Academic Council
Item No: _____

UNIVERSITY OF MUMBAI

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

(Credit Based Semester and Grading System with effect from Academic Year 2020-2021)

Preamble

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

In the second 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 II

(Semester III and IV)

Information Technology Syllabus
Credit Based Semester and Grading System
To be implemented from the Academic year 2020-2021

SEMESTER III			
Course	**TOPICS**	**Credits**	**L / Week**
PSIT301	Technical Writing and Entrepreneurship Development	4	4
PSIT302c	Cloud Application Development	4	4
PSIT303a	Machine Learning	4	4
PSIT304d	Offensive Security	4	4
	Practical		
PSIT3P1	Project Documentation and Viva	2	4
PSIT3P2c	Cloud Application Development Practical	2	4
PSIT3P3a	Machine Learning Practical	2	4
PSIT3P4d	Offensive Security Practical	2	4

SEMESTER IV			
Course	**TOPICS**	**Credits**	**L / Week**
PSIT401	Blockchain	4	4
PSIT402d	Cyber Forensics	4	4
PSIT403a	Deep Learning	4	4
PSIT404d	Information Security Auditing	4	4
	Practical		
PSIT4P1	Blockchain Practical	2	4
PSIT4P2d	Cyber Forensics Practical	2	4
PSIT4P3a	Deep Learning Practical	2	4
PSIT4P4	Project Implementation and Viva	2	4

Suggested List of Practical- SEMESTER III

Course: **PSIT3P2c**	**(Credits : 02 Lectures/Week: 04)**	

PSIT3P2c: Cloud Application Development Practical

Practical shall be implemented in .NET framework

No.	Name of the Practical
1	Develop an ASP.NET Core MVC based Stateless Web App.
2	Develop a Spring Boot API.
3	Create an ASP.NET Core Web API and configure monitoring.
4	A. Create an Azure Kubernetes Service Cluster
	B. Enable Azure Dev Spaces on an AKS Cluster
	C. Configure Visual Studio to Work with an Azure Kubernetes Service Cluster
	D. Configure Visual Studio Code to Work with an Azure Kubernetes Service Cluster
	E. Deploy Application on AKS i. Core Web API ii. Node.js API
5	Create an AKS cluster: a. from the portal b. with Azure CLI
6	Create an Application Gateway Using Ocelot and Securing APIs with Azure AD.
7	Create a database design for Microservices an application using the database.
8	A. Create an API management service
	B. Create an API gateway service
9	Demonstrate: A. Securing APIs with Azure Active Directory.
	B. Issuing a custom JWT token using a symmetric signing key
	C. Pre-Authentication in Azure API Management
	D. AWS API Gateway Authorizer
10	Create a serverless API using Azure functions
11	Create an AWS Lambda function
12	Build AWS Lambda with AWS API gateway

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

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