

## Semester - 3

Course Code: 301

Course Title: The Prominent Gujarati Literary Texts

(પ્રસિદ્ધ ગુજરાતી સાહિત્યિક કૃતિઓ)

Course Category: A.E.C. (Ability Enhancement Course)

Course Code	301
Course Title	<b>The Prominent Gujarati Literary Texts</b> (પ્રસિદ્ધ ગુજરાતી સાહિત્યિક કૃતિઓ) [The student is independent to select any other course as per the NEP standards (online/MOOC/Recognized university approved AEC course) or from courses offered by college/institute out of the course basket offered by the University under the Ability Enhancement courses (AEC) basket.]
Credits	2
Course Category	<b>(AEC) Ability Enhancement Course</b>
Level of Course	100-199 ( Foundation / Introductory )
Course Intake	As per the division intake allocated by University
Course Resource Person:	The institute can invite a professional/expert resource person of the concerned field from any other institute.
Course Fees:	-
Teaching per Week	2 Hrs
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	-
Implementation Year:	A.Y. 2024-2025
Purpose of Course	The prominent Gujarati Literary Texts aims to deepen participants' understanding of the rich literary heritage of Gujarat. This program focuses on exploring the prominent literature and characters within Gujarati novels, fostering a nuanced appreciation for cultural nuances, historical contexts, and literary techniques. By delving into the intricacies of Gujarati literature, participants can enhance their analytical and critical thinking skills while gaining a broader cultural perspective. [Modern Indian Language (MIL) & English language focused on language and communication skills.]
Course Objective	<b>1) Cultural Appreciation:</b> Foster a deep appreciation for the cultural heritage of Gujarat by studying prominent literature and characters in Gujarati texts, allowing participants to understand the societal values, traditions, and historical contexts depicted in the literary works. <b>2) Literary Analysis Skills:</b> Develop participants' analytical and critical thinking skills through an in-depth examination of the narrative structures, themes, and character developments found in Gujarati texts, thereby enhancing their ability to critically assess and interpret literature. <b>3) Historical Contextualization:</b> Provide participants with the necessary historical background to comprehend the evolution of Gujarati literature, enabling them to connect literary movements and periods with the societal changes and influences that shaped the works. <b>4) Communication Proficiency:</b> Enhance participants' communication skills by encouraging them to articulate their interpretations and analyses of Gujarati literature effectively, fostering the ability to express complex ideas and perspectives both verbally and in writing. <b>5) Cultural Sensitivity:</b> Promote cultural sensitivity and cross-cultural understanding by exploring the diverse characters and narratives within Gujarati texts, encouraging participants to recognize and appreciate the pluralistic nature of Gujarati literature and its reflections on society.
Pre-requisite	Knowledge of Gujarati (Reading, Writing and Speaking )

Course Outcomes	<p><b>CO1: Comprehensive Knowledge of Prominent Gujarati Novels:</b> Students will gain a deep understanding of the historical context, cultural nuances, and literary themes of four prominent Gujarati texts that explore historical facts and events. This outcome aims to foster a critical appreciation of the literature's connection to historical narratives.</p> <p><b>CO2: Analysis of Key Characters in Gujarati Novels:</b> Students will analyze and evaluate the main characters in the selected Gujarati texts, examining their motivations, development, and significance within the historical context. This outcome encourages students to delve into character studies and understand the author's portrayal of individuals against the backdrop of historical events.</p> <p><b>CO3: Cultural Sensitivity and Contextual Awareness:</b> Through the exploration of Gujarati texts, students will develop cultural sensitivity and contextual awareness, gaining insights into the social, political, and historical aspects that influence the literature. This outcome aims to enhance students' ability to interpret literature within its broader cultural and historical framework.</p> <p><b>CO4: Critical Evaluation of Literary Techniques:</b> Students will critically evaluate the literary techniques employed by prominent Gujarati novelists, examining narrative structures, symbolism, and stylistic choices. This outcome encourages students to develop a discerning eye for the artistic elements that contribute to the richness of Gujarati literature.</p> <p><b>CO5: Understanding Mahatma Gandhi's Autobiography in Gujarati Literature:</b> By studying Mahatma Gandhi's autobiography written in Gujarati, students will gain insights into his life, philosophy, and the socio-political landscape of the time. This outcome aims to connect the literary exploration of historical events with the personal narrative of one of the most influential figures in history, fostering a holistic understanding of the period.</p>																																																						
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)	<table><tr><td></td><td>PSO1</td><td>PSO2</td><td>PSO3</td><td>PSO4</td><td>PSO5</td><td>PSO6</td><td>PSO7</td><td>PSO8</td></tr><tr><td>CO1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CO2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CO3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CO4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CO5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	CO1									CO2									CO3									CO4									CO5								
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Course Content	<p><b>Unit-1: "જય સોમનાથ " - લેખક : કનૈયાલાલ મુનશી</b> - પરિચય અને ઐતિહાસિક સંદર્ભ: નવલકથાના પ્લોટ અને થીમ્સની ઝાંખી સોમનાથ મંદિરની ઐતિહાસિક પૃષ્ઠભૂમિ અને પાત્રોનું વિશ્લેષણ અને તેમનું ઐતિહાસિક મહત્વ. - ગુજરાતનું સાંસ્કૃતિક વિહંગલોકન : નવલકથામાં દર્શાવવામાં આવેલા સાંસ્કૃતિક તત્વોનું અન્વેષણ. નવલકથા અને સમકાલીન ગુજરાતમાં સાંસ્કૃતિક વ્યવહારનો તુલનાત્મક અભ્યાસ.</p> <p><b>Unit-2 : "સત્યના પ્રયોગો" - લેખક: મહાત્મા ગાંધી</b> - સાહિત્યિક સ્વરૂપ તરીકે આત્મકથા: ગાંધીજીની વર્ણન શૈલીનું મહત્વ. ગાંધીજીની ફિલસૂફી પર વ્યક્તિગત અનુભવોની અસરનું વિશ્લેષણ. - નૈતિક અને તાત્વિક પ્રતિબિંબ: સત્ય અને અહિંસા સાથે ગાંધીજીના પ્રયોગોનું અન્વેષણ.સમકાલીન સમાજમાં ગાંધીવાદી સિદ્ધાંતોની સુસંગતતા પર ચર્ચા.</p> <p><b>Unit-3 : "સિંહપુરુષ" - લેખક : ડો. શરદ ઠાકર</b> - પરિચય અને ઐતિહાસિક સંદર્ભ: સ્વતંત્રતા આંદોલન અને સ્વાધીનતા સંગ્રામ ના વિવિધ પાસા. - વીર સાવરકરની જીવનયાત્રા અને વિચારો. - કાળાપાણીની સજા અને આંદામાન-નિકોબારની જેલમાં વિતાવેલ કઠિન સમય. - જીવન યરિત્ર અને સ્વતંત્રતા માટેની દ્રઢતા.</p> <p><b>Unit-4: "પેલે પાર નો પ્રવાસ" : લેખક : રાધાનાથ સ્વામી</b> - આધ્યાત્મિક અને વ્યક્તિગત વૃદ્ધિ: સ્વામી રાધાનાથની ભારત યાત્રા .</p>																																																						



	<ul style="list-style-type: none"> <li>- સ્વ ની ખોજ માટે ભારતના તત્વજ્ઞાન અને આધ્યાત્મિક જ્ઞાન માટે ના અનુભવો.</li> <li>- સ્વ-શોધની ભૂમિકા પર ચર્ચા</li> <li>- આંતર-સાંસ્કૃતિક અનુભવો</li> <li>- વિવિધ સંસ્કૃતિઓના નવલકથાના ચિત્રણનું વિશ્લેષણ, વિવિધતામાં એકતા સંબંધિત તત્વનું અન્વેષણ.</li> <li>- ભારત પ્રવાસ દરમિયાન થયેલ અનુભવો.</li> </ul> <p><b>Unit-5: "મહા-માનવ સરદાર " - લેખક: દિનકર જોશી</b></p> <ul style="list-style-type: none"> <li>- જીવન ચરિત્ર અને ઘડતર.</li> <li>- લોહપુરુષ ની જીવન યાત્રા અને આઝાદી ની ચળવળમાં ભૂમિકા.</li> <li>- આઝાદ ભારતના શિલ્પી અને રાજ્યોનું એકત્રીકરણ</li> <li>- આધુનિક ભારત અને ભવિષ્યના ભારત અંગેના વિચારો.</li> </ul>
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1) "મહા-માનવ સરદાર " - લેખક: દિનકર જોશી , ISBN: 9788177907032 (ISBN10: 8177907034), Pravin Prakashan</li> <li>2) "Pele Parno Pravas" (Gujarati Of The Journey Home), Radhanath Swami, Publisher: Tulasi Books, ISBN: 9788191035537</li> <li>3) "સિંહપુરુષ" - લેખક : ડૉ. શરદ ઠાકર, Publisher: Navbharat sahity Mandir, ISBN-10. 8190240897 ; ISBN-13. 978-8190240895.</li> <li>4) "Saty na prayogo", લેખક : Mahatma Gandhi, Publisher: Navjivan Trust, ISBN(13): 978-8172290429.</li> <li>5) "જય સીમનાથ " - લેખક : કનૈયાલાલ મુનશી, ISBN(13): 978-9351751328</li> </ol>
<b>Teaching Methodology</b>	Class Work, Discussion, Self-Study, Case-Study, Seminars , Assignments
<b>Evaluation Method</b>	<p>50% Internal assessment.</p> <ul style="list-style-type: none"> <li>- Attendance, Class and home Assignment,</li> <li>- One presentation by the student on given topic,</li> <li>- A book review report on given topic of the book and participation in group discussion.</li> </ul> <p>50% External assessment.</p> <p>Seminar exam will be conducted by the two appointed examiners by the college/institute (Criteria for examiner appointment: Similar to the practical examiners appointed at graduation level who are expert in the subject.)</p> <ul style="list-style-type: none"> <li>- Final review report consist of minimum 3000 words will be prepared and presented by the student on one of the book selected from the five books of the syllabus. (40% weightage)</li> <li>- Student will also prepare detailed critical analysis of any two characters from the available books in the syllabus and prepare a presentation and report(minimum 600 words on each character selected by the student.) (40% weightage)</li> <li>- The examiners can also conduct Viva-voce on the presentation given by the student interaction with the student to evaluate student's understanding about the books and characters. (20% weightage)</li> </ul>



**Course Code: 302**  
**Course Title: Statistical Methods and Data Analysis**

Course Code	302																																																															
Course Title	<b>Statistical Methods and Data Analysis</b> (Multi-Disciplinary Course – 03) [Title of the course will be the one selected by the student from courses offered by college/institute out of the course basket offered by the University under the Multi-Disciplinary courses or Inter-disciplinary courses.]																																																															
Credits	4																																																															
Course Category	Multidisciplinary Course (MDC-03)																																																															
Level of Course	200-299 ( Intermediate Level Course )																																																															
Teaching per Week	4 Hrs.																																																															
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)																																																															
Review / Revision	-																																																															
Implementation Year:	A.Y. 2024-2025																																																															
Purpose of Course	To equip students with the fundamental principles and techniques necessary to analyze and interpret data across various disciplines. Through hands-on experience and theoretical understanding, students will gain proficiency in statistical methods essential for making informed decisions and drawing meaningful insights from complex datasets, fostering interdisciplinary problem-solving skills. [Student will opt any one course of multi-disciplinary nature from other than the computer Science and Application faculty. The course will be offered by the institute/college passed by the Board of Studies of University faculties other than the computer science and application faculty.]																																																															
Course Objective	1. Develop fundamental level knowledge of statistical data analysis, including data manipulation, visualization, and modelling using R programming language. 2. Understand and apply basic statistical concepts and techniques such as descriptive statistics, 3. Gain practical experience in cleaning, exploring, and preparing datasets for analysis, emphasizing reproducible research practices. 4. Enhance critical thinking and problem-solving skills by applying statistical methods to real-world datasets and interpreting results effectively using R.																																																															
Pre-requisite	Knowledge of Fundamentals of Statistics and Mathematics of 10 <sup>th</sup> Grade Level																																																															
Course Outcomes	<b>CO1:</b> Understand foundational statistical concepts including descriptive statistics, probability theory, and basic inferential statistics. <b>CO2:</b> Apply statistical techniques such as hypothesis testing, confidence intervals, and correlation analysis to analyze and interpret data accurately. <b>CO3:</b> Demonstrate proficiency in data visualization methods to effectively communicate statistical findings and insights. <b>CO4:</b> Utilize basic statistical software tools or programming languages like R or Python to perform data analysis and visualization tasks. <b>CO5:</b> Develop critical thinking skills to assess the validity and reliability of statistical analyses and draw appropriate conclusions from data. <b>CO6:</b> Apply statistical reasoning to real-world scenarios and make informed decisions based on data-driven insights.																																																															
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Course Outcome	After studying the course, students will be able to Implement acquired skills in writing codes using programming languages.																																																															



<b>Course Content</b>	<p><b>Unit-1: Basic concepts of statistic</b></p> <p>1.1 Population vs. sample, variables (categorical vs. numerical), datatypes.</p> <p>1.2 Descriptive statistics: measures of central tendency (mean, median, mode),</p> <p>1.3 Measures of dispersion (range, variance, standard deviation)</p> <p><b>Unit-2: Data Representation and Sampling technique</b></p> <p>2.1 Graphical representation of data (histograms, box plots, scatter plots)</p> <p>2.2 Probability theory: basic probability concepts</p> <p>2.3 Probability distributions (binomial, normal distributions)</p> <p>2.4 Sampling techniques: random sampling, stratified sampling,</p> <p>2.5 sampling distributions.</p> <p>2.6 Understanding Bell curve.</p> <p><b>Unit-3: Introduction to R and working with Data</b></p> <p>3.1 Overview of R and its applications in data analysis and statistics.</p> <p>3.2 Installing R and RStudio.</p> <p>3.3 Basic R syntax, variables, and data types.</p> <p>3.4 Importing data into R from different file formats (CSV, Excel, etc.).</p> <p>3.5 read, write and view data using data frames.</p> <p><b>Unit-4: Data Filtering and cleaning</b></p> <p>4.1 Subsetting and filtering data.</p> <p>4.2 Adding, removing, and renaming variables/Attributes.</p> <p>4.3 Data Cleaning and Transformation</p> <p>4.4 Identifying and handling missing values.</p> <p>4.5 Data type conversion and recoding variables.</p> <p><b>Unit-5: Working with Data in R</b></p> <p>5.1 Reordering and reshaping data frames.</p> <p>5.2 Merging and joining data frames.</p> <p>5.3 Calculating summary statistics (mean, median, mode, standard deviation).</p> <p>5.4 Generating frequency tables and cross-tabulations.</p> <p>5.5 Commands to measures of central tendency and dispersion.</p> <p>5.6 Concepts of normal distribution.</p> <p>5.7 Commands to explore view data distributions graphically (Bell curve).</p>
<b>Reference Books</b>	<p>1. "An Introduction to Statistical Learning: with Applications in R" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani, Publisher: Springer, ISBN: 978-1461471370</p> <p>2. "R for Data Science: Import, Tidy, Transform, Visualize, and Model Data" by Hadley Wickham and Garrett Golemund, Publisher: O'Reilly Media, ISBN: 978-1491910399</p> <p>3. "Discovering Statistics Using R" by Andy Field, Jeremy Miles, and Zoe Field Publisher: SAGE Publications Ltd, ISBN: 978-1446200469</p> <p>4. "Practical Data Science with R" by Nina Zumel and John Mount Publisher: Manning Publications, ISBN: 978-1617291562</p> <p>5. "Statistics: Unlocking the Power of Data" by Robin H. Lock, Patti Frazer Lock, Kari Lock Morgan, and Eric F. Lock, Publisher: Wiley, ISBN: 978-1119325572</p> <p>6. "The Art of R Programming: A Tour of Statistical Software Design" by Norman Matloff, Publisher: No Starch Press, ISBN: 978-1593273842</p> <p>7. "Introduction to Probability and Statistics Using R" by G. Jay Kerns, Publisher: RStudio, PBC, ISBN: 978-1886529450</p> <p>8. "Business Analytics – The science of Data-Driven Decision Making" by U.Dinesh Kumar, Publisher: Wiley, ISBN: 978-81-265-6872-2</p>
<b>Teaching Methodology</b>	Class Work, Discussion, Self-Study, Seminars and/or Assignments
<b>Evaluation Method</b>	<p>50% Internal assessment.</p> <p>50% External assessment.</p>

### Course: 303: Database handling using Python

Course Code	303								
Course Title	Database Handling using Python								
Credit	4								
Course Category	Major Course								
Level of Course	300 -399 ( Higher Level )								
Teaching per Week	4 Hrs (3 Hours Theory + 2 Hours Lab.work)								
Minimum weeks/ Semester	15 (Including Class work, examination, preparation etc.)								
Review / Revision	2023-2024								
Implementation Year	A.Y.2024-2025								
Medium of Instruction	English								
Purpose of Course	<ul style="list-style-type: none"> <li>- The course is aimed to give knowledge about use of SQLite and handle the dataset using Python. Basic purpose of this course to impart knowledge about database handling, dumping and converting to csv and text file using Python.</li> <li>- It also aims to understand connecting dataset with Python and execute queries using Python.</li> </ul>								
Course Objective	As an outcome of the subject, it is expected that the students will gain conceptual and practical knowledge about handling database, dump the database, restore database, database interaction with python, important python libraries, and perform basic statistical analysis and basic Data Visualization.								
Pre-requisite	<ul style="list-style-type: none"> <li>- SQLite Installation, setup and configuration should be shown practically as part of the preparation.</li> <li>- DDL-Create, Alter, Drop table, Rename, Column, Vacuum</li> <li>- DML-Insert, Update ,Delete, Replace</li> <li>- Constraints : Keys ( Primary, Unique, Foreign), Null, Check Constraint</li> <li>- Views (Create and Drop).</li> </ul>								
Course Out come	<p><b>CO1:</b> To make students understand working with SQLite.</p> <p><b>CO2:</b> To make students understand various components of database like Triggers.</p> <p><b>CO3:</b> To make students understand handling database and dumping the database to csv and text file as well as converting csv and text files to database.</p> <p><b>CO4:</b> To make students understand the importance of library functions to connect python with SQLite and handle the database using python.</p> <p><b>CO5:</b> To handle csv and excel files using python and use various statistical analysis using Numpy and Pandas library.</p> <p><b>CO6:</b> To make student understand and learn matplotlib functions to perform basic visualization of data.</p>								
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
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	CO5								



	CO6								
<b>Course Content</b>	<p><b>Unit-1: Introduction to SQLite:</b></p> <p>1.1 SQLite advantages, features and Fundamentals:</p> <p>1.1.1 SQLite datatype : ( Dynamic type, SQLite manifest typing &amp; type affinity) (NULL, INTEGER, REAL, TEXT, BLOB)</p> <p>1.1.2 Transaction, Rollback, Commit</p> <p>1.2 Data Filtering and Triggers</p> <p>1.2.1 Filtering: Distinct, where, between, in, like, Union, intersect, Except, Limit, IS NULL</p> <p>1.2.2 Having, Group by, Order by, Conditional Logic (CASE)</p> <p>1.3 SQLite joins: Inner, left, cross, self, Full outer joins.</p> <p>1.4 SQLite Trigger:</p> <p>1.4.1 Concepts of Trigger, Before and After trigger (on Insert, Update, Delete)</p> <p>1.4.2 Create, Drop trigger, Disable and Enable trigger</p> <p><b>Unit-2: Database backup and CSV handling:</b></p> <p>2.1 SQLite dump :</p> <p>2.1.1 Dump specific table into file, Dump only table structure</p> <p>2.1.2 Dump entire database into file</p> <p>2.1.3 Dump data of one or more tables into a file</p> <p>2.2 CSV files handling:</p> <p>2.2.1 Import a CSV file into a table</p> <p>2.2.2 Export a CSV file from table</p> <p><b>Unit-3: Python interaction with SQLite:</b></p> <p>3.1 Module: Concepts of module and Using modules in python.</p> <p>3.1.1 Setting PYTHONPATH, Concepts of Namespace and Scope</p> <p>3.1.2 Concepts of Packages in python</p> <p>3.2 Importing sqlite3 module</p> <p>3.2.1 connect () and execute() methods.</p> <p>3.2.2 Single row and multi-row fetch ( fetchone(), fetchall())</p> <p>3.2.3 Select, Insert, update, delete using execute () method.</p> <p>3.2.4 commit () method.</p> <p><b>Unit-4: Python Interaction with text and CSV:</b></p> <p>4.1 File handling ( text and CSV files) using CSV module :</p> <p>4.1.1 CSV module , File modes: Read , write, append</p> <p>4.2 Important Classes and Functions of CSV modules:</p> <p>4.2.1 Open(), reader(), writer(), writerows(), DictReader(), DictWriter()</p> <p>4.3 Dataframe Handling using Panda and Numpy:</p> <p>4.3.1 csv and excel file extract and write using Dataframe</p> <p>4.3.2 Extracting specific attributes and rows from dataframe.</p> <p>4.3.3 Central Tendency measures :</p> <p>4.3.3.1 mean, median, mode, variance, Standard Deviation</p> <p>4.3.4 Dataframe functions: head, tail, loc, iloc, value, to_numpy(), describe()</p>								

	<b>Unit-5: Data Visualization using dataframe:</b> 5.1 importing matplotlib.pyplot and plotting: ( only two dimensional Plots) 5.1.1 range() , subplot() , legend(), columns(), len() functions. 5.2 scatter plot: concept of Scatter plot, set title, xlabel and ylabel) 5.3 Line chart : concept of line plot: plot(), set_title(), legend() 5.4 histogram chart : Concepts of histogram hist(),set title, xlabel and ylabel 5.5 Bar Chart : Concepts of Bar chart, bar(),set title, xlabel and ylabel.
	[Practical implementation for this paper is not specific to any editor or UI.]
<b>Reference Books</b>	1. Learning with Python, Author: Allen Downe Publisher: DreamTech Press, ISBN: 978-9351198147 2. Python: The Complete Reference, Author: by Martin C. Brown, McGraw Hill Education,ISBN:978-9387572942 3. Learning Python: Powerful Object-Oriented Programming: 5th Edition, Author: Lutz M, Publisher: Shroff, ISBN:978-9351102014 4. Python In - Depth, Author: Ahidjo Ayeva , Kamon Ayeva, Publisher: BPB Publication, ISBN:978-9389328424 5. The SQLite Handbook, Author: by Rita Blackburn, Publisher: Emereo Publishing, ISBN:978-1489136459 6. Using SQLite, Author: Jay A. Kreibich, Publisher: O'Reily, ISBN:978-0596521189 7. "Python and SQLite: Build a Data Driven Web App", Author: Michael Driscoll, Publisher: CreateSpace Independent Publishing Platform, ISBN: 978-1484225820 8. "Mastering Python Networking: Your one-stop solution to using Python for network automation, DevOps, and Test-Driven Development", Author: Eric Chou, Publisher: Packt Publishing, ISBN: 978-1784397005 9. "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", Author: Wes McKinney, Publisher: O'Reilly Media, ISBN: 978-1491957660 10. "Head First Python: A Brain-Friendly Guide", Author: Paul Barry , Publisher: O'Reilly Media, ISBN: 978-1491919530 11. "Learning Python: Powerful Object-Oriented Programming", Author: Mark Lutz, Publisher: O'Reilly Media, ISBN: 978-1449355739
<b>Teaching Methodology</b>	Class Work, Discussion, Self-Study, Seminars and/or Assignments
<b>Evaluation Method</b>	50% Internal assessment. 50% External assessment.



**Course Code: 304**  
**Course Title: Object Oriented Programming and Data Structures**  
**(OOPs & D.S.)**

<b>Course Code</b>	304
<b>Course Title</b>	Object Oriented Programming and Data Structures (OOPs & D.S.)
<b>Credits</b>	4
<b>Course Category</b>	Major Course
<b>Level of Course</b>	300-399 ( Higher Level )
<b>Teaching per Week</b>	4 Hrs. ( 2 Hours Theory + 4 Hours Practical work )
<b>Minimum weeks per Semester</b>	15 (Including class work, examination, preparation etc.)
<b>Review / Revision</b>	2023-2024
<b>Implementation Year:</b>	A.Y. 2024-2025
<b>Purpose of Course</b>	<ul style="list-style-type: none"> <li>- Understand Object Oriented Programming Concepts and skills necessary for developing programs using C++. And it is important for a computer programmer to understand the storage representation and implementation of various data structures used in a computer program. This helps a programmer to use various data structures efficiently which in turn makes the program efficient. This course introduces various data structures, their storage representation &amp; implementation.</li> <li>- Data Structure concepts are important concepts to understand and implement. Purpose of the Data structure is to get basic ideas about how user defined data structures can be implemented. Implementation of Data Structure concept is not language specific.</li> </ul>
<b>Course Objective</b>	<ol style="list-style-type: none"> <li>1) This course has been designed for the beginners to help them understand basic to advanced concepts related to C++ Programming language.</li> <li>2) To make students understand the importance of OOP methodology and techniques.</li> <li>3) Basic concepts of data structures, role and importance of data structures in computer programming.</li> <li>4) Distinguish the key difference between storage &amp; implementation of various data structures.</li> <li>5) Recognize the problem properties and determine the use of appropriate data structures in different scenarios.</li> </ol>
<b>Pre-requisite</b>	Knowledge of C programming Language
<b>Course Outcomes</b>	<p>CO1: Students will be able to formulate a computing problem to executable computer program using C++ language.</p> <p>CO2: Understand concepts of class, objects, polymorphism, Inheritance and other important Object oriented concepts.</p> <p>CO3: Understanding about user defined data structures and their importance.</p> <p>CO4: Basic implementations of Stack and Queue.</p> <p>CO5: Concepts of variables, literals, data types, conversions of data types, input and output data and processing of data, inbuilt functions, arrays, header files, conditional and iterative statements.</p>

Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
	CO1								
	CO2								
	CO3								
	CO4								
	CO5								
Course Content	<p><b>Unit 1. Concepts of OOPS:</b></p> <ol style="list-style-type: none"> <li>1.1 Difference between procedural programming and OOPS</li> <li>1.2 Various library(header) files require for C++</li> <li>1.3 Data types in C++</li> <li>1.4 Concepts of String:               <ol style="list-style-type: none"> <li>1.4.1 character Array</li> <li>1.4.2 pointer to character array</li> <li>1.4.3 Use of String.h and its important functions: (strcmp, strcat, strcpy, strlen, strcmp )</li> </ol> </li> <li>1.5 Concepts of Class and Object</li> </ol> <p><b>Unit 2. Data Encapsulation and inheritance:</b></p> <ol style="list-style-type: none"> <li>2.1 Access controls concepts (Public, Private, Protected) and difference among them</li> <li>2.2 Declaring simple class, member variables and member functions.</li> <li>2.3 Concepts and use of enum.</li> <li>2.4 Concepts of Data hiding, abstraction and encapsulation with examples</li> <li>2.5 Concepts of Inheritance and Types of Inheritance</li> <li>2.6 Constructors and Destructors</li> </ol> <p><b>Unit 3. Polymorphism</b></p> <ol style="list-style-type: none"> <li>3.1 Concepts of Polymorphism</li> <li>3.2 Compile time and Run time Polymorphism</li> <li>3.3 Overloading and Overriding:               <p>Concepts, difference and application</p> </li> <li>3.4 Concepts of friend function</li> <li>3.5 Concepts of virtual function and pure virtual function</li> </ol> <p><b>Unit 4. Data Structure</b></p> <ol style="list-style-type: none"> <li>4.1 Introduction of Data Structure and application areas.</li> <li>4.2 Recursion concepts</li> <li>4.3 Difference among Linear and Non-Linear Data Structure</li> <li>4.4 Stack               <ul style="list-style-type: none"> <li>- Concepts of Stack(LIFO)</li> <li>- Pop, Push and Display(Peep)</li> <li>- Application areas of Stack ( Infix to postfix, Infix to prefix )</li> </ul> </li> </ol> <p><b>Unit 5. Queue</b></p> <ol style="list-style-type: none"> <li>5.1 Concepts of Queue(FIFO)               <ol style="list-style-type: none"> <li>5.1.1 Concepts of Queues and its basic operations</li> </ol> </li> <li>5.2 Implementation of Queue:               <ol style="list-style-type: none"> <li>5.2.1 Simple Queue: insert, delete and display</li> <li>5.2.2 Double ended Queue: insert, delete and display</li> <li>5.2.3 Circular queue: Insert, delete and display.</li> </ol> </li> </ol>								



<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Let us C++, Yaswant Kanitkar - TMH Publication</li> <li>2. Programming with C++, E Balaguruswamy - BPB Publication</li> <li>3. C++ and Object-Oriented Programming Paradigm, Jana - PHI</li> <li>4. The Complete Reference C++, Herbert Schildt - TMH</li> <li>5 The C++ Programming Language, Stroustrup – Addison Wesley</li> <li>6. OOP in Turbo C++, Robert Lafore - Galgotia Publication</li> <li>7. C++ Primer, Lippman – Addison Wesley</li> <li>8. Object Oriented Programming Fundamentals &amp; Applications, Probal Sengupta – PHI</li> <li>9. An Introduction to Data Structures with applications, Trembley – ‘Tata McGraw Hill.</li> <li>10. Algorithms – Data structure programs, Wirth Niclaus - PHI.</li> <li>11. Data structures – A Programming Approach with C, Dharmender Singh kushwaha and Arun Kumar Misra – PHI.</li> <li>12. Fundamentals of Data structures, Horwitz E. and Sahni – Computer Science Press</li> <li>13. Schaum’s outline of Data Structure with C++, John R. H. - Tata McGraw Hill.</li> <li>14. Expert Data Structure with C, R. B. Patel - Khanna Publication</li> <li>15. Data structures - a Pseudocode approach with C++, Richard F. Gilbert and Behrouz A. Forouzan - Thomson books</li> </ol>
<b>Teaching Methodology</b>	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
<b>Evaluation Method</b>	50% Internal assessment. 50% External assessment.

**Course Code: 305-01**  
**Course Title: Web Designing-1**

Course Code	305																																																						
Course Title	Web Designing-1																																																						
Credits	4																																																						
Course Category	Major Course																																																						
Level of Course	300-399 ( Higher Level )																																																						
Teaching per Week	4 Hrs. ( 2 Hours Theory + 4 Hours Practical work )																																																						
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)																																																						
Review / Revision	2023-2024																																																						
Implementation Year:	A.Y. 2024-2025																																																						
Purpose of Course	- Design is the process of collecting ideas, and aesthetically arranging and implementing them, guided by certain principles for a specific purpose. - Web design is a similar process of creation, with the intention of presenting the content on electronic web pages, which the end- users can access through the internet with the help of a web browser. - This course deals with designing of websites.																																																						
Course Objective	To make students aware of web terminology and website designing tools. Student can understand and implement the real functions of website development.																																																						
Pre-requisite	Basic knowledge of Simple HTML and HTML-5 concepts, windows based applications. Some very basic acquaintance with computers and the www is assumed.																																																						
Course Outcomes	<b>CO1:</b> Develop proficiency in HTML5 syntax and semantics, and CSS styling techniques for creating visually appealing web pages. <b>CO2:</b> Implement Bootstrap framework for rapid prototyping and responsive design, ensuring cross-browser compatibility and scalability. <b>CO3:</b> Utilize JavaScript for interactivity and dynamic content manipulation, incorporating libraries like jQuery for streamlined development. <b>CO4:</b> Demonstrate the ability to integrate HTML5, CSS, Bootstrap, and JavaScript to create cohesive and engaging web applications. <b>CO5:</b> Apply industry-standard practices in web development, including code optimization, version control, and responsive design principles.																																																						
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)	<table><tr><td></td><td>PSO1</td><td>PSO2</td><td>PSO3</td><td>PSO4</td><td>PSO5</td><td>PSO6</td><td>PSO7</td><td>PSO8</td></tr><tr><td>CO1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CO2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CO3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CO4</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>CO5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	CO1									CO2									CO3									CO4									CO5								
	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8																																															
CO1																																																							
CO2																																																							
CO3																																																							
CO4																																																							
CO5																																																							
Course Content	<b>UNIT-1: Working with HTML5 and CSS:</b> 1.1 concepts of CSS: 1.1.1 Adding CSS (Inline,Internal,External) 1.1.2 HTML Links and attribute.( _self, _blank, _parent, _top) 1.1.3 Absolute URL and Relative URL in <href> 1.1.4 <img> tag and its attributes (src, alt, style,width,height) 1.2 HTML forms : 1.2.1 form Elements and their attributes : 1.2.1.1 form (action, method, novalidate, autocomplete,target) 1.2.1.2 label, input (text, radio button, Checkboxes, submit/reset button) 1.2.1.3 select(id, name,<option>), 1.2.1.4 textarea (name, rows, cols),																																																						



- 1.2.1.5 button(type, onclick)
- 1.2.1.6 datalist
- 1.2.2 Media : Video, Audio

#### **UNIT-2: Design Web Sites Using Bootstrap4**

- 2.1 Bootstrap Introduction
- 2.2 Grid Structure
- 2.3 Table, Colours, Alerts, Form Controls
- 2.4 Buttons and ButtonGroups
- 2.5 Images, Media Objects
- 2.6 Pagination
- 2.7 Bootstrap Grids
- 2.8 Bootstrap Themes

#### **UNIT-3: Overview of Java Script**

- 3.1 Overview of Client & Server-Side Scripting
- 3.2 Structure of Java Script
- 3.3 Data types and Variables
- 3.4 Operators (Arithmetic, Assignment, Comparison, Logical and Conditional Operator)
- 3.5 Control Structure
  - 3.5.1 If...Else, switch..case
  - 3.5.2 While, Do...While, For Loop
  - 3.5.3 break, continue
- 3.6 Java Script String and Events
  - 3.6.1 Javascript Strings types
  - 3.6.2 String functions:
    - concat(), split(), indexOf(), lastIndexOf(), substring(), trim(), slice(), replace(), charAt()
  - 3.6.3 Javascript Events :
    - 3.6.3.1 Mouse Events : (click, mouseover, mouseremove, mouseout, mouseup)
    - 3.6.3.2 keyboard Events : (keyup,keydown)
    - 3.6.3.3 Form Event : (focus, submit, blur, change)

#### **UNIT-4: JavaScript Objects :**

- 4.1 Creating object :
  - (By object literal, By creating instance of Object, By using an object constructor)
- 4.2 Date object :
  - 4.2.1 Date constructor: Date(), Date(milliseconds), Date(dateString), Date(year, month, day, hours, minutes, seconds, milliseconds)
  - 4.2.2 Date Methods: getDate(), getDay(),getMonth(), getHours(), setDate(), setMonth(),setDay(), toString()
- 4.3 Document Object Model (DOM):
  - 4.3.1 DOM concepts
  - 4.3.2 DOM properties
  - 4.3.3 DOM methods :
    - write(), writeln(),getElementById(),getElementsByName()

#### **UNIT-5: JavaScript Functions:**

- 5.1 JavaScript Functions:
  - 5.1.1 Defining function (with and without parameters)
  - 5.1.2 calling function
  - 5.1.3 return statement
  - 5.1.4 Page redirection

	5.2 Dialog boxes : Alert, confirm, prompt 5.3 Form validation : 5.3.1 Basic validation (All form details are filled) 5.3.2 Data format validation (email, number, string, mobile number, name) [All Units carry Equal Weightage]
<b>Reference Books</b>	1. HTML & CSS: The Complete Reference - Thomas Powell - McGraw Hill Education 2. HTML Unleashed, Darnell Rick –Techmedia 3. HTML, XHTML, and CSS Bible - Steven M. Schafe – Wiley Publications 4. Cascading Style Sheets- The Definitive Guide, E. A Meyer –O'Reilly 5. Java Scripting Programming for Absolute Beginner, Harris -PHI 6. JavaScript Step by Step, Suehring -PHI 7. Bootstrap in 24 Hours, Sams Teach Yourself - JenniferKyrnin 8. Learning Bootstrap 4 - Matt Lambert – Packt Publishing 9. Bootstrap Responsive Web Development - Jake Spurlock - O'Reilly Media. 10. JavaScript and JQuery (Interactive Front-End Web Development) by Jon Duckett 11. JavaScript and JQuery (The missing manual) by David Sawyer MCFarland
<b>Teaching Methodology</b>	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
<b>Evaluation Method</b>	50% Internal assessment. 50% External assessment.



**Course Code: 305-02**  
**Course Title: Mobile Application Development - 1**

<b>Course Code</b>	305-02								
<b>Course Title</b>	Mobile Application Development – 1								
<b>Credits</b>	4								
<b>Course Category</b>	Major Course								
<b>Level of Course</b>	300-399 ( Higher Level )								
<b>Teaching per Week</b>	4 Hrs. ( 2 Hours Theory + 4 Hours Practical work )								
<b>Minimum weeks per Semester</b>	15 (Including class work, examination, preparation etc.)								
<b>Review / Revision</b>	2023-2024								
<b>Implementation Year:</b>	A.Y. 2024-2025								
<b>Purpose of Course</b>	Mobile application development is the process of creating software applications that run on a mobile device, and a typical mobile application utilizes a network connection to work with remote computing resources. Mobile device is used for different purposes ranging from email to online shopping and multiple apps for different reasons. Hence, the mobile development process involves creating installable software bundles, implementing backend services such as data access with an API, and testing the application on target devices. Knowledge about mobile application development on Android platform and gradually on hybrid platform is need of the current era.								
<b>Course Objective</b>	1) To understand concepts of Mobile Technology 2) Understand the development process and have edge over mobile user interface (UI) design. 3) Understand various UI development tools, Application design interfaces and creating basic app on Android platform.								
<b>Pre-requisite</b>	- Basic knowledge of Simple HTML, concept of Operating system and basics of coding. - This course will be mandatory to pursue Paper-405-02 (Mobile Application Development -2) in Semester-4.								
<b>Course Outcomes</b>	<b>CO1</b> : Students will be able to understand the concepts of Mobile technology. <b>CO2</b> : Students will have concepts of Android and Android frame work. <b>CO3</b> : Understand how data can be transferred using XML. <b>CO4</b> : Understand setting up of Android environment. <b>CO5</b> : Edge over Android widgets and development of basic Android based Apps.								
<b>Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)</b>		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
	CO1								
	CO2								
	CO3								
	CO4								
	CO5								
<b>Course Content</b>	<b>Unit-1: Concepts of Android and Setting up Android Environment:</b> 1.1 Introduction of Android 1.1.1 History, concepts and Features of Android 1.1.2 Concepts of API framework								

	1.2 Intro. of Android Architecture ( Software Stack ) <ul style="list-style-type: none"> <li>1.2.1 kernel Native Libraries</li> <li>1.2.2 Concepts of Native Libraries and Android Runtime(Dalvik VM)</li> <li>1.2.3 Application Framework</li> <li>1.2.4 Application</li> </ul> 1.3 Dalvik Virtual Machine (DVM) 1.4 Android Emulator <ul style="list-style-type: none"> <li>1.4.1 Setting up JDK and Android Studio</li> <li>1.4.2 Android SDK manager</li> </ul> 1.5 Creating Android Virtual Device (AVD) <b>Unit-2: Creating basic App</b> 2.1 Creating first App: <ul style="list-style-type: none"> <li>2.1.1 Activity</li> <li>2.1.2 Layout</li> </ul> 2.2 Basic App using Android studio <ul style="list-style-type: none"> <li>2.2.1 Create new android project</li> <li>2.2.2 Write message and run</li> <li>2.2.3 Understanding different components.</li> </ul> 2.3 Understanding AndroidManifest.xml, R.java <b>Unit-3: XML (Extensible Markup Language)</b> 3.1 Characteristic and Use of XML 3.2 XML syntax (Declaration, Tags, elements) 3.3 root element, case sensitivity 3.4 XML document: <ul style="list-style-type: none"> <li>3.4.1 Document Prolog Section</li> <li>3.4.2 Document element section</li> </ul> 3.5 XML declaration and rules of declaration. <b>Unit-4: Android Widgets(UI):</b> 4.1 Hiding Title bar 4.2 screen Orientation ( Portrait, Landscape) 4.3 Form Widget Palette <ul style="list-style-type: none"> <li>4.3.1 Placing text fields and Button</li> <li>4.3.2 Button onClick event</li> </ul> 4.4 Displaying Notification: <ul style="list-style-type: none"> <li>4.4.1 Toast Class</li> <li>4.4.2 Displaying message on Toast</li> </ul> 4.5 ToggleButton: <ul style="list-style-type: none"> <li>4.5.1 ToggleButton Attributes:(textOff, textOn)</li> <li>4.5.2 Event methods : getTextOff(), getTextOn(), setChecked()</li> </ul> <b>Unit-5: Other Android Widgets(UI):</b> 5.1 CheckBox: <ul style="list-style-type: none"> <li>5.1.1 Event methods: isChecked(), setChecked()</li> <li>5.1.2 Default and Custom Checkbox</li> </ul> 5.2 RadioButton: <ul style="list-style-type: none"> <li>5.2.1. Event methods of RadioButton</li> <li>5.2.2. Dynamic and Custom RadioButton</li> </ul> 5.3 Spinner, AlertDialog 5.4 AutoCompleteTextView, TextWatcher to EditText
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<b>Reference Books</b>	1) Android Application Development (With Kitkat Support), Author: Pradeep Kothari, Publisher: DreamTech Press., ISBN: 978-9351194095 2) Android Studio 3.0 Development Essentials: Android 8 Edition, Author: Neil Smyth, ISBN: 978-1977540096 3) Flutter for Beginners: An introductory guide to building cross-platform mobile applications with Flutter and Dart 2, Author: Alessandro Biessek, Packt Publishing House, ISBN: 978-1788996082 4) Beginning Flutter: A Hands On Guide to App Development, Author: Marco L. Napoli, Publisher: Wrox, ISBN: 978-1119550822 5) Android Programming for Beginners - Second Edition, Author: John Horton, Publisher: Image Short ISBN: 978-1789538502 6) Android 9 Development Cookbook, Author: Rick Boyer, Publisher: Packet Publishing, ISBN: 978-1788991216 7) The Dart Programming Language, Author: Bracha, Publisher: Pearson Education India, ISBN: 978-9332570368 8) Google Flutter Mobile Development Quick Start Guide: Get up and running with iOS and Android mobile app development, Author: Prajyot Mainkar, Publication: Packt Publishing, ISBN: 978-1789344967 9) Practical Flutter: Improve your Mobile Development with Google's Latest Open-Source SDK, Author: Frank Zammetti, Publisher: Apress, ISBN: 978-1484249710
<b>Teaching Methodology</b>	Class Work, Discussion, Lab work, Self-Study, Seminars and/or Assignments
<b>Evaluation Method</b>	50% Internal assessment. 50% External assessment.

**Course code: 306**  
**Course Title: Skill Enhancement Course (SEC-03)**

Course Code	306
Course Title	Skill Enhancement Course - III ( SEC – 03 )
Credit	2
Category of Course	Skill Enhancement Course
Level of Course	200-299 ( Intermediate Level)
Teaching per Week	2 Hrs (Any or Combination of Theory/Practical/Fieldwork/Internship/Project)
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	-
Implementation Year:	A.Y. 2024-2025
Purpose of Course	<ul style="list-style-type: none"> <li>- As per NEP(National Education Policy-2020), it is mandatory for students to select a 2 credit Skill Enhancement Course out of the choices given by the college/institute.</li> <li>- It will be mandatory for the student to opt minimum one 2-credit Skill Enhancement Course out of the list of offered courses recognised by the University during semester-1 to semester-5.</li> <li>- The student can start an alternative career in the field by obtaining higher degree of knowledge in the area.</li> <li>- It's aimed at imparting practical skills, embedded internship, hands-on training, soft skills, life skills, such approved online courses etc. to enhance the employability of students. This may also include courses as per the need of new evolving technology.</li> </ul>
Course Objective	Obtaining skill in particular field along with the regular curriculum of the selected program is essential. It not only enhance the skill but also provide an opportunity to develop skill in particular area where one can pursue career in future. Skill enhancement provides the opportunity and knowledge for an individual to develop and strengthen the necessary skills to gain, maintain, and advance in a chosen area. Skill enhancement programs are focused around training that combines the best practices from varieties of areas. Skill enhancement or training typically uses a combination of cognitive and behaviour problem solving approaches, both of which are used to strengthen a person's positive skill develop.
Pre-requisite	-
Course Content and Implementation road-map.	<ul style="list-style-type: none"> <li>(i) University has categorised and prepared the basket of the courses including approved online courses that can be offered as Skill Enhancement Course.</li> <li>(ii) The institute/college/department can design and implement skill enhancement course by getting approval from the relevant apex body of the university considering the SOP of the certificate course policies of the University.</li> <li>(iii) The institutes/college/departments can select more than one course out of the given sets of courses and offer them to their students.</li> <li>(iv) The students can select any of the courses offered by the institute/college/department from the given choices and enrol for the course.</li> <li>(v) The institute/college/department will arrange appropriate resource person(s) for the course.</li> <li>(vi) The course evaluation will be taken place at the college/institute/department level based on the nature of the course.</li> <li>(vii) The institute/college/department will assess the student based on the nature of the course. The student will be granted the credits on successful completion of the course.</li> </ul>



<b>Reference Books</b>	<ul style="list-style-type: none"> <li>- The reference materials and books will be decided by the Institutes/Colleges/Departments based on the selected Courses.</li> <li>- Minimum five copies of relevant topics are recommended to keep in the library.</li> </ul>
<b>Teaching Methodology</b>	Class Work/ Discussion/ Self-Study/ Seminars/ field works/ practical training/ field work and/or Assignments.
<b>Evaluation Method</b>	50% Internal assessment. 50% External assessment. Maximum Marks: 50 (Evaluation and Assessment will be carried out at institute level. On successful completion of the course, the student will be granted 2 credits. However, the obtained score will not be considered for S.G.P.A./C.G.P.A.)

**Course code: 307**  
**Course Title: Value Addition Course-III (VAC-03)**

Course Code	307
Course Title	Value Addition Course - III ( VAC – 03 )
Credit	2
Category of Course	Value Addition Course
Level of Course	200-299 ( Intermediate Level Course )
Teaching per Week	2 Hrs (Any or Combination of Theory/Practical/Fieldwork/Internship/Project)
Minimum weeks per Semester	15 (Including class work, examination, preparation etc.)
Review / Revision	-
Implementation Year:	A.Y. 2024-2025
Purpose of Course	As per NEP(National Education Policy-2020), it is mandatory for students to select a 2 credit Value Addition Course out of the choices given by the college/institute. It will be mandatory for the student to opt minimum one 2-credit Value Addition Course out of the list of offered courses recognised by the University during semester-1 to semester-4. The student can start an alternative career in the field by obtaining higher degree of knowledge in the area.
Course Objective	Obtaining knowledge in all or any of the components/fields like (i) Understanding India (ii) Environmental Science/Education (iii) Digital/Technological solutions (iv) Health & Wellness, Yoga education, sports, and fitness are essential for holistic development (v) Indian Knowledge system (IKS). The course components should be among these five categories/fields and as per the Curriculum and Credit Framework for Undergraduate Programmes of the UGC (Page-22 of the document). The purpose is to impart knowledge and understand the necessities of these aspects in life to make the healthy society and nation. It help in development of a dedicated and responsible citizen of the country by adding value to the life.
Pre-requisite	-
Course outcome	CO1: Student select the area of Value addition as per his/her interest. The choices will be given by the institute/department. CO2: The student acquire basic and fundamental level of knowledge in the field that the student opted. CO3: Understand the insight of the area and possibility of to explore more in the field. CO4: Understand effective representation of problems, solutions and insights of the challenges and problems of the peer subject relevant to value addition. CO5: Learn to upskill and upgrade the knowledge in the area of selected subject.
Course Content and Implementation road-map.	(i) The university has categorised and prepared the list of the courses that can be offered as Value Addition Course. (ii) The institute/college/department can design and implement skill enhancement course by getting approval from the relevant apex body of the university considering the SOP of the certificate course policies of the University. (iii) The institutes/college/departments can select more than one course out of the given sets of courses and offer them to their students. (iv) The students can select any of the courses offered by the institute/college/department from the given choices and enrol for the course. (v) The institute/college/department will arrange appropriate resource person(s) for the course.



	(vi) The evaluation will be taken place at the college/institute/department based on the nature of the course. (vii) The institute/college/department will assess the student based on the nature of the course. The student will be granted the credits on successful completion of the course.
<b>Reference Books</b>	- The reference materials and books will be decided by the Institutes/Colleges/Departments or as per the university guidelines based on the selected Courses. - Minimum five copies of relevant topics are recommended to keep in the library.
<b>Teaching Methodology</b>	Class Work/ Discussion/ Self-Study/ Seminars/ field works/ practical training/ field work and/or Assignments.
<b>Evaluation Method</b>	50% Internal assessment. 50% External assessment. Maximum Marks: 50 (Evaluation and Assessment will be carried out at institute level. On successful completion of the course, the student will be granted 2 credits. However, the obtained score will not be considered for S.G.P.A./C.G.P.A.)

**Internship:** Student willing to exit the program at the end of the two semesters and to avail the Certificate in Computer Application or exit the program at the end of the first four semesters and to avail the Diploma in Computer Application, it is essential to acquire four credits from internship. A key aspect of the internship is induction into actual work situations. Internships involve working with local industry, government or private organizations, business organizations, artists, crafts persons, and similar entities to provide opportunities for students to actively engage in on-site experiential learning. In option to these internships, the student can avail such four credits by availing two 2-credit university approved courses during any of these semesters. The student is required to enroll and avail these 4-credits and produce the evidence in process to opt the multi-level exit option after successfully completion of first year ( two semester ) or second year(four semesters).

