis>
6. <https://towardsdatascience.com/an-extensive-guide-to-exploratory-data-analysis-ddd99a03199e>
7. <https://www.docker.com/resources/what-container/>
8. <https://www.simplilearn.com/tutorials/docker-tutorial/what-is-docker-container>
9. <https://git-scm.com/book/en/v2/Getting-Started-About-Version-Control>
10. <https://www.simplilearn.com/tutorials/git-tutorial/git-installation-on-windows>
11. <https://www.tutorialspoint.com/git/index.htm>
12. https://www.w3schools.com/datascience/ds_introduction.asp
13. <https://www.simplilearn.com/tutorials/data-science-tutorial/introduction-to-data-science>

Course Outcomes:

- CO1: To *understand* data types in python and to apply array concepts using NumPy.
- CO2: *Understand* and *Apply* Structuring data using NumPy and manipulating the data using Pandas.
- CO3: Using Pandas to *analyze* and work with data sets.
- CO4: *Apply* and *Analyze* Graphical visualization of data using Matplotlib
- CO5: *Analyze* and *Apply* Version Control System and Docker in the development data science projects.



H.O.D. AI & ML
B.E.C. Bagalkot

Laboratory Assignments 2023-24

PART-A


A. No.	Name of Assignment
1.	(a) Write python program to check whether given number is even or odd.
	(b) Write python program to check whether given number is positive, negative and zero.
2.	(a) Write python to check the data type of the given value.
	(b) Write python to check whether given string is palindrome or not.
3.	(a) Write a python function to accept employee details such as Name, designation, HRA, DA, basic pay etc and compute the total salary. Display the same. Note: Read the employee details from the keyboard.
	(b) Write a python function to count even and odd numbers from the given list. Read the list elements from the user.
4.	(a) Write python code to illustrate UFuncs.
	(b) Write python code to illustrate various functions for sorting arrays supported by NumPy module.
5.	(a) Write python commands to demonstrate basic attributes of DataFrame over given ".CSV/Excel" file.
	(b) Write python commands to Identify Missing Values, Remove Missing Values and Imputation on given dataset.
6.	Write python code to illustrate following functions/properties using matplotlib library.

Note: PART-B-Assignment 5 and 6 will be considered for only internal performance evolution (NOT for CIE).


H.O.D. AI & ML
B.E.C. Bagalkot

PART-B

A. No.	Name of Assignment																														
1.	<p>Create a DataFrame from the given table and illustrate the following queries:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #cccccc;">Subject Name</th> <th style="background-color: #cccccc;">Subject Code</th> <th style="background-color: #cccccc;">Credits</th> <th style="background-color: #cccccc;">Sem</th> <th style="background-color: #cccccc;">Faculty Incharge</th> </tr> </thead> <tbody> <tr> <td>Python for DS</td> <td>22UAI305C</td> <td>03</td> <td>3</td> <td>Dr. Vishwanath Kagawade</td> </tr> <tr> <td>Principals of AI</td> <td>21AI402C</td> <td>03</td> <td>4</td> <td>Dr. Anil D. Devangavi</td> </tr> <tr> <td>DBMS</td> <td>20AI502C</td> <td>04</td> <td>5</td> <td>Mr. Nagaraj K.</td> </tr> <tr> <td>ML</td> <td>20AI401C</td> <td>04</td> <td>4</td> <td>Dr. Bharati R.</td> </tr> <tr> <td>Cyber Security</td> <td>23AI104H</td> <td>02</td> <td>2</td> <td>Mis. Jayasheela K.</td> </tr> </tbody> </table> <p> i) Create a DataFrame for the given data. ii) Display first two rows details, all the faculty names and iii) Show basic and statistical information about the given data. iv) What is size and shape of the given data? v) List attributes/ features of given data. vi) List Subjects with credits greater than or equal to 4 vii) Show Subjects taught by Dr. Vishwanath Kagawade viii) Display Subject codes for semesters 3 and 4. </p>	Subject Name	Subject Code	Credits	Sem	Faculty Incharge	Python for DS	22UAI305C	03	3	Dr. Vishwanath Kagawade	Principals of AI	21AI402C	03	4	Dr. Anil D. Devangavi	DBMS	20AI502C	04	5	Mr. Nagaraj K.	ML	20AI401C	04	4	Dr. Bharati R.	Cyber Security	23AI104H	02	2	Mis. Jayasheela K.
Subject Name	Subject Code	Credits	Sem	Faculty Incharge																											
Python for DS	22UAI305C	03	3	Dr. Vishwanath Kagawade																											
Principals of AI	21AI402C	03	4	Dr. Anil D. Devangavi																											
DBMS	20AI502C	04	5	Mr. Nagaraj K.																											
ML	20AI401C	04	4	Dr. Bharati R.																											
Cyber Security	23AI104H	02	2	Mis. Jayasheela K.																											
2.	Write python commands to perform the following queries on “used_cars.csv” dataset.																														
3.	Write python code to demonstrate various plots using matplotlib library.																														
4.	Write python code to demonstrate various plots using seaborn library.																														
5.	Create a Git account and perform basic Git operations including repository creation, cloning, committing changes, branching, and merging.																														
6	Create a GitHub account and perform basics of GitHub, including repository creation, collaboration, branching, and pull requests.																														


H.O.D. AI & ML
B.E.C. Bagalkot

22UAI404C	Data Science for AI L: T: P: 3: 0: 0	Credit: 03
Hrs/Week: 03Hrs		CIE Marks: 50
Total Hours: 40Hrs		SEE Marks: 50

UNIT-I	10 Hrs.
<p>Significance of data in AI , AI Software Development life cycle , Compare traditional software development with AI Software Development, Example – Game rules (Chess).</p> <p>Machining Learning , Machine learning types , Machine learning workflow , Machine learning applications , Challenges in ML , Building a model-steps involved . Pipelines: Data engineering , Machine learning , Deployment.</p> <p>Introduction to Data Science, Data Science uses, Data Science tools and technique. Big Data : Vs of Big Data - Sources of data, Role of Big Data in AI&ML.</p> <p>Data: Introduction, Data types: Structured Data, Unstructured Data, Challenges with Unstructured Data.</p> <p>Data Collection: Open Data, Social Media Data, Multimodal Data, Data Storage and Presentation.</p> <p>Data Preprocessing: Importance of data preprocessing, Data cleaning , Assess Data quality , Data anomalies , Detect missing values with pandas data frame functions: info() and .isna() , Diagnose type of missing values with visual and statistical methods (eg. chi-squared test of independence). Approaches to deal with missing values: Keep the missing value as is , Remove data objects with missing values ,,Remove the attributes with missing values , Estimate and impute missing values.</p> <p>Detecting outliers :univariate outlier detection, bivariate outlier detection, Time series outlier detection. Dealing with outliers : Do nothing, Replace with the upper cap or lower cap, Perform a log transformation, Remove data objects with outliers .</p> <p>Data Integration :Overview, data integration challenges. Approaches: Adding attributes , Adding data objects.</p> <p>Data reduction : Distinction between data reduction and data redundancy. Objectives: Methods with numerosity data reduction with dimensionality data reduction.</p> <p>Data transformation: Need for data transformation, Normalization, Standardization Data transformation with - binary coding, ranking transformation and discretization. Data transformation with ranking transformation and discretization.</p>	
UNIT-II	10 Hrs.
<p>Exploratory data analysis : overview , EDA goals and benefits. Univariate data analysis: Characterizing data with descriptive statistics , Univariate distribution, Univariate comparison plots , Univariate composition plots .</p> <p>Univariate analysis tests : Hypothesis testing Error, Test statistic, type, interpreting test statistics. Understanding p-value.</p> <p>Multivariate analysis: Finding relationship in data using Covariance and Correlation.</p>	

50% change in syllabus

[Signature]
H.O.D. AI & ML
B.E.C. Bagaikot

Multivariate distribution plot ,Multivariate comparison plot, Multivariate relationship plot ,Multivariate composition plot.

Feature Engineering, Data Splitting Importance of data splitting - Training set - Validation set - Testing set, Underfitting and Overfitting

UNIT-III	10 Hrs.
-----------------	----------------

Machine Learning pipeline, Supervised Learning: Regression, Types of regression, Regularization in ML, Real-Life Applications. Linear regression Overview: Types, Simple linear regression, Multiple linear regression, Polynomial linear regression, Applications of Linear Regression .

Understanding Simple linear regression, Regression equation, Assumptions, Gradient descent, Setting up the regression problem. Implementation: Student score based on study hours Problem statement, Create a model to analyses the relation between CIE and SEE result using sklearn. Create a model to analyze the relation between crop yield and rain fall rate, Build linear regression model using Stats model. Model Evaluation & testing: Evaluate regression model, Evaluation Metric, Coefficient of Determination or R-Squared (R2) , Root Mean Squared Error (RSME) . Optimize regression model, Gradient descent.

Cross-validation: Why do we need Cross-Validation? Techniques - Hold out method - Leave One Out Cross-Validation - K-Fold Cross-Validation.

Multiple Linear Regression: Overview, Assumptions , Normal Equation , Applications. Identification and collection of regression dataset, Perform data exploration, preprocessing and splitting on datasets , build regression model , evaluate the model , minimize the cost function using Boston housing price dataset from sci-kit learn datasets . Overfitting vs underfitting in Linear regression.

Supervised learning – classification, Types: Binary classification, Multi-Label Classification, Multi-Class Classification, Imbalanced Classification, Classification models , Applications

KNN Classification: Overview, KNN classification and regression , Choosing best K using validation method, Perform classification on Breast cancer data set using sklearn. Evaluation Metrics for Classification - confusion matrix, Accuracy, Precision and Recall ,Specificity , F1-score , AUC-ROC.

UNIT-IV	10 Hrs.
----------------	----------------

Decision tree, Understanding Entropy, information gain, Issues in decision tree, Overfitting in decision tree classifier and Pruning, Decision Tree Classifier Applications. Build decision tree-based model in python for like Play Tennis dataset from sci-kit learn Or any classification dataset from UCI , Kaggle. Evaluation of decision tree model with different metrics. Hyper parameter tuning for Decision Tree Classifier.

Logistic regression: Introduction to logistic regression. Difference between linear and logistic regression. Applications of logistic regression. The Logistic Function. The Logistic Regression Model. Gradient Descent and Optimization. Model Evaluation. Model Validation. Implementing Logistic Regression in Python (sklearn) for real world problems.


H.O.D. AI & ML
B.E.C. Bagalkot

Un supervised Learning: Definition and differences from supervised learning, Applications of unsupervised learning. Types of Unsupervised Learning,

Overview of Clustering: Definition and types of clustering, Applications of clustering in different fields.
Introduction to K-Means Clustering :Concept of K-Means Clustering. History and development of the K-Means algorithm, Real-world applications. Understanding the K-Means Algorithm: The objective function of K-Means, Steps involved in the K-Means algorithm. Distance Metrics: Euclidean distance and its importance in K-Means, Other distance metrics (Manhattan, Cosine), Choosing the right distance metric. Practical Implementation in Python (sklearn). Evaluating and Validating Clusters.

Reference Books/ Journals/ Technical Reports

1. "Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow" by Aurélien Géron,
2. "Python for Data Analysis" by Wes McKinney.
3. Online Courses: Coursera (Andrew Ng's Machine Learning), edX, Udacity.
4. Tutorials and Blogs: Towards Data Science, Kaggle kernels.

Course Outcome for Unit I:

- **Comprehensive Understanding of Data and AI Development Lifecycle:**
 - Students will understand the significance of data in AI, the AI Software Development Life Cycle, and compare it with traditional software development. They will gain practical skills in machine learning workflows, data science tools, Big Data, and data preprocessing, integration, reduction, and transformation.

Course Outcome for Unit II:

- **Mastering Exploratory Data Analysis and Data Preparation:**
 - Students will gain proficiency in exploratory data analysis (EDA) techniques, including univariate and multivariate data analysis, hypothesis testing, and understanding p-values. They will also learn the importance of feature engineering and data splitting, and understand the concepts of underfitting and overfitting in model training.



H.O.D. AI & ML
B.E.C. Bagalkot

Course Outcome for Unit III:

- **Developing and Evaluating Machine Learning Models:**
 - Students will understand the machine learning pipeline, with a focus on supervised learning techniques including various types of regression and classification models. They will gain hands-on experience in implementing, evaluating, and optimizing regression models using real-world datasets and Python libraries, and comprehend the importance of cross-validation and model evaluation metrics in preventing overfitting and underfitting.

Course Outcome for Unit IV:

- **Implementing and Evaluating Advanced Machine Learning Algorithms:**
 - Students will understand decision trees, including entropy, information gain, and issues such as overfitting and pruning. They will build, evaluate, and tune decision tree models, and gain practical skills in implementing logistic regression and unsupervised learning algorithms, including k-means clustering, with a focus on their applications, optimization, and evaluation using Python.



H.O.D. AI &
B.E.C. Bagalko.

22UAI407C	Agile Methodologies L:T:P:1:0:0	01-Credits
Hrs/Week: 01		CIE Marks:50
Total Hours:15		SEE Marks:50

Objectives:

1. Understanding Agile Principles: To grasp the foundational principles behind Agile methodologies, such as iterative development, customer collaboration, and responding to change over following a plan.
2. Agile Practices and Techniques: Introducing students to various Agile practices and techniques such as user stories, Project Planning and Design, Estimation planning, daily stand-ups, retrospectives, and continuous integration.
3. Knowledge of Agile Frameworks: To familiarize students with popular Agile frameworks.

UNIT-I	04 Hrs.
Introduction: Software Development Life Cycle (SDLC), Different types of software development models, Need of Agile software development, agile context– Manifesto, Principles, Methods, Values, Roles, Artifacts, Stakeholders, and challenges. Business benefits of software agility.	
UNIT-II	04 Hrs.
Project Planning: Recognizing the structure of an agile team– Programmers, Managers, Customers. User stories– Definition, Characteristics and content. Estimation– Planning poker, Prioritizing, and selecting user stories with the customer, projecting team velocity for releases and iterations	
UNIT-III	03 Hrs.
Project Design: Fundamentals, Design principles–Single responsibility, Open-closed, Liskov substitution, Dependency-inversion, Interface-segregation	
UNIT-IV	04 Hrs.
Design Methodologies: Need of scrum, Scrum practices –Working of scrum, Project velocity, Burn down chart, Sprint backlog, Sprint planning and retrospective, Daily scrum, Scrum roles– Product Owner, Scrum Master, Scrum Team.	

New course included

[Signature]
H.O.D. AI & ML
B.E.C. Bagalkot

Reference Books
<p>Text Books</p> <ol style="list-style-type: none"> 1. Ken Schwaber, Mike Beedle, "Agile Software Development with Scrum", International Edition, Pearson. 2. Robert C. Martin, "Agile Software Development, Principles, Patterns and Practices", First International Edition, Prentice Hall. 3. Pedro M. Santos, Marco Consolaro, and Alessandro Di Gioia, "Agile Technical Practices Distilled: A learning journey in technical practices and principles of software design", First edition, Packt Publisher. <p>Reference Books</p> <ol style="list-style-type: none"> 1. Lisa Crispin, Janet Gregory, "Agile Testing: A Practical Guide for Testers and Agile Teams", International edition, Addison Wesley. 2. Alistair Cockburn, "Agile Software Development: The Cooperative Game", 2nd Edition, Addison-Wesley <p>E-Books and Online learning material</p> <ol style="list-style-type: none"> 1. "The Complete Guide to Agile Software Development" https://clearbridgemobile.com/complete-guideagile-software-development/ 2. "Agile Fundamentals Ebook: A Complete Guide for Beginners", https://agileken.com/agilefundamentals-ebook/ <p>Online Courses and Video lectures</p> <ol style="list-style-type: none"> 1. "Agile Software Development", https://www.edx.org/course/agile-software-development Accessed on August 27, 2021. 2. "Agile Software Development", https://www.coursera.org/learn/agile-software-development Accessed on August 27, 2021. <p>Course Outcomes</p> <p>On completion of the course, the student will have the ability to:</p> <p>CO1: Interpret the concept of agile software engineering and its advantages in software development.</p> <p>CO2: Determine the role of design principles in agile Project Planning.</p> <p>CO3: Students should be able to apply key design principles, including Single Responsibility Principle (SRP), Open-closed Principle (OCP), Liskov Substitution Principle (LSP), Dependency Inversion Principle (DIP), and Interface Segregation Principle (ISP), to develop software solutions that are flexible, extensible, and easy to maintain</p> <p>CO4: Make use of various tools available to agile teams to facilitate the project.</p>

Evaluation Scheme

Assessment	Marks	Weightage
CIE-I	20	20
CIE-II	20	20
Assignments/ Case Study	10	10
SEE	50	50
Total	100	100


 H.O.D. AI & ML
 B.E.C. Bagalkot

CIE: Pattern of Examination: Descriptive pattern
 Time: 1 ½ hours (90Minutes)
 Maximum Marks: 40
 Answer any Two full question

Q.No.	Question	Marks	CO	BLL
	Unit-I			
1. a		20		
b.				
c.				
d.				
	Unit-II			
2.a.		20		
b.				
c.				
d.				
	Unit-I &Unit-II			
3. a.		20		
b.				
c.				
d.				


H.O.D. AI & ML
B.E.C. Bagalkot

SEE: Pattern of Examination: Descriptive pattern

Time: 1 ½ hours (90Minutes)

Maximum Marks: 50

Note: Answer any Five question selecting at least one from each unit.

Q.No.	Question	Marks	CO	BLL
Unit-I				
1. a		10		
b.				
c.				
d.				
2. a		10		
b.				
c.				
d.				
Unit-II				
3. a.		10		
b.				
c.				
d.				
4. a.		10		
b.				
c.				
d.				
Unit-III				
5. a.		10		
b.				
c.				
d.				
6. a		10		
b.				
c.				
d.				
Unit-IV				
7. a		10		
b.				
c.				
d.				
8. a.		10		
b.				
c.				
d.				



H.O.D. AI & ML
B.E.C. Bagalkot

21UAI601C	Optimization Techniques for Machine Learning L:T:P:3:0:0	03-Credits
Hrs/Week: 03		CIE Marks: 50
Total Hours: 40		SEE Marks: 50

Prerequisite: Basic linear algebra, probability, and knowledge of a programming language like Python (Google CoLab) to conduct simulation exercises

UNIT - I	10 Hrs
<p>Foundation: Function Optimization, Candidate solutions, Objective functions, Evaluation costs.</p> <p>Optimization and Machine Learning: Introduction to ML and Optimization, Learning as optimization, Optimization in ML project.</p> <p>How to Choose an Optimization Algorithm: Optimizing algorithms, Differentiable objective function, Non differentiable objective function.</p> <p>Background: No Free Lunch Theorem for Machine Learning, Implications for optimization and Machine learning.</p> <p>Local Optimization vs. Global Optimization: Local Optimization, Global Optimization, Local Optimization vs. Global Optimization.</p> <p>Premature Convergence: Convergence in ML, Premature convergence, Addressing premature convergence.</p> <p>Creating Visualization for Function Optimization: Visualization for function optimization, Visualize 1D function optimization, Visualize 2D function optimization,</p> <p>Stochastic Optimization Algorithms: Stochastic optimization and algorithms, Practical considerations for Stochastic Optimization.</p> <p>Random Search and Grid Search: Naïve function optimization algorithms, Random search for function optimization, Grid search for function optimization.</p>	
UNIT – II	10 Hrs
<p>Local Optimization: Gradient in Machine Learning, Derivative and gradient, Worked examples of calculating derivatives, Interpreting derivatives, Calculating derivative of a function.</p> <p>Univariate Function Optimization: Univariate function optimization, Convex univariate function optimization, Non convex univariate function optimization.</p> <p>Pattern Search: Nelder-Mead Optimization Algorithm, Nelder-Mead example in Python, Nelder-Mead on challenging functions.</p> <p>Second Order optimization algorithms: The BFGS and L-BFGS-B Optimization Algorithms, Worked examples of BFGS.</p> <p>Stochastic Hill Climbing algorithms: Stochastic Hill Climbing algorithm and its implementation, Examples of applying Stochastic Hill Climbing algorithms.</p> <p>Iterated Local Search: Introduction to iterative local search, Ackley objective function, Stochastic Hill Climbing algorithm with random restarts, Iterated local search algorithms.</p>	
UNIT - III	10 Hrs
<p>Global Optimization:</p> <p>Simple Genetic Algorithm: Genetic algorithm from scratch, genetic algorithm for Onemax, Genetic algorithm for function optimization.</p> <p>Evolution Strategies: Develop a (μ, λ)-ES, develop $(\mu + \lambda)$-ES.</p> <p>Differential Evolution: Differential evolution algorithm from scratch, Differential evolution</p>	

New Elective course added

H.O.D.
H.O.D. AI & ML
B.E.C. Bagalkot

algorithm on the sphere function.

Simulated Annealing : Implement simulated annealing and worked Example.

UNIT - IV

10 Hrs

Gradient Descent:

Gradient Descent Optimization: Gradient descent and worked example. Gradient descent optimization, Gradient descent with momentum and its visualization. Gradient Descent with AdaGrad, Gradient Descent with RMSProp, Gradient Descent with Adadelta, Adam Optimization Algorithm

Projects:

Use Optimization Algorithms to Manually Fit Regression Models: Optimize linear and logistic regression models,

Optimize Neural Network Models: Optimize a perceptron and a multi layer perceptron.

Feature Selection using Stochastic Optimization: Optimization for feature selection, Enumerate all feature subsets.

Manually Optimize Machine Learning Model: Manual hyper parameter optimization, Perceptron hyper parameter optimization, XGBOOST hyper parameter optimization.

Text Books:

1. Optimization Techniques for Machine Learning, Jayson Brownlee, Machine learning mastery, 2021.

Reference Books:

1. Linear Algebra and Learning from Data, Gilbert Strang
2. Convex Optimization by Stephen Boyd
3. Optimization for Machine Learning by Suvrit Sra, MIT Press.

Course Outcomes:

CO1: Grasp essential concepts in function optimization and Connect Optimization with Machine Learning

CO2: Develop the skill to pick the right optimization algorithm based on the problem

CO3: Create visualizations for function optimization

CO4 : Apply optimization techniques to ML based real-world problems


H.O.D. AI & ML
B.E.C. Bagalkot

Department of Electrical and Electronics Engineering

Syllabus for B.E VI - Semester for academic year 2023 – 2024

(For students admitted to I year in 2021-22)

21UEE605C	Power System-III	03 - Credits (3 : 0 : 0)
Hours/Week : 03		CIE Marks : 50
Total Hours : 40		SEE Marks : 50

UNIT – I	10 Hours
<p>Network Topology: Introduction, Elementary Graph Theory, connected graph, sub graph Loop, Cut-set, Tree, Co- tree, Basic loops, Basic cut-set. Incidence Matrices: Element-node incidence matrix A (Bus-incidence matrix), Branch path incidence matrix K, Basic (Fundamental) cut-set incidence matrix B, Augmented cut-set matrix, Basic loop incidence matrix C, Augmented loop incidence matrix. Algorithm for formation of Bus Impedance Matrix, formation of Ybus by inspection method and singular transformation method.</p>	
UNIT – II	10 Hours
<p>Load Flow Studies: Introduction, Power Flow Equation, Classification of Buses Gauss-Seidel Method: Algorithm for GS method, Modification of algorithm to include PV buses, Q- limit violations, Acceleration of convergence and examples. Newton-Raphson Method: Introduction, Algorithm for NR method in polar coordinates and rectangular coordinates. Fast Decoupled Load Flow and examples.</p>	
UNIT – III	10 Hours
<p>Economic Operations of Power System: Introduction, Performance curves, Economic generation scheduling neglecting losses and generator limits, Economic generation including generator limits and neglecting losses, Iterative technique, Economic Dispatch Including Transmission Losses: Approximation penalty factor, Derivation of transmission loss formula. Introduction to optimal scheduling for hydrothermal plants. Problem formulation, solution procedure and algorithm</p>	
UNIT – IV	10 Hours
<p>Excitation Systems: Introduction, DC Excitation system, AC Excitation, static Excitation, Dynamic performance measures of Excitation system, control and protective functions: AC and DC regulators, excitation system stabilizing circuits, power system stabilizer, load compensation, under excitation limiter, over excitation limiter. Modeling of AVR, steady state and dynamic performance analysis of AVR.</p>	
<p>References:</p> <ol style="list-style-type: none"> 1. Stag. G. W and El-Abaid, A. H., "Computer Methods in Power System Analysis", 2019 MEDTECH, A Division of Scientific International 2019. 2. Olle I. Elgerd, "Electric Energy Systems Theory-An Introduction", 2nd Edition McGraw-Hill Book Company. 3. Pai M.A., "Computer Techniques in Power System Analysis", 2nd Edition, TMH, 2006. 4. K. Uma Rao, "Computer Techniques and Model in Power Systems", 2nd Edition, I.K. International, 2014. 5. Singh L. P., "Advanced Power System Analysis and Dynamics", 6th Edition, New Age International (P) Ltd, New Delhi, 2014. 6. Nagrath, I. J., and Kothari, D.P., "Modern Power System Analysis", 4th Edition, TMH, 2011 	

Syllabus for B.E VI - Semester for academic year 2023 – 2024

(For students admitted to I year in 2021-22)

Course Outcomes:

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

1. Apply suitable network topology, primitive network, types of power system buses for load flow studies and economic scheduling algorithms and excitation systems for power system operation.
2. Investigate performance of the power systems using load flow analysis, optimum scheduling of thermal generators and excitation systems.
3. Calculate YBUS matrix, real power, reactive power and power flow for a given power systems using load flow studies and optimum cost of generation of thermal power plants using economic scheduling study and components of excitation systems.
4. Formulate the load flow models, economic scheduling of thermal generators.

Course Outcomes - Programme Outcomes Mapping Table

Sl.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	21UEE605C.1	3							1		1		1	2	1	
2	21UEE605C.2	3	1						1		1		1	1	2	1
3	21UEE605C.3	3	3	2	2	1			1		1		1	3	1	1
4	21UEE605C.4	3	3	3	3	1			1	1	1		2	3	1	

Syllabus for B.E III - Semester for academic year 2023 – 2024

(For students admitted to I year in 2022-23)

22UEE315C	Sustainable Energy Technologies in Agriculture	03 - Credits (3 : 0 : 0)
Hours/Week : 03		CIE Marks : 50
Total Hours : 40		SEE Marks : 50

UNIT – I	(10 Hours)
<p>Introduction to irrigation systems: Need for Irrigation and ill effects of irrigation, Type of irrigation methods, Micro irrigation systems – pros and cons, Energy saving potential in irrigation systems, Optimum sizing of pumps, Govt. initiatives in irrigation systems, Solar photovoltaic powered irrigation pumps, Different connection topologies of SPV pumps, pros and cons of SPV pumps.</p>	
UNIT – II	(10 Hours)
<p>Sizing of grid connected irrigation pumps: Crop water assessment: Concept of evapotranspiration, Growth stages of crops, Different methods for assessment of evapotranspiration, Crop factors. Assessment of hydraulic head and HP rating of pumps, Assessment of energy conservation and saving potential.</p>	
UNIT – III	(10 Hours)
<p>SPV based irrigation pumps: Solar photovoltaic basics, Issues in sizing the SPV based pumps, Govt. schemes for SPV irrigation systems, Selection of SPV array capacity & connection configuration, Economic analysis.</p>	
UNIT – IV	(10 Hours)
<p>Micro Irrigation Systems: Drip Irrigation Systems: Components used, Layout of drip irrigation, Selection of lateral pipelines, Sizing of pumping unit, Cost and Energy Analysis. Micro Sprinkler Irrigation Systems: Required resources and conditions, Layout, Selection of Sprinkler and spacing, Capacity of Sprinkler pumping unit, Cost and Energy Analysis.</p>	
<p>Reference Books:</p> <ol style="list-style-type: none"> 1. A.M.Michael, “Irrigation Theory and Practice”, Vikas Publishers, Second Enlarged Edition, 2011. 2. Basanagouda F. Ronad, S H Jangamshetti, “Optimum Sizing of SPV Irrigation Systems based on Field Conditions”, LAP LAMBERT Academic Publishing, August 2018. 3. M.Kay, N.Hatcho, “Small-Scale Pumped Irrigation: Energy and Cost”, Irrigation Water Management Training Manual, Food and Agriculture Organization of United States, Rome, 1992. 	
<p>Course Outcomes: After completion of the course, the students will be able to:</p> <ol style="list-style-type: none"> 1. Identify the challenges faced by farmers in irrigation systems and be able to suggest probable solution 2. Assess the optimum size of the irrigation pumps by calculating the exact water requirement of the crops for the specific location for local climatic conditions 3. Analyze the working of solar photovoltaic powered irrigation system under the specified conditions 4. Suggest the type of micro irrigation scheme for specified agriculture land by analyzing field conditions 	

Syllabus for B.E III - Semester for academic year 2023 – 2024

(For students admitted to I year in 2022-23)

Course Outcomes - Programme Outcomes Mapping Table

Sl.	Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	22UEE315C.1	2	2										1	2		2
2	22UEE315C.2	2	1	1			1						1	1		2
3	22UEE315C.3	2	1	1			1	1	1				1	1		2
4	22UEE315C.4	2	2	1	1		1	1	1				1	1		1

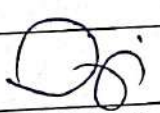
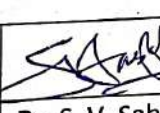
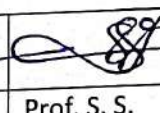
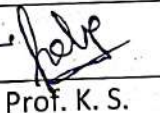
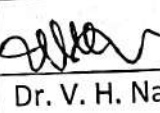
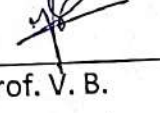
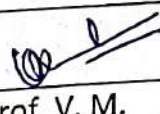
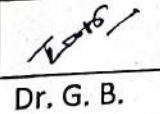
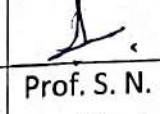
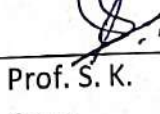
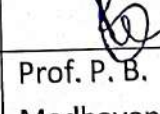
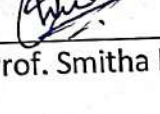

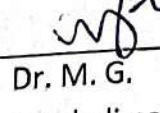
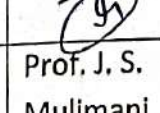
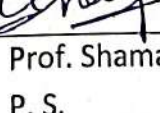
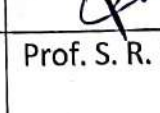
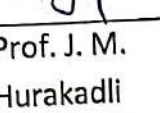
Department of Computer Science and Engineering

BASAVESHWAR ENGINEERING COLLEGE (AUTONOMOUS), BAGALKOTEE
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Proceedings of Board of Studies Meeting held on 07-02-2024

The Board of Studies meeting of the Department of Computer Science and Engineering was held on 7th February 2024, at 11.00 am. Dr. V. B. Pagi, Chairman of BoS, welcomed all the members and started the meeting.



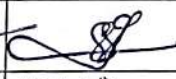

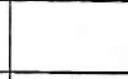

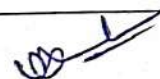
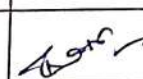
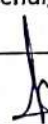

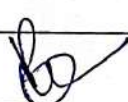
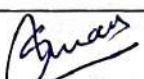

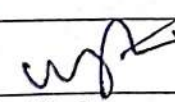

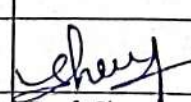
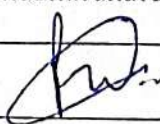
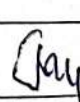
Agenda 1	: To discuss and approve the number of hours for the Project Phase-II (UCS852P) of 8 th semester BE(CSE) for 2020 admitted batch.
Resolution	: Presently, the number of hours for the course UCS852P: Project Phase II, carrying 12 credits, is 24 hours. Considering the amount of effort needed for the Project Work and the load of the semester (3 elective courses and a seminar), the members of the BoS recommend the number of hours to be kept same as the number of credits, i.e., 12 hours. Hence, it is recommended to update the number of hours for UCS852P: Project Phase II as 12 Hours, for the 2020-admitted batch.
Agenda 2	To discuss and approve the revised syllabus of 22UCS230B: Introduction to Web Programming for the 2023-admitted batch.
Resolution	Existing content is from the book: Thomas A. Powell, "The Complete Reference HTML & CSS". The present content is not appropriate for the 1 st year BE level. Hence, it is recommended to change the book: Chris Bates, Web Programming (Second Edition), Wiley, 2006, as the primary reference. It is also recommended to revise the contents, including HTML,

					
Dr. V. B. Pagi	Dr. S. V. Saboji	Prof. S. S. Yendigeri	Prof. K. S. Patil	Dr. V. H. Naik	Prof. V. B. Hunagund
					
Prof. V. M. Bonal	Dr. G. B. Chittapur	Prof. S. N. Benkikeri	Prof. S. K. Gour	Prof. P. B. Madhavanavar	Prof. Smitha K.
					
Prof. B. S. Malapur	Dr. M. G. Kambalimath	Prof. J. S. Mulimani	Prof. Shama P. S.	Prof. S. R. Karjol	Prof. J. M. Hurakadli

Agenda 3	:	CSS and Javascript.
Resolution	:	Any other matter with permission of the chair.
	:	No other matters were discussed.

A copy of the above is forwarded to the following for information and necessary action.

1. Member Secretary, Academic Council, BEC(A), Bagalkote
2. The Principal, BEC(A), Bagalkote
3. The Controller of Examinations, BEC(A), Bagalkote
4. All members of Board of Studies in CSE, BEC(A), Bagalkote

 Dr. V. B. Pagi	 Dr. S. V. Saboji	 Prof. S. S. Yendigeri	 Prof. K. S. Patil	 Dr. V. H. Naik	 Prof. V. B. Hunagund
 Prof. V. M. Bonal	 Dr. G. B. Chittapur	 Prof. S. N. Benkikeri	 Prof. S. K. Gour	 Prof. P. B. Madhavanavar	 Prof. Smitha K.
 Prof. B. S. Malapur	 Dr. M. G. Kambalimath	 Prof. J. S. Mulimani	 Prof. Shama P. S.	 Prof. S. R. Karjol	 Prof. J. M. Hurakadli

Basaveshwar Engineering College (Autonomous), Bagalkot
Department of Computer Science and Engineering (CSE)

Meeting of Board of Studies

Date: 07-02-2024

Time: 11 am

Venue: Bhaskaracharya Seminar Hall, CSE

Agenda of the Meeting

1. To discuss and approve the number of hours for the Project Phase-II of 8th semester BE(CSE) for 2020 admitted batch.
2. To discuss and approve the revised syllabus of 22UCS230B: Introduction to Web Programming for the 2023-admitted batch.
3. Any other matter with permission of the chair.

Date: 06-02-2024


Chairman, BoS (CSE)

22UCS230B	Introduction to Web Programming	Credits: 03(2:0:2:0)
Hrs/Week: L:T:P:S		CIEMarks:50
Total Hours/Week: 46 Hrs (26 T+20 P)		SEEMarks:50

UNIT-I	08 Hrs.
Fundamentals of Web: Introduction to Internet, World Wide Web, Web Browser, Web Server, Uniform Resource Locators, MIME, HTTP Hypertext Markup Language: Basic HTML, The Document Body, Text, Hyperlinks, Adding More Formatting, Lists: Ordered Lists, Unordered Lists, Definition Lists	
UNIT-II	06 Hrs.
HTML: Tables, Using Color and Images, Multimedia Objects, Frames, Forms, The HTML Document Head in Detail: Document type declaration Stylesheets: Cascading Stylesheets, Introduction, Using Styles: Simple Examples, Defining Your Own Styles, Properties and Values in Styles, Stylesheets – A Worked Example	
UNIT-III	06 Hrs.
CSS: Formatting Blocks of Information, Layers JavaScript: An Introduction to JavaScript, What is Dynamic HTML?, JavaScript, JavaScript – The Basics, Variables, String Manipulation, Mathematical Functions, Statements, Operators, Arrays, Functions	
UNIT-IV	06 Hrs.
Objects in JavaScript: Data and Objects in JavaScript, Regular Expressions, Exception Handling, Built-in Objects, Cookies, Events Dynamic HTML with JavaScript: Data Validation, opening a New Window, Messages and Confirmations, The Status Bar, writing to a Different Frame, Rollover Buttons, Moving Images	
Reference Books *	
1. Chris Bates, WEB PROGRAMMING (Second Edition), Wiley, 2006. 2. Thomas A. Powell, THE COMPLETE REFERENCE HTML & CSS, Fifth Edition, Tata McGraw Hill, 2017. 3. John Dean, WEB PROGRAMMING with HTML5 CSS and JavaScript, First Edition, Jones & Bartlett Learning, 2019. 4. Robert Cebesta, Programming the World Wide Web, 4 th Edition, Pearson, 2008. 5. Eric Lad, Jim O. Donnel, Using HTML 4, XML and Java, PHI, 1999	



Professor and Head
Department of Computer Science and Engineering
Beehive Engineering College
Bhubaneswar, Odisha - 751002

Programming Assignments:

1. To create a simple html file to demonstrate the use of different tags.
Create an html page named as "Basic_Html_Tags.html" and add the following tags
 - a) Different heading tags (h1 to h6)
 - b) Paragraph
 - c) Horizontal line
 - d) Line Break
 - e) Pre tag
 - f) Different Logical Style (,<u>,<sup>,<sub>)

2. Create a HTML code to display the following web page using list.

Learning Web Development

- I. Background Skills
 - A. Unix Commands
 - B. Vim Text Editor
- II. HTML
 - A. Minimal Page
 - B. Headings
 - C. Tags
 - D. Lists
 - I. Unordered
 - II. Ordered
 - iii. Definition
 - iv. Nested
 - E. Links
 - I. Absolute
 - II. Relative
 - F. Images

3. Create an html page named as "Table.html" to display the following table.

NAME	SUBJECT	MARKS
Nilay	Advanced Web	75
	Operating System	60
Lary	Advanced Web	90
	Operating System	75
Total Average:		72.5

4. Create an internal style sheet to define the following CSS properties for element(s) on your page:
 - a. text-decoration
 - b. text-align
 - c. font-size
 - d. font-family
 - e. font-weight
5. Create an external style sheet to define the following CSS properties for element(s) on your page:
 - a. text-decoration, text-align, font-size, font-family, font-weight
 - b. background-color, color, margin-xxx (left, right, top, or bottom), padding
 - c. border-style , border-color , border-width
6. To create HTML code to insert image and to add a link to a web page.
7. Write a HTML code to perform the following CSS properties
 - i. Text Properties: text-color, text-align, text-decoration, text-transformation
 - ii. Font Properties: font-style, font-size, font-family

8. Create the following table using CSS properties.

Roll No	Name	Team
1001	Arjun	Red
1002	Arjun	Blue
1003	Arjun	Green

9. Create a HTML code for simple registration form which include
 i. Firstname ii. Middlename iii. Lastname iv. Course with option button v. Gender with radio button vi. Phone No vii. Address viii. Submit and reset button

Registration Form

Firstname:

Middlename:

Lastname:

Course: C1 C2 C3

Gender: Male Female

Phone No:

Address:

10. Using HTML and Javascript, design a webpage to calculate payroll of an employee. Read Employee details such as Emp_Id, Name, Designation, Department and Basic Salary. Read Deduction in percentage such as PF, LIC. Read Allowance in percentage such as DA and HRA. Calculate Gross and Net Salary of an Employee.

Course Outcomes**

After completion of the course student will be able to

1. Analyze historical context and justification for HTML over XHTML.
2. Develop HTML documents and adding various semantic markup tags.
3. Learn various attributes, values and types of CSS.
4. Build a web page using links and images.
5. Develop web applications using Javascript.

Course Outcomes	Programme Outcomes (POs)												Program Specific Outcomes (PSOs)		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	-	3	3	-	-	-	-	-	-	-	-	3	-	-	-
CO2	-	2		2	-	-	-	-	-	-	-	3	2	-	1
CO3	-	-	2	-	-	-	-	-	-	-	-	3	3	2	2
CO4	3	-	-	2	-	-	-	-	-	-	-	3	3	3	3
CO5	-	3	2	-	1	-	-	-	-	-	-	-	-	2	

Department of Information Science and Engineering

Department of Information Science and Engineering 3rd Semester

Sl. No.	Course			Credits	Examination						
	Category	Code	Title		Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks
					L	T	P				
1	BSC	22UMA301C	Numerical Techniques and Integral Transforms	3	3	0	0	3	50	50	100
2	AEC	22UIS305C	Advanced Web Programming (Integrated)	4	3	0	2	5	50	50	100
3	PCC	22UIS304C	Logic Design(integrated)	4	3	0	2	5	50	50	100
4	PCC	22UIS314C	Computer Organization	4	4	0	0	4	50	50	100
5	PCC	22UIS303C	Data Structures	4	3	2	0	5	50	50	100
6	PCC	22UIS381L	Data Structures Lab	1	0	0	2	2	50	50	100
7	BSC	22UMA300M	Bridge Course Mathematics - I	0	2	0	2	4	50	50	100
8	MC	UHS002M UHS003M UHS001M	National Service Scheme Physical Education(Sports and Athletics) Yoga	0	0	0	2	2	100	0	100
9		AAP	AICTE Activity Points								
Total				20	17	2	10	29	400	400	800


Head Of Department
 Information Science & Engineering
 Basवेश्वर Engineering College
 BAGALKOT-587 102 INDIA

Department of Information Science and Engineering
4th Semester

Sl. No.	Course			Credits	Examination						
	Category	Code	Title		Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks
					L	T	P				
1	BSC	22UMA401C	Engineering Mathematics - IV	3	3	0	0	3	50	50	100
2	HSSM	22UHSXXC	Universal Human Values - II	1	1	0	0	1	50	50	100
3	PCC	22UIS403C	Analysis and Design of Algorithms(Integrated)	4	3	0	2	5	50	50	100
4	PCC	22UIS412C	Object Oriented Modelling and Design (Integrated)	4	3	0	2	5	50	50	100
5	PCC	22UIS413C	Database Management Systems	4	3	2	0	5	50	50	100
6	PCC	22UIS417C	Software Engineering	3	3	0	0	3	50	50	100
7	PCC	22UIS421L	Database Application Laboratory	1	0	0	2	2	50	50	100
8	BSC	22UMA400C	Bridge course Mathematics - II	0	2	0	0	2	50	50	100
9	MC	NSS PE YO	National Service Scheme Physical Education(Sports and Athletics) Yoga	0	0	0	2	2	0	0	0
10		AAP	AICTE Activity Points								
Total				20	18	2	6	26	400	400	800


 Head Of Department
 Information Science & Engineering
 Basaveshwar Engineering College
 BAGALKOT-587 102 INDIA

Department of Information Science and Engineering
5th Semester

Sl. No.	Course			Credits	Examination						
	Category	Code	Title		Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks
					L	T	P				
1	HSSM	22UBT523C	Environmental Studies	1	1	0	0	1	50	50	100
2	AEC	22UHS521C	Soft Skills	2	2	0	0	2	50	50	100
3	PCC	22UIS504C	Advanced Java Programming (Integrated)	3	2	0	2	4	50	50	100
4	PCC	22UIS509C	Operating Systems	3	3	0	0	3	50	50	100
5	PCC	22UBT540C	Biology For Engineers	3	2	0	2	4	50	50	100
6	PEC	22UIS050E	Advanced Cyber Security	3	3	0	0	3	50	50	100
7	OEC		Open Elective Course - I	3	3	0	0	3	50	50	100
8	PROJ	22UIS531P	Mini project	2	0	0	2	2	50	50	100
9	MC	NSS PE YO	National Service Scheme Physical Education(Sports and Athletics) Yoga	0	0	0	2	2	0	0	0
10		AAP	AICTE Activity Points								
Total				20	16	0	6	22	400	400	800


Head Of Department
 Information Science & Engineering
 Basaveshwar Engineering College
 BAGALKOT-587 102

Department of Information Science and Engineering

6th Semester

Sl. No.	Course			Credits	Examination						
	Category	Code	Title		Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks
					L	T	P				
1	PCC	22UIXXXC	Computer Networks(Integrated)	4	3	0	2	5	50	50	100
2	PCC	22UIXXXC	Discrete Mathematical Structures	3	3	0	0	3	50	50	100
3	PCC	22UIXXXC	AI & Machine Learning using Python (Integrated)	4	3	0	2	5	50	50	100
4	PCC	22UIXXXC	Theory of Computations	3	3	0	0	3	50	50	100
5	PEC	22UIXXXC	Professional Elective Course - II	3	3	0	0	3	50	50	100
6	OEC	22UIXXXC	Open Elective Course - II	3	3	0	0	3	50	50	100
7	PROJ.	22UIXXXC	Pre-Project Work	0	0	0	0	0	0	0	0
8	MC	NSS PE YO	National Service Scheme Physical Education(Sports and Athletics) Yoga	0	0	0	2	2	0	0	0
9		AAP	AICTE Activity Points								
Total				20	18	0	4	22	350	350	700

Note:
Pre-Project Work - 1) Batch Formulation, 2) Project Allocation and Guide Allotment, 3) Problem Identification and Formulation, and 4) Literature Survey - Minimum 10 papers are to be surveyed.


Head Of Department
 Information Science & Engineering
 Basaveshwar Engineering College
 BAGALKOT-587 102 INDIA

Department of Information Science and Engineering

7th Semester

Sl. No.	Course			Credits	Examination						
	Category	Code	Title		Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks
					L	T	P				
1	HSSM	22UIXXXC	Management and Entrepreneurship	3	3	0	2	5	50	50	100
2	PCC	22UIXXXC	Cryptography and Network Security	3	2	0	2	4	50	50	100
3	PEC	22UIXXXC	Professional Core Elective – III (Integrated)	3	2	0	2	4	50	50	100
4	PEC	22UIXXXC	Professional Core Elective - IV	3	3	0	0	3	50	50	100
5	PROJ	22UIXXXC	Project Work	12	0	0	12	12	50	50	100
Total				24	10	0	18	28	250	250	500


Head of Department
 Information Science & Engineering
 Basवेश्वर Engineering College
 BAGALKOT-587 102 INDIA

Department of Information Science and Engineering

8th Semester

Sl. No.	Course			Credits	Examination						
	Category	Code	Title		Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks
					L	T	P				
1	AEC	22UIXXXC	MOOCS	3	3	0	0	3	50	50	100
2	OEC	22UIXXXC	MOOCS	3	3	0	0	3	50	50	100
3	INT	22UIXXXC	Internship	10	0	0	10	10	50	50	100
Total				16	6	0	10	16	150	150	300


Head Of Department
 Information Science & Engineering
 Basaveshwar Engineering College
 BAGALKOT-587 102 INDIA

Department of Electronics and Communication Engineering

BVVS

Basaveshwar Engineering College, Bagalkot


Department of Electronics and Communication Engineering

Details of the Courses whose Contents are Revised During the Period 2023-24

Sl. No	Semester	Title of the Course	Course Code	% of the Content Added or Deleted
01	III	Semiconductor Devices and Circuits	22UEC302C	05 % (Added)
02	III	Network Analysis	22UEC304C	20 % (Added)
03	VII	Multimedia Communication	21UEC702E	15 % (Added)

Jmallapw
Professor and Head
Department of Electronics & Communication Engg.
Basaveshwar Engineering College,
BAGALKOT - 587 102

Semester III	COURSE NAME Semiconductor Devices and Circuits	Course Code 22UEC302C	
Credits	04	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	3:0:2:3	SEE Marks	50
Total Hours of Pedagogy	40 hours Theory + 10 - 12 Lab slots	Total Marks	100
Course	IPCC	Exam Hours	03
Course objectives:			
<ol style="list-style-type: none"> To provide the knowledge about construction, operation and characteristics of JFET, MOSFET, Thyristors and design of clipper and clamper circuits. To design amplifiers using FET to meet the given specifications. To design different types of power supplies to meet the given specifications. And Performance analysis of FET amplifiers i.e. computation of gain, input impedance and output impedance. To study the construction, operation and characteristics, application of optoelectronic and other two-terminal devices. 			
Unit – 1(10 Hrs)			
Field Effect Transistors: Introduction, construction, operation and characteristics of JFETs, transfer characteristics. Introduction to MOSFETs, Depletion type MOSFET, Enhancement type MOSFET, MOS capacitor.			
Thyristors: Introduction, construction, operation and characteristics of SCR, TRIAC, UJT. Applications of Diode: clippers and clampers.			
Unit – 2 (10 Hrs)			
FET Biasing: Introduction, Fixed bias configuration, Self bias configuration, Voltage divider biasing, Common gate configuration, Design, p-channel FETs, Universal JFET bias curve.			
Unit – 3 (10 Hrs)			
FET amplifiers: Introduction, JFET small signal model, voltage divider bias configuration, frequency response of amplifiers.			
Power Supplies (Voltage Regulators): Introduction, general filter considerations, capacitor filter, RC filter, discrete transistor voltage regulation, IC voltage regulators.			
Unit – 4 (10 Hrs)			
Optoelectronic Devices: Light units, Light emitting diode (LED), Liquid Crystal Displays (LCD), photo conductive cell, photo diode, solar cells, photo transistors, and optocouplers.			
Miscellaneous Devices: Schottky diode, varactor diode, power diode, tunnel diode.			


 Professor and Head
 Department of Electronics & Communication Engg.
 Basaveshwar Engineering College,
 BAGALKOT - 587 102

PRACTICAL COMPONENT OF IPCE

Suggested Simulation/Modeling/Design/Verification/Hardware Boards/etc. (preferably open source)

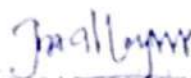
1. Hardware implementation using discrete components for the following experiments
2. Demonstrate the operation of the following circuits using suitable simulation software (Open source such as Proteus, Simulink, xSim, Pspice)

Sr. No.	Experiments
1	Design a circuit to measure cut in and reverse breakdown voltage of a diode.
2	Analysis of a diode halfwave and fullwave rectifier with and without capacitor filter.
3	Design a circuit to measure cut in and reverse breakdown voltage of Zener diode.
4	Design a voltage regulator using Zener diode and its regulation analysis.
5	Construct a circuit to measure and plot the input and output characteristics of a transistor for calculating h-parameters under CB/CE/CF configuration.
6	Construct a circuit to perform clipping of positive half cycle/negative half cycle.
7	Construct a circuit to perform controlled level shifting of positive half cycle/negative half cycle.
8	Design and implement a circuit to amplify the low level signal using BJT/FET under CE/CS configuration and analyse the frequency response.
9	Design a circuit to plot the drain and transfer characteristics of JFET and hence find transconductance.
10	Design and implement RC phase shift/Colpitt's/Hartley oscillator for the given specifications.
11	Voltage versus current characteristics and its analysis of silicon controlled rectifier (SCR).
12	Design and implementation of controlled rectifier.
13	V-I characteristics and analysis of UJT.
14	Design and implementation of UJT as a relaxation oscillator.
15	Design 5V/12V regulated power supply.

Course outcomes

After completion of the course student will be able to

1. Design clipper, clamper and differentiate different types of electronic devices.
2. Design of MOSFET amplifier for the given specifications using the knowledge of Field Effect Transistor.
3. Design regulated power supply to meet the given specifications and Choose a specific FET and other


 Pratik
 Department of Electrical Engineering
 Basavanna Institute of Technology
 Bangalore - 560076

components to design an amplifier

4. Differentiate the characteristics and their importance of different optoelectronic and other two terminal devices for various applications.

Reference Books

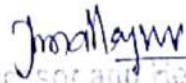
1. Nashelesky & Boylestead, "Electronic Devices & Circuit Theory", 10th Edition, Pearson, 2009.
2. Adel S. Sedra, Kenneth C. Smith & Arun N. Chandorkar, Microelectronic Theory and Applications, 2013, Fifth edition, Reprint, Oxford University press, New York, USA.
3. D.A. Bell, "Electronic Devices & Circuit", 4th Edition, PHI, 2007.

Web links and Video Lectures (e-Resources):

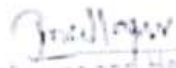
1. https://spoken-tutorial.org/tutorial-search/?search_foss=eSim&search_language=English
2. https://www.google.com/search?q=NPTel+videos+on+optoelectronics+electronics&rlz=1C1CHMY_enIN992IN992&oq=NPTel+videos+on+optoelectronics+electronics&aqs=chrome..69i57j33i160.1193773779j0j15&sourceid=chrome&ie=UTF-8#fpstate=ive&vld=cid:a2be5200,vid:WWjldCmRteg

Course Articulation Matrix

Course Outcomes	POs											PSOs			
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
CO1: Design clipper, clamper and differentiate	3	3	3	2	1	1	0	1	1	1	1	1	3	0	0


 Professor and Head
 Department of Electronics & Communication Engg.
 Basaveshwar Engineering College,
 BANGALORE - 567 102.

different types of electronic devices	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
E02: Design of BJT/OPAMP amplifier for the given specifications using the knowledge of Power Effect Transistor	1	1	2	2	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0
E04: Design regulated power supply to meet the given specifications and choose a specific IC and other components to design an amplifier	1	2	2	2	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
E06: Differentiate the characteristics and their importance of different semiconductor and other two terminal devices for various applications	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Course Contributor to POs	0	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0


 Professor and Head
 Department of Electron & Communication Engg
 Rajawadekar Engineering College
 RAJALAKHOTI - 507 102

Semester: 03	NETWORK ANALYSIS	Course Code	22UEC304C
Credits		03	CIE Marks
Teaching Hours/Week (L:T:P:S)	3:0:0:2	SEE Marks	50
Total Hours of Pedagogy	40 hours Theory + 10 - 12 Self Study Lab slots	Total Marks	100
Course	PCC	Exam Hours	03

Course objectives:

1. To introduce the concept of mesh and node analysis
2. To understand the concept of graph theory
3. To introduce network theorems which are applied to simplify complex circuits
4. To provide the background of Laplace transform to analyze the transient behavior of elements in network
5. To introduce concept of two-port networks parameters, attenuators and equalizers

Unit - 1 (10 Hrs)

Introduction to network analysis: Reference directions for current and voltage, Independent and dependent sources, Source transformation, Mesh and Nodal analysis with dependent and independent sources for AC, DC and bridge networks, Star-delta and Delta-star conversions

Unit - 2 (10 Hrs)

Network theorems: Superposition theorem, Millman's theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem

Network graphs: Definition of terms. Matrices associated with graphs: incidence, reduced incidence, fundamental cut-set and fundamental tie-set, analysis of networks

Unit - 3 (10 Hrs)

Transients analysis: (i) RC transients: Storage cycle, Initial values, Instantaneous values, Application; (ii) RL transients: Storage cycle, Initial values, Instantaneous values, Application

Laplace transformation: Basic theorems, Laplace transform of periodic functions, application of Laplace transform to RL and RC circuits.

Unit - 4 (10 Hrs)

Two-Port Network: Two port network analysis using Impedance (Z) parameters, Admittance (Y) parameters, Hybrid (h) parameters and transmission parameters. Relationship between parameters.

Principles of Attenuators and equalizers: Design of Symmetrical T-type, π -type, Lattice and Bridged-T attenuator, Asymmetrical T, L, and PI attenuators. Design of two terminal series and shunt equalizers.

Malay
Professor and Head
 Department of Electronics & Communication Engg.
 Basaveshwar Engineering College,
 BAGALKOT - 587 102

PRACTICAL COMPONENT OF PCC

Suggested Simulation/Modeling/Design/Verification/Hardware Boards/etc. :

Demonstrate the operation of the following circuits using suitable simulation software (Open source such as Psim, Pspice, Proteus, Simulink, eSim)

Sl. No.	Experiments
1	Determination of current through each branch of a given network using mesh analysis
2	Determination of current through each branch of a given network using nodal analysis
3	Simplification of given network using star-delta conversion and finding the current in load
4	Simplification of given network using source conversion and finding the current in load
5	Verification of Superposition theorem
6	Verification of Thevenin's theorem
7	Verification of Norton's theorem
8	Verification of Maximum power transfer theorem
9	Verification of Millman's theorem
10	To plot frequency response of RL and RC network
11	To design and verify symmetrical attenuators
12	To design and verify Asymmetrical attenuators

Course outcomes

After completion of the course student will be able to

1. Apply various circuit analysis techniques such as mesh analysis, nodal analysis, and source transformation to investigate AC and DC networks
2. Solve voltage and currents in the networks using network theorems and topology
3. Analyze the transient behavior of elements using Laplace transformation
4. Evaluate two-port network parameters and to design attenuators and equalizers

Reference Books

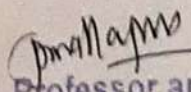
1. Robert L. Boylestad, "Introductory Circuit Analysis" (13th edition), Prentice Hall, 2015
2. Roy Choudhary, "Networks and systems", 2nd Edition, New Age International Publications, 2006
3. Hayt, Kemmerly and Durbin, "Engineering Circuit Analysis", 9th Edition, TMH, 2006.
4. G. K. Mithal, "Network Analysis", Khanna Publishers, 1997

Web links and Video Lectures (e-Resources):

1. <https://nptel.ac.in/courses/108105159>
2. <https://nptel.ac.in/courses/108102042>
3. https://spoken-tutorial.org/tutorial-search/?search_foss=eSim&search_language=English
4. <https://psim.software.informer.com/11.1/>
5. www.ni.com/multisim

Course Articulation Matrix:

Course Outcomes	POs											PSOs			
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
CO1: Apply various circuit analysis techniques such as mesh analysis, nodal analysis, and source transformation to investigate AC and DC networks	3	2	1	1	1	0	0	0	1	0	0	1	3	0	0
CO2: Solve voltage and currents in the networks using network theorems and topology	3	3	1	1	1	0	0	0	1	0	0	1	3	0	0
CO3: Analyze the transient behavior of elements using Laplace transformation	3	3	1	1	1	0	0	0	1	0	0	1	3	0	0
CO4: Evaluate two-port network parameters and to design attenuators and equalizers	3	2	1	1	1	0	0	0	1	0	0	1	3	0	0
Course Contribution to POs	3.00	2.5	1	1	1	0	0	0	1	0	0	1	3	0	0


Professor and Head
 Department of Electronics & Communication Engg.
 Basaveshwar Engineering College,
 BAGALKOT - 587 102

Total change in ~~5%~~ syllabus. 15% 15%

SUBJECT CODE- 21UEC702E	Subject Title: MULTIMEDIA COMMUNICATIONS	Credits: 03
L:T:P - N _L : 3 N _T : 0 N _P 0		CIE Marks: 50
Total Hours/Week: 03		SEE Marks: 50

UNIT-I	10 Hrs.
Introduction, Multimedia information representation, Multimedia networks, Multimedia applications. Introduction, Digitization principles, Text, Images, Audio, Video.	
UNIT-II	10 Hrs.
Text and Image Compression: Introduction, Compression principles, Text compression, image compression	
UNIT-III	10 Hrs.
Audio and Video Compression: Introduction, Audio compression, Video compression,	
UNIT-IV	10 Hrs.
Multimedia Network Communications: Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on-demand, Multimedia over Wireless Networks.	

Reference Books *

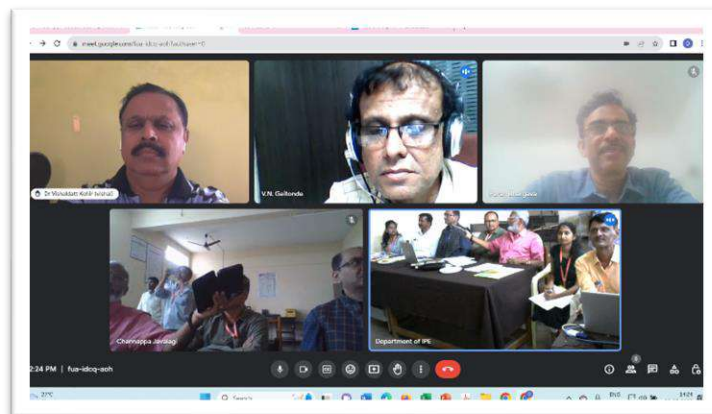
Text Books:



BASAVESHWAR ENGINEERING COLLEGE, BAGALKOTE

DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING

Proceedings of the Board of Studies (BOS) meeting Held at 12.30 PM on Saturday, 22.07.2023



Channappa Javagi (Presenting)

Credit split-up (2021-22 Admitted Students)

Sem.	BSC	ESC	HSMC	AEC	PCC	PEC	OEC	Proj.	Int.	Sem.	UHV	Total
1	07	10	02	01	--	--	--	--	--	--	--	20
2	07	09	02	02	--	--	--	--	--	--	--	20
3	03	--	01	1 (Dept.)	14	--	--	--	--	--	01	20
4	03	--	01	--	15	--	--	--	02	--	--	21
5	--	--	01	2 (SS)	10	03	03	--	02	--	--	21
6	03	--	--	01	06	03	06	02	--	--	--	21
7	--	--	03	01	03	06	--	08	--	--	--	21
8	--	--	--	3 (MOOCS) 2 (Dept.)	--	--	--	--	10	01	--	16
Tot.	23	19	10	13	48	12	09	10	14	01	01	160

BASAVESHWAR ENGINEERING COLLEGE (AUTONOMOUS) BAGALKOT
DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING

Board of Studies (BOS) Meeting

22.07.2023, Saturday, 12.30 PM

Seminar Hall, IPE Dept

AGENDA

Sub. (1)	Welcome Address by Chairman, BoS in IPE
Sub. (2)	To read and approve the minutes of Board of Studies meeting held on 22.12.2022
Sub. (3)	To apprise of the activities from 23.12.2022 to 21.07.2023
Sub. (4)	Seeking approval for detailed syllabus of B.E VII and VIII semester of 2020-21 batch.
Sub. (5)	Seeking approval for scheme and detailed syllabus of B.E V and VI semester for 2021-22 batch.
Sub. (6)	Seeking approval for proposed B.E I to VIII semester scheme for 2022-23 batch.
Sub. (7)	Seeking approval for detailed syllabus of III and IV semester for 2022-23 batch.
Sub. (8)	Seeking approval for proposed B.E I to VIII semester scheme for 2023-24 batch.
Sub. (9)	Seeking approval for Online Courses (NPTEL) to be offered during the academic year 2023-24.
Sub. (10)	Seeking approval for scheme of evaluation for the following courses: (1) Integrated Professional Core Course (IPCC), (2) Mini-Project, (3) Major-Project, (4) Internship, (5) NSS, (6) PE and Sports, (7) Yoga for the batches 2021-22 and onwards.
Sub. (11)	Seeking approval for syllabus of mandatory courses (Yoga, NSS, PE and Sports) for the batches 2021-22 and onwards.
Sub. (12)	Seeking approval for the Panel of Examiners
Sub. (13)	Seeking approval for categorizing courses as Employability/Skill Development/Entrepreneurship
Sub. (14)	Any other matter with permission of the chair.
Sub. (15)	Vote of Thanks

INDEX




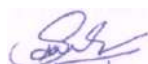

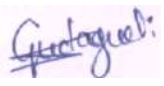

Subject No	Details	Page No.
	Proceedings of BOS Meeting, 22.07.2023	01
Sub. (2)	Minutes of Board of Studies meeting held on 22.12.2022	05
Sub. (3)	To apprise of the activities from 23.12.2022 to 21.7.2023	08
Sub. (4)	Seeking approval for detailed syllabus of B.E VII and VIII semester of 2020-21 batch.	10
Sub. (5)	Seeking approval for scheme and detailed syllabus of B.E V and VI semester for 2021-22 batch.	51
Sub. (6)	Seeking approval for proposed B.E I to VIII semester scheme for 2022-23 batch.	68
Sub. (7)	Seeking approval for detailed syllabus of III and IV semester for 2022-23 batch.	79
Sub. (8)	Seeking approval for proposed B.E I to VIII semester scheme for 2023-24 batch.	69
Sub. (9)	Seeking approval for Online Courses (NPTEL) to be offered during the academic year 2023-24.	101
Sub. (10)	Seeking approval for scheme of evaluation for the following courses: (1) Integrated Professional Core Course (IPCC), (2) Mini-Project, (3) Major-Project, (4) Internship, (5) NSS, (6) PE and Sports, (7) Yoga for the batches 2021-22 and onwards.	125
Sub. (11)	Seeking approval for syllabus of mandatory courses (Yoga, NSS, PE and Sports) for the batches 2021-22 and onwards.	128
Sub. (12)	Seeking approval for the Panel of Examiners	
Sub. (13)	Seeking approval for categorizing courses as Employability/Skill Development/Entrepreneurship	161



BASAVESHWAR ENGINEERING COLLEGE, BAGALKOTE
DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING
Proceedings of the Board of Studies (BOS) meeting
Held at 12.30 PM on Saturday, 22.07.2023

Sub (1)	Welcome Address by Chairman, BOS in IPE
Resolution	The chairman of the Board of Studies Dr. C. M. Javalagi, Professor and Head, Dept. of I & P Engineering extended a hearty welcome to all the members of the Board of Studies (BOS) in IPE.
Sub (2)	To read and approve the minutes of the Board of Studies meeting held on 22.12.2022
Resolution	The minutes of the previous BOS meeting which was held on 22.12.2022 were circulated to all members prior to the meeting. Dr. C. M. Javalagi placed the same before the members of the committee for approval. Resolutions were accepted and approved by the Board. The minutes are as in Annexure – 1.
Sub (3)	To apprise of the activities from 23.12.2022 to 21.07.2023
Resolution	Dr. C. M. Javalagi presented a brief report of the academic and other developmental activities from 23.12.2022 to 21.07.2023 as in Annexure – 2.
Sub (4)	Seeking approval for detailed syllabus of B.E VII and VIII semester of 2020-21 batch.
Resolution:	Detailed syllabus of B.E VII and VIII semester of the 2020-21 batch was presented before the members of the BOS by Dr. D. G. Mallapur. The suggestions from the members: <ul style="list-style-type: none">• Dr. V. G. Akkimardi suggested teaching types of layout before economic analysis of the layouts in the subject UIP750C Operations Management.• Dr. V. V. Kohir suggested including 2D simulation software and a virtual lab in the subject UIP702C Plasticity and Metal Forming.<ul style="list-style-type: none">○ The said suggestion will be implemented as a part of the assignment. The Board accepted and approved the syllabus of B.E VII and VIII semesters of the 2020-21 batch with the above modifications. (Annexure – 3)




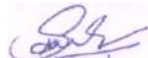

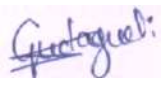

Name and Signature of BOS members present

#	#		#
Dr. Vishaldatt V. Kohir	Prof. Parag Bharagava	Dr Ranganath M. Singari	Dr. V.N. Gaitonde
Absent			
Shri S Sreenivas Reddy	Dr. C.M. Javalagi	Dr. D.G. Mallapur	Dr. S. M. Pharsiyawar
			
Dr. V.G. Akkimardi	Ms. Suresh Gudagudi	Ms. Sushmita Talikoti	

#: Members present for the meeting online through Google Meet via link: <https://meet.google.com/fua-idcq-ach>

Sub (5)	Seeking approval for the scheme and detailed syllabus of B.E V and VI semester for the 2021-22 batch.
Resolution	<p>Dr. D. G. Mallapur presented the scheme and detailed syllabus of B.E V and VI semester for the 2021-22 batch.</p> <ul style="list-style-type: none"> • Dr. Parag Bhargava proposed to include Product Design & Development as an elective subject. <ul style="list-style-type: none"> ○ The subject Product Design & Development will be included in the list of electives for the students admitted to first year during the academic year 2021-22. • Dr. R. M. Singari suggested to reduce the number of elective subjects and modify the list. <ul style="list-style-type: none"> ○ Modified list is available in Annexure – 4.
Sub (6)	Seeking approval for proposed B.E I to VIII semester scheme for 2022-23 batch.
Resolution	<ul style="list-style-type: none"> • The proposed scheme of B.E I to VIII semester for students admitted to first year in 2022-23 was presented by Dr. D. G. Mallapur and the board accepted and approved with the introduction of Integrated Professional Core Courses (IPCC) (Annexure – 5).
Sub (7)	Seeking approval for detailed syllabus of III and IV semester for 2022-23 batch.
	<p>Detailed syllabus of III and IV semester for students admitted to first year in 2022-23 was presented by Dr. S. M. Pharsiyawar. After going through the syllabus, the board accepted and approved the same with following modifications:</p> <ul style="list-style-type: none"> • Introduction of Integrated Professional Core Courses (IPCC) for the subjects Fundamentals of Material Science & Engineering, and Manufacturing Processes during III semester. • Including Report Writing & Presentation Skills and Biology for Engineers under Ability Enhancement Course (AEC) category during III semester. • Introduction of Integrated Professional Core Courses (IPCC) for the subjects Industrial Engineering & Management, and Industrial Metrology & Quality Control for IV semester. (Annexure – 6).
Sub (8)	Seeking approval for proposed B.E I to VIII semester scheme for 2023-24 batch.






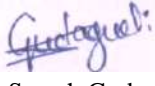
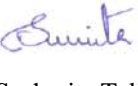
Name and Signature of BOS members present

#	#		#
Dr. Vishaldatt V. Kohir	Prof. Parag Bharagava	Dr Ranganath M. Singari	Dr. V.N. Gaitonde
Absent			
Shri S Sreenivas Reddy	Dr. C.M. Javalagi	Dr. D.G. Mallapur	Dr. S. M. Pharsiyawar
			
Dr. V.G. Akkimardi	Ms. Suresh Gudagudi	Ms. Sushmita Talikoti	

#: Members present for the meeting online through Google Meet via link: <https://meet.google.com/fua-idcq-ach>

Resolution	The proposed B.E I to VIII semester scheme for the students admitted to first year in 2023-24 was briefed by Dr. S. M. Pharsiyawar and the members of the board approved to adopt the scheme. <ul style="list-style-type: none"> o Inclusion of Product Development as AEC (Ability Enhancement Course) was suggested by Dr. Parag Bhargava looking into the possibilities. (Annexure – 5).
Sub (9)	Seeking approval for Online Courses (NPTEL) to be offered during the academic year 2023-24.
Resolution	The lists of Online Courses available/offered under NPTEL and MOOCS were presented to the members by Dr. S. M. Pharsiyawar and members approved the same. (Annexure – 7).
Sub (10)	Seeking approval for scheme of evaluation for the following courses: (1) Integrated Professional Core Course (IPCC), (2) Mini-Project, (3) Major-Project, (4) Internship, (5) NSS, (6) PE and Sports, (7) Yoga for the batches 2021-22 and onwards.
Resolution	The scheme of evaluation was presented by Dr. S. M. Pharsiyawar for the courses (1) Integrated Professional Core Course (IPCC), (2) Mini-Project, (3) Major-Project, (4) Internship, (5) NSS, (6) PE and Sports, (7) Yoga for the batches 2021-22 and onwards. Members of the board approved the scheme of evaluation for the above-mentioned courses. (Annexure – 8).
Sub (11)	Seeking approval for syllabus of mandatory courses (Yoga, NSS, PE and Sports) for the batches 2021-22 and onwards.
Resolution	Dr. S. M. Pharsiyawar briefed about the syllabus contents of Yoga, NSS, PE and Sports courses for the batches 2021-22 and onwards. The members of the board approved the syllabi of Yoga, NSS, PE and Sports courses for the batches 2021-22 and onwards. (Annexure – 9).
Sub (12)	Seeking approval for the Panel of Examiners
Resolution	Dr S.M Pharsiyawar presented the list of SEE theory question paper setters & evaluators, and practical examiners to the members. The board approved the panel as in Annexure – 10.
Sub (13)	Seeking approval for categorizing courses as Employability/Skill Development/Entrepreneurship.

Name and Signature of BOS members present




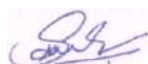

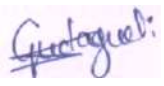

#	#		#
Dr. Vishaldatt V. Kohir	Prof. Parag Bharagava	Dr Ranganath M. Singari	Dr. V.N. Gaitonde
Absent			
Shri S Sreenivas Reddy	Dr. C.M. Javalagi	Dr. D.G. Mallapur	Dr. S. M. Pharsiyawar
			
Dr. V.G. Akkimardi	Ms. Suresh Gudagudi	Ms. Sushmita Talikoti	

#: Members present for the meeting online through Google Meet via link: <https://meet.google.com/fua-idcq-ach>

Resolution	Board agreed and suggested the department faculty thoroughly check the syllabi of the subjects and categorize them under Employability/Skill Development/Entrepreneurship groups.
Sub (14)	Any other matter with the permission of the chair.
Resolution	No other matter/s was put before the committee for discussion.
Sub (15)	Vote of Thanks.
Resolution	Since there were no other matters for discussion, Dr. D. G. Mallapur proposed vote of thanks.


BOS Chairman

Name and Signature of BOS members present

#	#		#
Dr. Vishaldatt V. Kohir	Prof. Parag Bharagava	Dr Ranganath M. Singari	Dr. V.N. Gaitonde
Absent			
Shri S Sreenivas Reddy	 Dr. C.M. Javalagi	 Dr. D.G. Mallapur	 Dr. S. M. Pharsiyawar
 Dr. V.G. Akkimardi	 Ms. Suresh Gudagudi	 Ms. Sushmita Talikoti	

#: Members present for the meeting online through Google Meet via link: <https://meet.google.com/fua-idcq-ach>