



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

**Affiliated to  
UNIVERSITY OF MUMBAI**

**Syllabus for the T.Y.B.Sc. IT (under NEP)**

**Vertical under NEP: MAJOR**

**Program: B.Sc. Information Technology**

**Program Code: RJMAJIT**

**Semester V and VI**

**(REVISED 2025-2026 in alignment with the NEP 2020 facilitating the inter-and multidisciplinary learning and multiple entry and exit of the students)**

**Level 5.5**

**(CBCS 2025-2026)**

**B.Sc. IT Semester V and VI as per NEP 2020**  
Implemented from the academic year 2025-2026.  
**Major Subject: Information Technology**

Credit Structure for **B.Sc. IT Semester V and VI** as per **NEP 2020** Implemented from the academic year 2025-2026. **Major Subject: Information Technology**

**Semester: V**

**Level 5.5 Major Information Technology**

| <b>Courses</b>                                  | <b>Title</b>   | <b>Credit</b> | <b>Total Credits</b> |
|---|--|---------------|----------------------|
| <b>Major DSC (Discipline Specific Course)</b>   |  |               |                      |
| RJDSCIT351                                      | Full Stack Development with MERN Technologies  | 3             | 10                   |
| RJDSCIT352                                      | Java Programming   | 3             |                      |
| RJDSCITP351                                     | MAJ: Major Practical<br>(Full Stack development with MERN Technologies and Java Programming Practical) | 2             |                      |
| RJDSCITP352                                     | Applied Software Project Management Practical  | 2             |                      |
| <b>Major DSE (Discipline Specific Elective)</b> |  |               |                      |
| RJDSEIT351                                      | System Administration with Linux   | 2             | 4                    |
| RJDSEITP351                                     | System Administration with Linux Practical   | 2             |                      |
| RJDSEIT352                                      | Artificial Intelligence and Applications   | 2             |                      |
| RJDSEITP352                                     | Artificial Intelligence and Applications Practical   | 2             |                      |
| <b>Minor</b>                                    |  |               |                      |
| RJMINIT351                                      | Design Principles of Internet of Things  | 2             | 4                    |
| RJMINITP351                                     | Design Principles of Internet of Things Practical  | 2             |                      |
| <b>Skill Enhancement Course</b>                 |  |               |                      |
| RJSECITP351                                     | Mobile Programming Practical   | 2             | 2                    |
| <b>Field Project</b>                            |  |               |                      |
| RJFPIT351                                       | Major Project  | 2             | 2                    |
| <b>Total:</b>                                   |  |               | 22                   |

**\* As per University Grid**

**Semester: VI**  
**Level 5.5 Major Information Technology**

| <b>Courses</b>                                  | <b>Title</b>  | <b>Credit</b> | <b>Total Credits</b> |
|---|---|---------------|----------------------|
| <b>Major DSC (Discipline Specific Course)</b>   |   |               |                      |
| RJDSCIT361                                      | Advanced Web Development  | 3             | 10                   |
| RJDSCIT362                                      | Principles of Information Security  | 3             |                      |
| RJDSCITP361                                     | MAJ: Major Practical<br>(Advanced Web Development and<br>Principles of Information Security<br>Practical) | 2             |                      |
| RJDSCIT363                                      | IT Services and Management  | 2             |                      |
| <b>Major DSE (Discipline Specific Elective)</b> |   |               |                      |
| RJDSEIT361                                      | Geographic Information System   | 2             | 4                    |
| RJDSEITP361                                     | Geographic Information System<br>Practical  | 2             |                      |
| RJDSEIT362                                      | Software Testing and Quality<br>Assurance   | 2             |                      |
| RJDSEITP362                                     | Software Testing and Quality<br>Assurance Practical   | 2             |                      |
| <b>Minor</b>                                    |   |               |                      |
| RJMINIT361                                      | Business Analytics  | 2             | 4                    |
| RJMINITP361                                     | Business Analytics Practical  | 2             |                      |
| <b>Field Project</b>                            |   |               |                      |
| RJOJTIT361                                      | On the Job Training   | 4             | 4                    |
| <b>Total:</b>                                   |   |               | 22                   |

**\* As per University Grid**

## DISTRIBUTION OF TOPICS AND CREDITS

### T. Y. B.Sc. Information Technology SEMESTER V

**Semester: V**

**Level 5.5 Major Information Technology**

| <b>Field Project</b> |                     |                |  |
|----------------------|---------------------|----------------|--|
| <b>Course</b>        | <b>Nomenclature</b> | <b>Credits</b> | <b>Topics</b>  |
| RJFPIT351            | Major Project       | 02             | Software Project implementation based on the practical course “Applied Software Project Management” – Designing of UI, Programming and testing of the software designed. |

| <b>Semester V – Field Project</b>   |  |                |                 |
|---|--|----------------|-----------------|
| <b>Course Code</b>  | <b>Course Title</b>  | <b>Credits</b> | <b>Duration</b> |
| RJFPIT351   | Major Project  | 02             | 60 Hours        |
| <p><b>Course Objectives:</b></p> <ul style="list-style-type: none"> <li>➤ Implement a problem statement to simulate or to create a live project application from different areas of IT like software development, IOT, Networking, Security, Gaming etc.</li> <li>➤ Design effective interface and relevant code scripts for the interfaces</li> <li>➤ Explore and utilize new software tools and technologies.</li> <li>➤ Test the application created.</li> </ul> |  |                |                 |
| <b>Sr No</b>  | <b>Details</b>   |                |                 |
| <b>1.</b>   | <p><b>System Design</b><br/>                     Design and create database using selected technology<br/> <b>OR</b><br/>                     Design and build basic gaming console platform for your application<br/> <b>OR</b><br/>                     Design Network topology<br/> <b>OR</b><br/>                     Design IOT system architecture with all components</p> |                |                 |
| <b>2.</b>   | <p><b>UI Design &amp; Coding</b><br/>                     Design and Develop User Interface for software development project using relevant</p>  |                |                 |

|           |   |
|-----------|---|
|           | technology<br><b>OR</b><br>Design and Develop Gaming Interface using relevant technology.<br><b>OR</b><br>Identify protocols to be implemented in the network project<br><b>OR</b><br>Design Hardware interface for IOT application and Develop code UI interface interaction |
| <b>3.</b> | <b>Unit Testing</b><br>Testing of individual project modules of respective project types.   |
| <b>4.</b> | <b>Integration Testing</b><br>Testing of entire project for all stakeholders and all deliverable components.  |
| <b>5.</b> | <b>Review and Corrections</b>   |

| <b>Course Outcomes</b> | <b>Description<br/>(After this course, students will be able to--)</b>  | <b>Blooms Levels</b>                       | <b>PSO Addressed</b> |
|------------------------|---|--|----------------------|
| <b>CO1</b>             | Design, create and build a projects in one of the dedicated fields of Information Technology – ERP, Data analytics, IOT, Networking, Network Security, Gaming | Level VI<br>Create,<br>Design              | PSO 3                |
| <b>CO2</b>             | Test the application, identify and analyze the shortcomings for improved solutions.   | Level III<br>Analyze<br>Level VI<br>Design | PSO 2<br>PSO 3       |

## DISTRIBUTION OF TOPICS AND CREDITS

### T. Y. B.Sc. Information Technology SEMESTER VI

| Semester VI – OJT (Field Project)  |                     |         |           |
|--|---------------------|---------|-----------|
| Course Code  | Course Title        | Credits | Duration  |
| RJOJTIT361   | On the Job Training | 4       | 120 Hours |
| <b>Course Objectives:</b> <ul style="list-style-type: none"><li>➤ To enhance professional competency, familiarize students with professional principles, ethics, values, and integrity.</li><li>➤ To provide exposure to emerging technologies/ automation and to gain insight in actual workflow mechanisms.</li><li>➤ To enhance entrepreneurial capabilities in students</li><li>➤ To enhance problem solving, decision-making and teamwork skills.</li></ul> |                     |         |           |

#### Introduction :

Students are to complete individual internships with a registered Private, Commercial, Government or Non-government organization. The internship must be completed for 120 hours in the fields related to Information Technology. Some key areas are listed below -

#### Indicative areas

- Trade and Agriculture
- Economy & Banking Financial Services and Insurance
- Logistics, Automotive & Capital Goods
- Fast Moving Consumer Goods & Retail
- Information Technology/Information Technology Enabled Services & electronics
- Handcraft, Art, Design & Music
- Healthcare & Life Science
- Sports, Wellness and Physical Education
- Tourism & Hospitality
- Digitization & Emerging Technologies (Internet of Things/Artificial Intelligence/Machine Learning/Deep Learning/Augmented Reality/Virtual Reality etc.)
- Humanitarian, Public Policy and Legal Services
- Communication
- Education
- Sustainable Development
- Commerce, Medium and Small-Scale Industries

**Note: This is only an indicative list and not an exhaustive one.**

## **Process of Implementation**

Appointment of OJT coordinators - teachers and students

Students are expected to fulfil this requirement full time during vacations or part time within the duration of semester VI

## **Pattern of Evaluation**

Evaluation during the OJT program involves two key components: External Evaluation (50%) and Internal Evaluation (50%). The following is a suggested two-fold pattern of evaluation.

1. Host Organization Evaluation (External) : The host organization will assess students based on criteria such as punctuality, completion of hours, and proficiency in required skill sets. They will also provide feedback on the student's overall performance.
2. Department Mentor Evaluation (Internal) : Students will be evaluated by their department mentor based on their weekly reporting, written report, and viva voce/presentations.

| External<br>(Organization<br>Representative) | Completion<br>of Hours | Quality/<br>Performance | Punctuality/Regularity  | Total      |
|--|------------------------|-------------------------|-------------------------|------------|
|  | 20                     | 20                      | 10                      | 50         |
| Internal<br>(Department<br>Mentor)           | Weekly<br>Reporting    | Written Report          | Viva-Voce /Presentation |            |
|  | 15                     | 20                      | 15                      | 50         |
| <b>Total</b>                                 |                        |                         |                         | <b>100</b> |

## **Documentation Format**

### **Cover Page contents -**

- Title of the Report: On-the-Job Training Experience Report
- Name of the Student:
- Name of the organization:
- Department/Division Where Training took place
- Duration of Training: [Start Date to End Date of Training]
- Date of Submission: [Date of Submitting the Report]

### **Detailed Documentation Format**

- Certificate
- Declaration of student
- Introduction
- Company Overview
- Training Objectives
- Training Experience
- Skills Developed
- Achievements & Contributions
- Challenges Faced
- Lessons Learned
- Recommendations
- Conclusion
- Appendices
  - Appendix I - OJT Undertaking
  - Appendix II - Resume
  - Appendix III - Confirmation letter from organization
  - Appendix IV - Student Log
  - Appendix V : Supervisor Feedback (optional)
  - Appendix VI - Completion certificate
- References

### Appendix I : OJT Undertaking

|  |  |
|--|--|
| 1. Student Name:   |  |
| 2. Current Address   |  |
| 3. Residence Address   |  |
| 4. Email ID  |  |
| 5. Mobile No.  |  |
| 6. Aadhar Number   |  |
| 7. PAN Number  |  |
| 8. Overall GPA   |  |
| 9. Mode of Internship  |  |
| <p>I confirm that I agree with the terms, conditions, and requirements of the OJT Policy.</p> <p>Student Signature:</p><br><br><p>Date</p>   |  |
| <p>I confirm that the student has attended the OJT orientation, and he/she has met all paperwork and process requirements to participate in the OJT programme and has received approval from his/her mentor.</p><br><br><p>Sign of Head of the Department/ Department Coordinator/Mentor</p><br><br><p>Date_____</p> |  |

## Appendix II : Draft Resume Template

Name:

Contact Number and Email ID:

Education:

Higher Educational Institute(HEI) Name:

Degree / Specialization:

CGPA:

Internship / Work Experience:

Project:

- Emphasize accomplishments that are relevant to the field
- Be specific—omit unnecessary words and sentences
- Start your sentence with an action verb, not a passive one-Use past-tense verb to show what you have accomplished Quantify results as much as possible
- Use keywords that will catch a recruiter's eye
- Other Achievements and Personal Interests ( List other achievements also in reverse chronological order )
- Leadership positions held outside your formal work environment
- Personal interests and accomplishments that will distinguish you from other applicants
- Volunteer service/Social Work

Languages known (Mention the level of Proficiency):

Computer Proficiency (Mention the skills you possess):

**Appendix III : Format of Confirmation Letter from organization**  
**(to be printed on company letterhead.)**

To Whomsoever it may Concern

This is to certify that Mr/ Miss \_\_\_\_\_ from TYBSc IT class of R J College of Arts, Science and Commerce (Empowered Autonomous) is offered an internship opportunity in our organization. Duration of internship will be from \_\_\_\_\_ to \_\_\_\_\_.

Sign of authorized representative.

**Appendix IV: Student Log**

| Day | Date | Task Assigned | Number of Hours |
|-----|------|---------------|-----------------|
|-----|------|---------------|-----------------|

**Appendix V : Supervisor Feedback (optional)**

Name of the candidate:

Job Specification:

Total Duration:

Rate the candidate for the following in the range of 1 to 5 (put a check mark in relevant column)

| Sr No | Particular      | Excellent | Very Good | Good | Satisfactory | Poor |
|-------|-----------------|-----------|-----------|------|--------------|------|
| 1     | Punctual        |           |           |      |              |      |
| 2     | Regular         |           |           |      |              |      |
| 3     | Adaptable       |           |           |      |              |      |
| 4     | Ability to take |           |           |      |              |      |

|    |                          |  |  |  |  |  |
|----|--------------------------|--|--|--|--|--|
|    | responsibility           |  |  |  |  |  |
| 5  | Ability to work in team  |  |  |  |  |  |
| 6  | Communication Skills     |  |  |  |  |  |
| 7  | Problem Solving          |  |  |  |  |  |
| 8  | Ability to complete task |  |  |  |  |  |
| 9  | Grasp new Concept        |  |  |  |  |  |
| 10 | Quality of work done     |  |  |  |  |  |

Comments:

Name and designation of Supervisor

Appendix VI : Completion certificate

Certificate of Completion

This is to certify that Mr / Miss \_\_\_\_\_ of R. J. College of Arts, Science and Commerce (Empowered Autonomous), Ghatkopar Mumbai has completed his / her internship with our organization. Duration of internship was \_\_\_\_\_ Hours starting from \_\_\_\_\_ to \_\_\_\_\_. During this period, he/she has satisfactorily completed given assignments.

Signature of authorized signatory.

**(to be printed on company letterhead.)**

### Distribution of Marks- Semester V

| Sr. No  | Course Code | Course Title  | Credit | Total Marks |          |       |
|---|-------------|---|--------|-------------|----------|-------|
|   |             |   |        | Internal    | External | Total |
| <b>Major DSC (Discipline Specific Course)</b>   |             |   |        |             |          |       |
| 1.  | RJDSCIT351  | Full Stack Development with MERN Technologies   | 3      | 25          | 50       | 75    |
| 2.  | RJDSCIT352  | Java Programming  | 3      | 25          | 50       | 75    |
| 3.  | RJDSCITP351 | MAJ: Major Practical (Full Stack development with MERN Technologies and Java Programming Practical) | 2      | 20          | 30       | 50    |
| 4.  | RJDSCITP352 | Applied Software Project Management_ Practical  | 2      | 20          | 30       | 30    |
| <b>Major DSE (Discipline Specific Elective)</b> |             |   |        |             |          |       |
| 5.  | RJDSEIT351  | System Administration with Linux  | 2      | 20          | 30       | 50    |
| 6.  | RJDSEITP351 | System Administration with Linux Practical  | 2      | 20          | 30       | 50    |
| 7.  | RJDSEIT352  | Artificial Intelligence and Applications  | 2      | 20          | 30       | 50    |
| 8.  | RJDSEITP352 | Artificial Intelligence and Applications Practical  | 2      | 20          | 30       | 50    |
| <b>Minor</b>                                    |             |   |        |             |          |       |
| 9.  | RJMINIT351  | Design Principles of Internet of Things   | 2      | 20          | 30       | 50    |
| 10.   | RJMINITP351 | Design Principles of Internet of Things Practical   | 2      | 20          | 30       | 50    |
| <b>Skill Enhancement Course</b>                 |             |   |        |             |          |       |
| 11.   | RJSECITP351 | Mobile Programming Practical  | 2      | 20          | 30       | 50    |
| <b>Field Project</b>                            |             |   |        |             |          |       |
| 12.   | RJFPIT351   | Major Project   | 2      | 20          | 30       | 50    |
| <b>Total:</b>                                   |             |   | 22     |             |          |       |

**Distribution of Marks- Semester VI**

| Sr. No  | Course Code | Course Title   | Credits | Total Marks |          |       |
|---|-------------|--|---------|-------------|----------|-------|
|   |             |  |         | Internal    | External | Total |
| <b>Major DSC (Discipline Specific Course)</b>   |             |  |         |             |          |       |
| 1.  | RJDSCIT361  | Advanced Web Development   | 3       | 25          | 50       | 75    |
| 2.  | RJDSCIT362  | Principles of Information Security   | 3       | 25          | 50       | 75    |
| 3.  | RJDSCITP361 | MAJ: Major Practical (Advanced Web Development and Principles of Information Security Practical) | 2       | 20          | 30       | 50    |
| 4.  | RJDSCIT363  | IT Services and Management   | 2       | 20          | 30       | 50    |
| <b>Major DSE (Discipline Specific Elective)</b> |             |  |         |             |          |       |
| 5.  | RJDSEIT361  | Geographic Information System  | 2       | 20          | 30       | 50    |
| 6.  | RJDSEITP361 | Geographic Information System Practical  | 2       | 20          | 30       | 50    |
| 7.  | RJDSEIT362  | Software Testing and Quality Assurance   | 2       | 20          | 30       | 50    |
| 8.  | RJDSEITP362 | Software Testing and Quality Assurance Practical   | 2       | 20          | 30       | 50    |
| <b>Minor</b>                                    |             |  |         |             |          |       |
| 9.  | RJMINIT361  | Business Analytics   | 2       | 20          | 30       | 50    |
| 10.   | RJMINITP361 | Business Analytics Practical   | 2       | 20          | 30       | 50    |
| <b>Field Project</b>                            |             |  |         |             |          |       |
| 11.   | RJOJTIT361  | On the Job Training  | 4       | 40          | 60       | 100   |
| <b>Total:</b>                                   |             |  | 22      |             |          |       |

Evaluation and Assessment (Based on the centralized guidelines given by EC under NEP 2020)

Credit based Evaluation – 25 marks evaluation per credit.

**Major DSC theory courses** – 3 credit theory courses will be evaluated for 75 marks. 25 marks Internal assessment and 50 marks External evaluation (Semester End Examination)

**Major DSC practical course** – 2 credit practical courses will be evaluated for 50 marks. 20 marks continuous evaluation and 30 marks external evaluation (SEE practical examination)

**Minor and Major DSE Theory** courses for 2 credits will be evaluated for 50 marks – 20 marks Internal Assessment and 30 marks external evaluation. (Semester End Examination)

**Minor, Major DSE and SEC practical courses** - 2 credit practical courses will be evaluated for 50 marks. 20 marks continuous evaluation and 30 marks external evaluation (SEE practical examination)

Evaluation of FP (50 marks – 2 credits) and Major DSC- Software project Management practical (50 marks – 2 credits) will be conducted together in the form of Major Field project viva voce. 20 Marks internal Assessment for both courses will be done in continuous evaluation mode and 30 marks external evaluation will be done in the form of project viva voce by an external examiner.

**Mapping of the courses to employability / entrepreneurship / skill development**

**SEMESTER V**

| <b>Course Code</b>   | <b>Course Title</b> | <b>Unit No. And topics focusing on Employability / Entrepreneurship / Skill development</b>                                   | <b>Employability /Entrepreneurship / Skill development</b>                    | <b>Specific Activity</b> |
|----------------------|---------------------|---|---|--------------------------|
| <b>Field Project</b> |                     |   |   |                          |
| RJFPIT351            | Major Project       | Skill Enhancement:<br><br>Gathering requirement and design of project<br>Employability:<br>code complete working Application. | Students get on Hands on experience of Designing fully functional Application | Project work             |

**Mapping of the courses to employability / entrepreneurship / Skill development**

**SEMESTER VI**

| <b>Course Code</b>   | <b>Course Title</b> | <b>Unit No. And topics focusing on Employability / Entrepreneurship / Skill development</b>   | <b>Employability/ Entrepreneurship/ Skill development</b>  | <b>Specific Activity</b> |
|----------------------|---------------------|---|--|--------------------------|
| <b>Field Project</b> |                     |   |  |                          |
| RJOJTIT361           | On the Job Training | Skill Enhancement, Employability, Entrepreneurship:<br>Developing a complete / partial project, working on different tools, developing small components | Industry Experience gained in the process of internship is enriching and students get prepared for real world tasks. | Industrial Internship    |

### Integration of Cross cutting Issues

| <b>Integration of Cross cutting Issues Class</b> | <b>Course Code</b>      | <b>Cross Cutting Issues</b>  |
|--|-------------------------|--|
| TYBSc<br>Information Technology<br>Major         | RJFPIT351<br>RJOJTIT361 | Quality Education,<br>Industry, Innovation and<br>Infrastructure, Reduced<br>inequality, Decent work<br>and economic growth<br>UNSDG 4, 9,10 |