



Hindi Vidya Prachar Samiti's
**Ramniranjan Jhunjhunwala College of Arts, Science
& Commerce (Autonomous), Ghatkopar (W)**



Affiliated to
University of Mumbai

Syllabus Framework as per LOCF

Program: M.Sc. Information Technology
Program Code: RJSPIT

Choice Based Credit System Syllabus

(With effect from the academic year 2021-22)

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The Preamble

Why IT?

The world around us is rapidly changing! The change is carried by the technology. Information Technology has become the fourth basic need of human after food, shelter and clothing. Be it buying essentials online; connecting to friends and family; online learning or entertainment; IT is integral part of normal life. The increasing popularity and luxury turning into necessity has created a large number of opportunities in the field of Information Technology. Information Technology is an application-oriented program where students learn core technologies and apply their skills in developing solutions for different problems in a variety of domains. The applications may lead students to master a niche skill and bag a unique career opportunity.

Why IT at R J College?

Department of IT was established in the year 2007-08. Since its inception, department has been centering attention of the college with vibrant activities and several success stories of the students. Strength of the department is talented, experienced faculty members, state of the art laboratories, rich in resource departmental library, hardworking students and a very strong industrial connect. The PG program started in the year 2016 and has received excellent response. In the journey of 16 years, students of department of IT secured top rank in university examinations in both UG and PG programs. Department of Biotechnology (DBT), New Delhi has granted DBT star scheme grant to the department of Information Technology jointly with department of Computer Science. At RJIT, a special attention is given to the overall grooming of the students and making them industry – ready.

TechConnect is an initiative of the department where expert alumni members share their expertise and experiences with the students. Communication skill of the students is polished through various activities including presentations of case studies and project work. RJIT hosts an intercollegiate TechFest, “Symposium” every alternate year, where students get a good opportunity to develop leadership qualities, organizing skills and showcase their talent. Faculty being the core strength of the education system, there have been many collaborations with giants like Patni computers for strengthening our faculty in the past. Faculty members regularly undergo trainings on different new technologies to keep up with ever changing, dynamic IT field.

Our Curriculum Your Strength

As part of the Autonomous Institution, the Department of Information Technology has revised the syllabus of M.Sc. IT as per the Choice Based Credit System (CBCS) and the industry requirements, to be implemented from the academic year 2021-22. It is believed that the proposed syllabus will offer the Post Graduates an enriched learning experience, quality skills, ability to create solutions to real world problems and understand the effects of computer systems on the people and society. The major areas that are focused throughout the

program are Data Science, Artificial Intelligence, Virtualization, Cloud Computing, Networking, Big Data Analytics, Computer Forensics, Blockchain technologies, Virtual & Augmented Reality and Robotics.

To see how theoretical aspects learned in classes are integrated into the practical world, we facilitate experiential learning in the form of Case Study and Project. This will help fresh pass out students in gaining on-floor experience. The skills acquired during the program would help post graduates to land a decent job in an IT sector.

The students would also be encouraged to write a research paper and improve the presentation and leading skills every semester and earn credits for the same. We make it a point to train our students, regardless of their domain, using the best methods possible to master the concepts and help to build a successful career in the various sectors of Information Technology.

Furthermore, continuous assessment is an integral part of the evaluation, which will facilitate systematic and thorough learning towards a better understanding of the subject to the students.

Program Outcome

Students of all Post graduate degree program on completion of the program will be able to

Convey the concept clearly

Students would have clarity and complete domain knowledge. Shall be able to analyze solve, innovate and convey the concept clearly by utilizing effective communication skills

Social Interaction

Respect each other and should be able to resolve conflicts and help in reaching amicable solution. They should be able to work in diverse teams. They should be able to distinguish when and what is socially acceptable. Students would perform functions that demand higher competence in national/international organizations with positive spirit and cooperate with peer. Provide leadership and be mentors.

Responsible citizen

Contribute to Nation development through social service. Being empathetic and sympathetic to fellow beings.

Honesty and Integrity, Ethics

Recognize different values and systems and respect them. In decision making moral values should be given prime importance. Student should be aware of ethical issues and regulatory considerations while addressing society needs for growth with honesty.

Environmental and Sustainability

Environmental issues would be considered and problem solving with sustainable development would be chosen.

Life Long learning and Global thinking

Enjoy learning in every situation and should have skills for adapting in any part of the world and contribute to nation building globally.

Program Specific Outcomes

The increasing popularity and luxury turning into necessity has created a large number of opportunities in the field of Information Technology. Information Technology is an application-oriented program where students learn core technologies and apply their skills in developing solutions for different problems in a variety of domains. It is believed that the syllabus will offer the Post Graduates an enriched learning experience, quality skills, ability to create solutions to real world problems and understand the effects of computer systems on the people and society. The major areas that are focused throughout the program are Data Science, Artificial Intelligence, Virtualization, Cloud Computing, Networking, Big Data Analytics, Computer Forensics, Blockchain technologies, Virtual & Augmented Reality and Robotics.

To see how theoretical aspects learned in classes are integrated into the practical world, we facilitate experiential learning in the form of Case Study and Project. This will help fresh pass out students in gaining on-floor experience. The skills acquired during the program would help post graduates to land into a decent job in an IT sector, education sectors and startups/entrepreneurship. The students would also be encouraged to write a research paper and improve the presentation skills every semester and earn credits for the same.

All the courses in the program are carefully designed to equip the students for professional certifications and competitive exams like aptitudes, GATE, NET, SET etc. and to write research proposals for grants.

PSO1	Use the Knowledge of Information Technology with recent Trends aligned with Research and Industry.
PSO2	Apply Information Technology in the field of Data Science, Artificial Intelligence, Cloud Computing, Web Services, Automation and Internet of Things (IoT)
PSO3	Demonstrate and Use the competency on topics like Data Collection, Preparation and Pre-processing, Data Transformation, Calculating Descriptive Statistics, Exploratory Data Analysis, Probability and Probability

	Distributions, Estimating Statistical Parameters, Hypothesis Testing, Building and Evaluating the Statistical Models.
PSO4	Understand and Describe the necessary theoretical background for Cloud Computing Environments. Gain insight on the methodologies and technologies for the development of applications that will be deployed and offered through Cloud Computing Environments. Apply the knowledge on building cloud infrastructures by using IaaS software and Developing cloud applications by utilizing PaaS software.
PSO5	Understand , Describe and Apply the various concepts and basic and some advanced algorithms of Artificial Intelligence. Remember and Use knowledge representation issues and using predicate logic and production rules. Understand and Apply techniques that could be augmented to support non-monotonic reasoning, statistical technique, semantic network, frame and scripts.
PSO6	Create and Deploy the web applications using ASP.NET Core MVC and Visual Studio. Create HTTP Services using Core Web API. Handle data with XML serialization and ADO.NET with SQL Server into the Web Applications.
PSO7	Understand and Analyse existing network protocols and networks, Develop new protocols in networking and Understand the facts of networking research.
PSO8	Understand and Identify the threats and different types of attacks that can be launched on computing systems. Use and Apply Tools and Techniques to prevent attacks on computing systems and to test the software against the attacks.
PSO9	Understand the key issues in big data management and analysis, Analyse data by utilizing various statistical and data mining techniques/algorithms, Perform analytics on real-time streaming data and Understand the various NoSQL alternative database models. Use the Big Data Frameworks Hadoop,

	Map Reduce and NO SQL for big data analytics as well.
PSO10	Understand and Use VMWare VSphere 6.7, Install and Configure ESXi server, Understand , Install/Configure VSphere Centre, Configure and Manage the Resource Allocation, Storage Devices, VSphere Update Manager and VSphere Security. Create a VSphere Network as well.
PSO11	Apply the various techniques of Image and Vision Processing in the field of Graphics and Artificial Intelligence. Detect and Analyse images in the frequency domain using various transforms, spatial filters, compression techniques.
PSO12	Understand and Use key features, different types of platforms & Languages of Blockchain Technology. Develop familiarity with their core components, protocols, tools, and its implementation strategies. Introduce application areas, current practices, and research activity. Design and develop solutions to real-life case studies. Use Blockchain Technology in conjunction with other bleeding edge Technologies in the domains of Big Data, Artificial Intelligence, Machine Learning, and Analytics & IOT.

Table of mapping course learning outcomes to program learning outcomes

	Course Code	Core Competency	Critical Thinking	Analytical	Research Skills	Problem Solving	Team Work
Msc IT Semester I	RJSPIT101	√	√	√	√	√	√
	RJSPIT102	√	√	√	√	√	√
	RJSPIT103	√	√	√	√	√	√
	RJSPIT1P1a	√	√	√	√	√	√
	RJSPIT1P1b	√	√	√	√	√	√
	RJSPIT1C1	√	√	√			√
	RJSPIT1L1	√	√	√	√	√	√
	RJSPIT1L2	√	√	√	√	√	√
	RJSPIT1R1	√	√	√	√	√	√
	RJSPIT1S1	√	√	√	√		√
Msc IT Semester II	RJSPIT201	√	√	√	√	√	√
	RJSPIT202	√	√	√	√	√	√
	RJSPIT203	√	√	√	√	√	√
	RJSPIT2P2a	√	√	√	√	√	√
	RJSPIT2P2b	√	√	√	√	√	√
	RJSPIT2C2	√	√	√			√
	RJSPIT2L3	√	√	√	√	√	√
	RJSPIT2L4	√	√	√	√	√	√
	RJSPIT2R2	√	√	√	√	√	√
	RJSPIT2S2	√	√	√	√		√
Msc IT Semester III	RJSPIT301	√	√	√	√	√	√
	RJSPIT302	√	√	√	√	√	√
	RJSPIT303	√	√	√	√	√	√
	RJSPIT3P3a	√	√	√	√	√	√
	RJSPIT3P3b	√	√	√	√	√	√
	RJSPIT3C3	√	√	√	√	√	√
	RJSPIT3L5	√	√	√	√	√	√
	RJSPIT3L6	√	√	√	√	√	√

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	RJSPIT3D1	√	√	√	√	√	√
Msc IT	RJSPIT4D2	√	√	√	√	√	√
Semester Iv	RJSPIT4I1	√	√	√	√	√	√

Teaching Learning Process

The teaching learning process in the learning outcomes-based curriculum framework in the subject of Information Technology is designed to help students to learn the subject in greater details, analyze and apply as and when required. The course offers the requisite skills for a professions and jobs in Information Technology. All courses have practical and hands-on sessions an integral part which promotes the learner to acquire the requisite skills for employment by experiential learning. Teaching also involves guest lectures by experts drawn from research institutes of repute, industries, and entrepreneurs.

An interesting combination of teaching learning processes is adopted in which the teacher and learners are actively involved.

Some of the salient teaching learning processes are

- Class lectures
- Hands-on sessions
- Presentations and Videos
- Case Study
- Group Discussion, workshops
- Peer teaching and learning
- Flipped classroom, project-based learning, quiz, seminars, exhibitions, posters
- Practical's experimental design planning, analysis, interpretation, application of knowledge gained
- Mini & Major Project
- Technology enabled self-learning

The effective teaching strategies would address the requirements of learner to learn at their own pace. Self-learning is encouraged at postgraduate level emphasis is on acquiring higher order skills. The entire program is also designed to foster the technical skills as per the industry requirement. The teaching learning processes adopted would aim at participatory pedagogy.