

UNIVERSITY OF MUMBAI



Syllabus for M.sc. Part I
Program: M.Sc.
Subject: Information Technology

(Credit Based Semester and Grading System with
effect from Academic Year 2019-2020)

Preamble

This is the first year (part I) curriculum in the subject of Information Technology. The revised structure is designed to transform students into technically competent, socially responsible and ethical Computer Science professionals. In these Semesters we have made the advancements in the subject based on the previous Semesters Knowledge.

In the first year is important to develop the intelligence regarding to various industry trends. Second year of this course making basics strong related to specialized industry and automation trends in wide diversification in technology.

The proposed curriculum contains two semesters; each Semester contains Ability to apply the knowledge of Information Technology with recent trends aligned with research and industry. Making students capable to apply IT in the field of Computational Research, Soft Computing, Big Data Analytics, Data Science, Image Processing, Artificial Intelligence, Networking and Cloud Computing. Making students aware about socially acceptable technical solutions in the domains of Information Security, Machine Learning, Internet of Things and Embedded System, Infrastructure Services as specializations.

Proposed Curriculum contains challenging and varied subjects aligned with the current trend with the application of knowledge of Intellectual Property Rights, Cyber Laws and Cyber Forensics and various standards in interest of National Security and Integrity along with IT Industry, write effective project reports, research publications and content development and to work in multidisciplinary environment in the context of changing technologies.

In essence, the objective of this syllabus is to create a pool of technologically savvy, theoretically strong, innovatively skilled and ethically responsible generation of computer science professionals. Hope that the teacher and student community of University of Mumbai will accept and appreciate the efforts.

M.Sc. PART I
(Semester I and II)
Information Technology Syllabus
Credit Based Semester and Grading System
To be implemented from the Academic year 2019-2020

| SEMESTER I | | | |
|-------------------|-------------------------------------|----------------|-----------------|
| Course | TOPICS | Credits | L / Week |
| PSIT101 | Research in Computing | 4 | 4 |
| PSIT102 | Data Science | 4 | 4 |
| PSIT103 | Cloud Computing | 4 | 4 |
| PSIT104 | Soft Computing Techniques | 4 | 4 |
| | Practical | | |
| PSIT1P1 | Research in Computing Practical | 2 | 4 |
| PSIT1P2 | Data Science Practical | 2 | 4 |
| PSIT1P3 | Cloud Computing Practical | 2 | 4 |
| PSIT1P4 | Soft Computing Techniques Practical | 2 | 4 |

| SEMESTER II | | | |
|--------------------|--------------------------------------|----------------|-----------------|
| Course | TOPICS | Credits | L / Week |
| PSIT201 | Big Data Analytics | 4 | 4 |
| PSIT202 | Modern Networking | 4 | 4 |
| PSIT203 | Microservices Architecture | 4 | 4 |
| PSIT204 | Image Processing | 4 | 4 |
| | Practical | | |
| PSIT2P1 | Big Data Analytics Practical | 2 | 4 |
| PSIT2P2 | Modern Networking Practical | 2 | 4 |
| PSIT2P3 | Microservices Architecture Practical | 2 | 4 |
| PSIT2P4 | Image Processing Practical | 2 | 4 |

Suggested List of Practical- SEMESTER II

| | | |
|---|---|--|
| Course: PSIT2P2 | (Credits : 02 Lectures/Week: 04) | |
| PSIT2P2: Modern Networking Practical | | |
| <i>Practical shall be implemented in GNS3/EVE-Ng network Emulator/MININET</i> | | |
| No. | Name of the Practical | |
| 1 | Configure IP SLA Tracking and Path Control Topology | |
| 2 | Using the AS_PATH Attribute | |
| 3 | Configuring IBGP and EBGP Sessions, Local Preference, and MED | |
| 4 | Secure the Management Plane | |
| 5 | Configure and Verify Path Control Using PBR | |
| 6 | IP Service Level Agreements and Remote SPAN in a Campus Environment | |
| 7 | Inter-VLAN Routing | |
| 8 | Simulating MPLS environment | |
| 9 | Simulating VRF. | |
| 10 | Simulating SDN with <ul style="list-style-type: none"> • OpenDaylight SDN Controller with the Mininet Network Emulator • OFNet SDN network emulator | |
| 11 | Simulating OpenFlow Using MININET | |

Scheme of Examination

1. Theory:

I. Internal 30 Marks : (Any one of the following):

a. Written Test

OR

b. SWAYAM (Advanced Course) of minimum 20 hours and certification exam completed

OR

c. NPTEL (Advanced Course) of minimum 20 hours and certification exam completed

OR

d. Valid International Certifications (Prometric, Pearson, Certiport, Coursera, Udemy and the like)

e. One certification marks shall be awarded one course only. For four courses, the students will have to complete four certifications.

II. 10 marks:

The marks given out of 40 for publishing the research paper should be divided into four courses and should awarded out of 10 in each of the four courses.

10 marks from every course coming to a total of 40 marks, shall be awarded on publishing of research paper in UGC approved Journal with plagiarism less than 10%. The marks can be awarded as per the impact factor of the journal, quality of the paper, importance of the contents published, social value.

2. External Examination: 60 marks

As per university guideline.

3. Practical and Project Examination:

The Marking Scheme for each of the Elective is given below:

A Certified copy journal is essential to appear for the practical examination.

| | | |
|---|----------------------|----|
| 1 | Practical Question 1 | 20 |
| 2 | Practical Question 1 | 20 |
| 3 | Journal | 5 |
| 4 | Viva Voce | 5 |

OR

| | | |
|---|----------------------|----|
| 1 | Practical Question 1 | 40 |
| 2 | Journal | 5 |
| 3 | Viva Voce | 5 |
