S. P. Mandali's
Ramnarain Ruia Autonomous College *(Affiliated to University of Mumbai)*

RUIA COLLEGE
Explore ● Experience ● Excel

Syllabus for
Program: F.Y.B.Sc.

Program Code: RUSCS

(As per the guidelines of National Education Policy 2020- Academic year 2023-24)

(Choice based Credit System)

RAMNARAIN RUIA AUTONOMOUS COLLEGE, SYLLABUS FOR 2023-2024

PROGRAM OUTLINE(B.Sc.)

GENERIC ELECTIVE COURSES

YEAR	SEM	COURSE CODE	TYPE OF COURSE	COURSE TITLE	CREDITS
FY B.Sc.	I	RUSGECS.O1 01	Generic Elective	Design Thinking - I	2

		RUSGECS.O1 02		Creative Content Writing - I	
		RUSGECS.O1 03		Python Basics - I	
FY B.Sc.	II	RUSGECS.E1 11	Generic Elective	Design Thinking - II	2
		RUSGECS.E1 12		Creative Content Writing - II	
		RUSGECS.E1 13		Python Basics - II	

RAMNARAIN RUIA AUTONOMOUS COLLEGE, SYLLABUS FOR 2023-2024

Course Code: RUSGECS.O101
Course Title: Design Thinking - I
Type of Course: GENERIC ELECTIVE
Academic year 2023-24

COURSE OUTCOME	DESCRIPTION A student completing this course will be able to:
CO 1	Learn design thinking concepts and principles
CO 2	Use design thinking methods in every stage of the problem
CO 3	Learn the different phases of design thinking
CO 4	Apply various methods in design thinking to different problems

DETAILED SYLLABUS

RUSGECS.O101	Design Thinking - I	Credits 2 / 30 Hours
Unit I	INTRODUCTION Why Design? Four Questions, Ten Tools,Principles of Design Thinking,The process of Design Thinking ,How to plan a Design Thinking project UNDERSTAND, OBSERVE AND DEFINE THE PROBLEM Search field determination, Problem clarification, Understanding of the problem, Problem analysis, Reformulation of the problem, Observation Phase, Empathetic design, Tips for observing, Methods for Empathetic Design, Point-of-View Phase, Characterization of the target group, Description of customer needs.	15 Hrs
Unit II	IDEATION AND PROTOTYPING Ideate Phase, The creative process and creative principles , Creativity techniques , Evaluation of ideas , Prototype Phase , Lean Startup Method for Prototype Development , Visualization and presentation techniques. TESTING AND IMPLEMENTATION Test Phase ,Tips for interviews ,Tips for surveys ,Kano Model , Desirability Testing , How to conduct workshops	**15 Hrs**

,Requirements for the space , Material requirements , Agility for Design Thinking.

Textbooks:
- Christian Mueller-Roterberg, Handbook of Design Thinking - Tips & Tools for how to design thinking.
- Designing for Growth: a design thinking tool kit for managers By Jeanne Liedtka and Tim Ogilvie.

References:

- Johnny Schneider, "Understanding Design Thinking, Lean and Agile", O'Reilly Media, 2017.
- Roger Martin, "The Design of Business: Why Design Thinking is the Next Competitive Advantage", Harvard Business Press , 2009.
- Hasso Plattner, Christoph Meinel and Larry Leifer (eds), "Design Thinking: Understand – Improve – Apply", Springer, 2011

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RAMNARAIN RUIA AUTONOMOUS COLLEGE, SYLLABUS FOR 2023-2024

Course Code: RUSGECS.O102
Course Title: Creative Content Writing - I

Type of Course: GENERIC ELECTIVE

Academic year 2023-24

COURSE OUTCOME	DESCRIPTION A student completing this course will be able to:

CO 1	To introduce students to the concepts of content writing.
CO 2	To connect them with various writing and editing styles and techniques.
CO 3	To help them develop their creative abilities.
CO 4	To improve the learners' employability

DETAILED SYLLABUS

RUSGECS.O102	Creative Content Writing - I	Credits 2 / 30 Hours
Unit I	**Basics of Content writing:** Introduction to Content Writing, Learning Tone in Writing and Its Types, Comprehending style in writing and its Types, Common Grammatical Errors. **Best Practices for Writing for the Web:** Making our storyElegant, Professional, Write with an Attitude, Keep Verbs Active, List Items, Chunk Information, Title and Subtitle, Organise for Your Audience. **Things Marketers Write:** The Ideal Length for Blog Posts, Podcast, Facebook Posts, Tweets, and Other Marketing Content.	15 Hrs
Unit II	**Social Media Writing:** Writing for Twitter, writing with Hashtags, Writing Social Media with Humor, writing for Facebook, writing for LinkedIn, Writing Your LinkedIn Profile, writing for Email, Writing Landing Pages, Writing Headlines, writing a Home Page, Writing the About Us Page, Writing Better Blog Posts, Writing Annual Reports. **Infographics:** Visual Communication-What Are Infographics?, The Science of Visualization, Creating Infographics-Purpose, The Art of Observation, Processing Your Ideas, Designing Your Infographics, Publishing Your Infographics	15 Hrs

Textbooks:

1. Content Writing Handbook, Author:Kounal Gupta, 2020, Henry Harvin.

2. Feldar, Lynda. Writing for the Web: Creating Compelling Web Content Using

Words, Pictures, and Sound. New Riders, CA, USA, 2011

Additional References:
1. Everybody Writes: Your Go-To Guide to Creating Ridiculously Good Content Paperback Ann Handley Pan Macmillan India 2016
2. The Power of Infographics: Using Pictures to Communicate and Connect With Your Audiences Paperback – 15 June 2012 Mark Smiciklas
3. Law Relating to Intellectual Property Rights Book by V. K. Ahuja, 2017
4. Web Resources:
   a. https://www.locationrebel.com/b2b-writing/
   b. https://www.mindler.com/blog/how-to-become-a-content writer-in-india/
   c. https://study.com/articles/What_is_a_Content_Writer.html
   d. https://www.mondaq.com/india/contracts-and-commercial law/445620/legal- contractsagreements-drafting-and-legal vetting
   e. https://www.crazyegg.com/blog/copywriting/

Course Code: RUSGECS.O103

Course Title: Python Basics - I

Type of Course: GENERIC ELECTIVE

Academic year 2023-24

COURSE OUTCOME	DESCRIPTION After Completing this course student will be able to:
CO 1	Describe core syntax and semantics of python.
CO 2	Understand data storing and processing mechanism using string, List, Dictionary, Tuples.
CO 3	Frame an algorithm and will be able to convert it to a program.
CO 4	Develop a python application.

DETAILED SYLLABUS

RUSGECS.O103	Python Programming -I	Credits 2 / 30 Hours
Unit I	**Computational Problem-Solving Strategies** Fundamentals of Computing, Identification of Computational Problems, Problem analysis, Algorithms, flowcharts **Variable, expression and statements** :Data types, Variables, expressions, Statements, Operators, types of operators, operator precedence, I/O operations, comments, Errors: Syntax Errors - Runtime errors - Logical Errors.	15 Hrs
Unit II	**Conditional and control flow statements:** if, if-else, nested if –else Looping constructs: for, while, nested loops, break, continue, pass **Strings, Lists, Tuples, Dictionaries:** String properties, String methods, List properties, List operations, list slicing, list method, Tuples assignment, Tuples properties, Tuple methods, Dictionaries properties, Operations and methods	15 Hrs

Textbooks:

1. Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist'', 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016 (http://greenteapress.com/wp/thinkpython/)
2. Practical Programming: An Introduction to Computer Science Using Python, Paul Gries, et alPragmatic Bookshelf, 2nd Edition 2014.
3. Introduction to computing and problem solving using python, E Balagurusamy, McGraw Hill Education

Course Code: RUSGECS.E111

Course Title: Design Thinking - II

Type of Course: GENERIC ELECTIVE

Academic year 2023-24

COURSE OUTCOME	DESCRIPTION A student completing this course will be able to:
CO 1	Discuss the design thinking process and innovation.
CO 2	Practice design thinking process through a multidisciplinary task.
CO 3	Apply design thinking in IT.
CO 4	Solve different cases.

DETAILED SYLLABUS

RUSGECS.E111	DESIGN THINKING-II	Credits 2 / 30 Hours

Unit I	**Techniques and tools of design thinking** Information gathering,problem analysis and definition,idea generation,Synthesis Through modeling,critical evaluation **Design Thinking in Information Technology** Bringing Design Thinking to Business Process Modeling Agile Software Development in Virtual Collaboration Environments Towards Next Generation Design Thinking: Scenario Based Prototyping for Designing Complex Software Systems with Multiple Users	**15 Hrs**
Unit II	**Case study and Application of design thinking** **Society** :Expanding the Politics of Civic Engagement ,Managing Gridlocked Debates **Business:**Implementing a Strategic Technology Plan ,Creativity in the Culinary Arts,Empathy as a Means to Innovate in a Pharmaceutical Company ,Visioning, Listening, and Diagramming at a University,Fast-Fail and Iterative ,Dinner Conversation as a Model For Effective **Health And Science:**Health Care Delivery,A Design Approach to Treating Cancer **Law:**Problem Definition,Alternatives and the Big Idea **Writing :**Draft as Prototype,Writing Prose for Writing Pros Design Thinking in the Classroom Design Thinking for Startups	**15 Hrs**

Textbooks:

1. Design Thinking Understand – Improve – Apply, Hasso Plattne**r,** Christoph Meinel, Larry Leifer Editors
2. Design thinking a guide to creative problem solving for everyone, Andrew Pressman

Course Code: RUSGECS.E112

Course Title: Creative Content Writing - II

Type of Course: GENERIC ELECTIVE

Academic year 2023-24

COURSE OUTCOME	DESCRIPTION A student completing this course will be able to:
CO 1	To introduce students to the concepts of content writing.
CO 2	To connect them with various writing and editing styles and techniques.
CO 3	To help them develop their creative abilities.
CO 4	To improve the learners' employability

DETAILED SYLLABUS

RUSGECS.E112	Creative Content Writing - II	Credits 2 / 30 Hours
Unit I	**Content Tools:** Research and Knowledge Management Tools, Writing Tools, Productivity Tools, Editing Tools, A Few Great Style Guides, Non- Text Writing Tools, Blog Idea Generators, Google Authorship, Image Sources, Tools for Content Writing. **Ethical and Legal aspects of content writing:** Learn Legal English, Learn Legal Vocabulary In Legal Writing, IPR Laws, and Copywriting, Plagiarism laws in Content Writing**.**	15 Hrs
Unit II	**Search Engine Optimization:** Meaning, Common SEO techniques, Understanding Search Engines, basics of Keyword search, Google rankings, Link Building, Steps to optimise website, On-page and off-page optimization **Prompt Engineering:** Open AI Playground, ChatGPT Tokens, ChatGPT Limitations, Prompt Priming, New ideas and copy generation, Zero, one and few shot prompting, Chain of thought prompting, Different types of prompting, Generative AI for Business, Marketing, AI writing & Copy	15 Hrs

Textbooks:

1. Content Writing Handbook, Author:Kounal Gupta, 2020, Henry Harvin. 2. Feldar, Lynda. Writing for the Web: Creating Compelling Web Content Using Words, Pictures, and Sound. New Riders, CA, USA, 2011

Additional References:

1. Everybody Writes: Your Go-To Guide to Creating Ridiculously Good Content Paperback Ann Handley Pan Macmillan India 2016
2. The Power of Infographics: Using Pictures to Communicate and Connect With Your Audiences Paperback – 15 June 2012 Mark Smiciklas
3. Law Relating to Intellectual Property Rights Book by V. K. Ahuja, 2017
4. Web Resources:
    a. https://www.locationrebel.com/b2b-writing/
    b. https://www.mindler.com/blog/how-to-become-a-content writer-in-india/
    c. https://study.com/articles/What_is_a_Content_Writer.html
    d. https://www.mondaq.com/india/contracts-and-commercial law/445620/legal- contractsagreements-drafting-and-legal vetting
    e. https://www.crazyegg.com/blog/copywriting/

Course Code: RUSGECS.E113
Course Title: Python Basics - II
Type of Course: GENERIC ELECTIVE
Academic year 2023-24

COURSE OUTCOME	DESCRIPTION After Completing this course student will be able to:
CO 1	Design modular programs.
CO 2	Apply File handling operations
CO 3	Implement database connectivity
CO 4	Apply data analytics modules

DETAILED SYLLABUS

RUSGECS.E113	Python Basics - II	Credits 2 / 30 Hours
Unit I	**Functions And Modules:** Defining a function, calling a function, Advantages of functions, types of functions, function parameters, Formal parameters, Actual parameters, global and local variables, Importing module, Creating & exploring modules. **File handling and Database Connectivity:** Opening and closing files, various types of file modes, reading and writing to files, Database connectivity operations, processing on data	15 Hrs
	Numpy and Pandas: Features, Data structure, Series creation, Data frame, Handling missing values, Data operation and processing, SQLopeartions, Introduction to Numpy, Properties, types of arrays, attributes of ndarray, array functions, copy and view, Mathematical Functions of Numpy. **Matplotlib,Scipy and seaborn**: Chart properties, styling a chart, types of presentation style,, Introduction to Scipy, Scipy Sub packages – Integration and Optimization, Statistic, Weave and Introduction to Seaborn, Advanced data visualization with seaborn	15 Hrs

Textbooks:

1 Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist'', 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016 (http://greenteapress.com/wp/thinkpython/)
2 Practical Programming: An Introduction to Computer Science Using Python, Paul Gries, et alPragmatic Bookshelf, 2nd Edition 2014.
3 Introduction to computing and problem solving using python, E Balagurusamy, McGraw Hill Education

References:

1 Practical Programming: An Introduction to Computer Science Using Python, Paul Gries, et al., Pragmatic Bookshelf, 2nd Edition 2014.
2 Web References:
   a. https://numpy.org/doc/
   b. https://pandas.pydata.org/docs/
   c. https://matplotlib.org/3.2.1/contents.html
   d. https://www.scipy.org/docs.html

MODALITY OF ASSESSMENT

General Elective (2 Credits)

A) Total Marks
    a. Theory – 50 Marks

B) Theory Internal Assessment (40%) - 20 Marks

Sr No	Evaluation type	Marks
1	Class Test / Assignments / Projects	20
	TOTAL	**20**

C) Theory External Assessment (Semester End Examination) (60%) - 30 Marks
    1. Duration – The duration for these examinations shall be of **One hour** 2.
    Theory question paper pattern:
        a. Two questions of 15 marks each / Three questions of 10 marks each