Resolution No:AC/II(22-23).3.RUS6

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)

PROGRAM OUTLINE (B.Sc.)

Year	Sem	Course code	Type of course	Course title	Credits
FY B.Sc.	I	RUSSECCS .O101	Skill Enhancement Course	Open Source Technology	1
	I	RUSSECCS P.O101	Practical based on SEC	Practicals of Open Source Technology	1
FY B.Sc.	II	RUSSECCS .E111	Skill Enhancement Course	Object Oriented Programming with JAVA	1
	II	RUSSECCS P.E111	Practical based on SEC	Practicals of Object Oriented Programming with JAVA	1

SEMESTER I

Course Code: RUSSECCS.O101

Course Title: Open Source Technology

Type of Course: Skill Enhancement Courses

Academic year 2023-24

COURSE OUTCOME	DESCRIPTION A student completing this course will be able to:
CO 1	To differentiate between open-source software and commercial software.
CO 2	To Understand the policies, licensing procedures and ethics of FOSS.
CO 3	Understand open-source philosophy, methodology and ecosystem.
CO 4	Awareness with Open-Source Technologies.

DETAILED SYLLABUS

RUSSECCS.O101	OPEN SOURCE TECHNOLOGY	CREDITS 1 / 15 HOURS
Unit I	**Introduction to Open-Source:** Open Source, Need and Principles of OSS, Open-Source Standards, Requirements for Software, OSS success, Free Software, Examples, Licensing, Free Vs. Proprietary Software, Free Software Vs. Open-Source Software, Public Domain. History of free software, Proprietary Vs Open-Source Licensing Model, use of OpenSource Software, FOSS does not mean no cost. History: BSD, The Free Software Foundation and the GNU Project. **Open-Source Principles and Methodology:** Open-Source History, OpenSource Initiatives, Open Standards Principles, Methodologies, Philosophy, Software freedom, Open-Source Software Development, How to create your own Licences, Important FOSS Licences, Copyright vs. Copyleft , Patents, Zero marginal cost, Income-generation Opportunities, Internationalisation, Open Source Projects **Open-Source Ethics and Social Impact:** Open source vs. closed source, Open-source Government, Ethics of Open-source, Social and Financial impacts	15 Hrs

	of open-source technology, Shared software, Shared source, Open Source as a Business Strategy **Case Studies:** Study the Understanding the developmental models, licensing, mode of funding, commercial/non-commercial use of several projects like Apache Web server, BSD, GNU/Linux, Android, Mozilla (Firefox), Wikipedia, Drupal, WordPress, Git, GCC, GDB, GitHub, Open Office, LibreOffice, Docker, Open-source Databases, LAMP .	

Textbooks:

1. "Open-Source Technology", Kailash Vadera& Bhavyesh Gandhi, University Science Press, Laxmi Publications, 2009
2. "Open-Source Technology and Policy", Fadi P. Deek and James A. M. McHugh, Cambridge University Press, 2008.

Additional References:

1. "Perspectives on Free and Open-Source `, GautamGuliani, O"Reilly Media
2. Linux kernel Home: http://kernel.org4
3. Open-Source Initiative: https://opensource.org/5
4. The Linux Foundation: http://www.linuxfoundation.org/
5. The Linux Documentation Project: http://www.tldp.org/2
6. Docker Project Home: http://www.docker.com3.
7. Linux Documentation Project: http://www.tldp.org/6
8. Web References:
    a. Wikipedia - https://en.wikipedia.org/7.https://en.wikipedia.org/wiki/Wikipedia:Contributing_to_Wikipedia8
    b. Github - https://help.github.com/9.
    c. The Linux Foundation: http://www.linuxfoundation.org/

Course Code: RUSSECCSP.O101

Course Title: Practical of Open Source Technology

Type of Course: Skill Enhancement Courses

Academic year 2023-24

COURSE CODE: RUSSECCSP.O101	
Sr. No.	**PRACTICAL TITLE**
1	Open Source Operating Systems Learn the following open source operating system of your choice: Linux, Android, FreeBSD, Open Solaris etc. Learn the installation. Identify the unique features of these OS
2	Hands on with LibreOffice
3	Hands on with GIMP Photo Editing Tool
4	Hands on with Shotcut Video Editing Tool
5	Hands on with Blender Graphics and Animation Tool
6	Hands on with Apache Web Server
7	Hands on with WordPress CMS
8	Contributing to Wikipedia: Introduction to wikipedia: operating model, licence, how to contribute? Create your user account on wikipedia. Identify any topic of your choice and contribute the missing information
9	Github Create and publish your own open source project: Write any simple program using your choice of programming language. Create a repository on github and save versions of your project. You"ll learn about the staging area, committing your code, branching, and merging, Using GitHub to Collaborate: Get practice using GitHub or other remote repositories to share your changes with others and collaborate on multi developer projects. You"ll learn how to make and review a pull request on GitHub. Contribute to a Live Project: Students will publish a repository containing their reflections from the course and submit a pull request.
10	Virtualization: Open Source virtualization technologies: Install and configure the following: VirtualBox, Zen, KVM Create and use virtual machines

SEMESTER II

Course Code: RUSSECCS.E111

Course Title: Object Oriented Programming using JAVA

Type of Course: Skill Enhancement Courses

Academic year 2023-24

COURSE OUTCOME	DESCRIPTION A student completing this course will be able to:
CO 1	Apply object-oriented concepts to solve real world problems
CO 2	Implement principles of packages and strings in java.
CO 3	Develop multi-thread applications with exception handling
CO 4	Understand java I/O streams
CO 5	Apply exception handling concept
CO 6	Understand Thread communication

DETAILED SYLLABUS

RUSSECCS.E111	Object Oriented Programming using JAVA	CREDITS 1 / 15 HOURS
Unit I	**JAVA BASICS** -OOPS Concepts-Java Programming Constructs - class and objects, Methods, Constructors, Access Specifiers, Data Types, Variables Operators, Control Statements, Arrays, Inheritance, Method Overloading and Overriding, Abstract Class, Interfaces, Packages, Access Modifiers, String functions **I/O FILE OPERATIONS and Networking** – I/O Stream, Buffered Reader/Writer FileInputStream, FileOutputStream , Networking concepts **EXCEPTION HANDLING AND THREADS:** Exception Handling structure, Try, Catch, Finally Blocks, Throw ,Throws, Class Throwable, Thread creation, Thread creation, Thread life cycle, Thread Priorities, Synchronisation, Inter Thread Communication	**15 Hrs**

Textbooks:

1. Cay S. Horstman, Gary Cornell, “Core Java Volume - I Fundamentals' ', Prentice Hall, 10th Edition, 2016.

References:

1. Horstmann & Cornell, “CORE JAVA 2 Advanced Features – VOL-II”, Pearson Education, 10th Edition, 2017.
2. Herbert Schildt, Java: The Complete Reference, 11 th Edition, 2018.
3. E.BalaGuruswamy, “Programming with Java”

Course Code: RUSSECCSP.E111

Course Title: Practical of Object Oriented Programming using JAVA

Type of Course: Skill Enhancement Courses

Academic year 2023-24

COURSE CODE: RUSSECCSP.E111	
Sr. No.	**PRACTICAL TITLE**
1	Implementation of classes, methods, objects
2	Implementation of interfaces
3	Implementation of packages
4	Implementation of inheritance concepts
5	Implementation of polymorphism concepts
6	Exercises on string manipulation
7	Implementation of exception handling
8	Exercises on file handling and stream concepts
9	Implementation of networking
10	Implementation of Multithreading concept

MODALITY OF ASSESSMENT

Skill Enhancement Course (1 Credit)

A) Total Marks

a. **Theory – 25 Marks**
b. **Practical – 50 Marks**

B) Theory Internal Assessment (40%) - 10 Marks

Sr No	Evaluation type	Marks
1	Class Test/ Project / Assignment / Presentation/Open Book Test	10
	TOTAL	**10**

C) Theory External Assessment (Semester End Examination) 60% - 15 Marks

1. Duration – The duration for these examinations shall be of **45 Minutes**.
2. Question Paper Pattern:

Question	Options	Marks	Questions Based on
1	Three out of Four	15	Unit I
	TOTAL	**15**	

D) Practical Examination (Semester End): 50 marks

a. **Practical Internal Assessment (40%) 20 Marks:** Students have to acquire at least 40% marks in each paper individually.
b. **Practical Sem End Exam (60%) 30 Marks**.

Particulars	Practical
Internal Assessment	20
Laboratory work	30
Total	**50**