PARUL UNIVERSITY
FACULTY OF IT & COMPUTER SCIENCE
DEPARTMENT OF MCA

STUDENT INFORMATION HANDBOOK

MASTER OF COMPUTER APPLICATIONS

SEMESTER 3/5/9 (PU)

2021-22

Important Links:

https://www.paruluniversity.ac.in/
https://ums.paruluniversity.ac.in/AdminPanel/Default.aspx

P.O. LIMDA, TA. WAGHODIA, DIST VADODARA
PH. 02668-260300,260344

Department of MCA

Advancements in Information & Communication Technologies (ICT) has emerged in extensive usage of computer applications in nearly all domains of society. In modern era, computer applications are prevalent and largely demanded in several areas of society including Management Information Systems, Medical Science, Social Networks, Business Applications, Mobile Applications, Financial & Banking Applications, Educational Software, Decision Support Systems, Scientific Applications and Commercial Applications.

Looking to the enormous demand of computer application professionals in diversified areas of society, Parul University offers the Master of Computer Application (MCA) programme under Faculty of IT & Computer Science. The Department of MCA offers two flavors of MCA programme: 3-yrs (Regular) MCA and 2-yrs (Lateral) MCA.

The Department of Master of Computer Application at Parul University emphasizes on building professionals in the domain of computer applications by providing necessary environment by means of facilitating suitable blend of technical and non-technical learning experience. **The department cultivates students in various curricular, co-curricular and extra-curricular activities in order to produce future system analysts, system designers, system programmers, application programmers, testing professionals, system managers, project managers, researchers and other leading positions in systems/IT department.**

The department offers various subjects from diversified technical/non-technical areas such as – core IT domain, management, communication skills, mathematics & logic building and rich pool of elective subjects.

By means of active collaboration with eminent academicians and industry-professionals, the Department emphasizes on continuous improvements in course curriculum, teaching-learning practices and evaluation methods. The department of MCA also emphasizes on offering diversified additional courses related to carrier development, communication skills improvement, skill development courses, vocational courses and entrepreneurship for overall development of student.

The department of MCA focuses on project-based learning, and hence students are motivated to work on tiny hands-on projects in practical oriented subjects to get better exposure. Moreover, throughout their MCA studies, students are required to work on around 3 mini/major projects in individual/team to get enough confidence on software-development and thereby become industry-ready.

Vision

To contribute towards generating resources and means for the betterment of humanity through quality educational services, active participation in community services and establishment of institutions to sensitize all stakeholders towards "Inclusive India, Progressive India."

Mission

To build diligent, ethical and competitive IT professionals by imparting conceptual knowledge and experimental skills to deliver ICT based solutions to the society.

Program Outcomes:

No.	Program Outcomes
PO1	an ability to apply knowledge of foundations of mathematics and computer science for solving computational problems.
PO2	an ability to identify, analyze, design and propose secure and safe ICT applications.
PO3	an ability to identify problems and develop relevant ICT solutions considering safety and security constraints.
PO4	an ability to test, validate and deploy ICT applications.
PO5	an ability to apply skills to establish themselves as an asset for the organization by their managerial, interpersonal, communication and intrapreneurial abilities and ethical practices.
PO6	an ability to communicate effectively.
PO7	an ability to collect, interpret, analyze and represent data; and develop statistical solutions.
PO8	an ability to cultivate life-long learning, goal setting, positive attitude and societal responsibility.

Academic Calendar-2021-22 ODD

PARUL UNIVERSITY
FACULTY OF IT & COMPUTER SCIENCE
DEPARTMENT OF MCA
Academic Calendar 2021-22 (ODD)

Mon	Tue	Wed	Thu	Fri	Sat	Sun	Week
31-May	01-Jun	2	3	4	5	6	1
7	8	9	10	11	12	13	2
14	15	16	17	18	19	20	3
21	22	23	24	25	26	27	4
28 - CT	29	30	01-Jul	2	3	4	5
5 - CT	6	7	8	9	10	11	6
12 - CT	13	14	15	16	17	18	7
19 - CT	20	21	22	23	24	25	8
26 - CT	27	28	29	30	31	01-Aug	9
2	3	4	5	6	7	8	10
9	10	11	12	13	14	15	11
16 - CT	17	18	19	20	21	22	12
23 - CT	24	25	26	27	28 - CT	29	13
30	01-Sep	2	3	4	5	6	14
7	8	9	10	11		27	15

Exam	Start	End	Result
Mid Term Exam	02-08-2021	07-08-2021	23-08-2021
Remedial Exam	26-07-2021	30-07-2021	09-08-2021
End Semester Exam (Theory)	04-10-2021	16-10-2021	-
End Semester Exam (Practical)	20-09-2021	01-10-2021	-
Supplementary Exam (Theory)	17-10-2021	22-10-2021	-
Supplementary Exam (Practical)	04-10-2021	16-10-2021	-
Assignment Submission (Current Sem	16-08-2021	-	-
Assignment Submission (Previous Se	05-07-2021	-	-

Semester	Commencement Date
3 / 5 / 7 / 9	31-05-2021

Holidays	Colour Indicators
15-08-2021 - Independence Day	Orientation Day
22-08-2021 - Rakshabandhan	Mid Term Exam
30-08-2021 - Janmashtami	Term End
10-09-2021 - Ganesh Chaturthi	Remedial Examination
02-10-2021 - Gandhi Jayanti	Term Work Submission

Events/Activities		Workshops/Seminars
1) Kavyotsav3	3 Jun 21	1)Asp.net (MVC)DR -15,16 Jun21
2) Yoga/Singing	10 Jun 21	2)PHP(Laravel)SGP - 22,23 Jun 21
3) PHP/ASP/Android Competition	17 Jun 21	3)CareerGuidance Seminar-6Jul21
4)Idea Pitching-EDC	02-Sep-21	4)Research Wkshop-Sep last week
5) Poster Making Competition	01-Jul-21	5) Workshop1: 30Jun21
6)C/C++/Python Prog Competition	08-Jul-21	6) Workshop2: 07 Jul 21
7)Essay Competition	15-Jul-21	7) Workshop3: 14 Jul 21
8)Mock Interview	22-Jul-21	8) Workshop4 -21 Jul 21
9) Mock Conference 3	24 Jun 21	
10) The Screen Writer	26-Sep-21	
11) Social Activity(Total 2 Activities) - Every Saturday		
Parent Teacher Meet : 17-07-2021		

Diwali Vacation
(01-11-2021 to 20-11-2021)

Commencement of Next Semester: 18-10-2021

Expert Talk	
1) MAD	1st Week of July
2) WAD	2nd Week of July
3) OSTF	3rd Week of July
4) WAMC/ANNS	4th Week of July

Prepared By	Approved By
Prof. Vivek Dave	Head-MCA & Director-MCA

Commencement Date: 31-May-2021
Note: Placement Training from: 01-June-2021 to 15-June-2021
Two Days ASP .NET Workshop on 16th & 17th June, 2021

MCA3-M.Sc. IT3-MCA5-IMCA9 Regular Batch Time Table (ONLINE)

Parul University - FITCS - PIET-MCA						QUALITY RECORDS
At & Po Limda, Ta Waghodia, Dt. Vadodara				QR-751-3.1		CLASS TIME
ONLINE CLASS TIME TABLE						
DEPT:	MCA, MSc IT & IMCA	CLASS: M.C.A. & MSc. IT SEM - 3 and IMCA SEM - 7 & 9				
ACA YR:	2020-21	DIV - 1 & 2				
TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
9:30 - 10:30	Class Test	WMC - ARM ANNS - AR	MAD - KS	MAD - KS (D1) WAD - KG (D2)	OSTF - VD (D1) MAD - KS (D2)	WMC - ARM ANNS - AR
10:30 - 11:30	WAD - KG (D1)	OSTF - VD	WAD - KG			OSTF - VD
Recess						
12:15 - 1:15	WAD - KG	MAD - KS (D1) WAD - KG (D2)	ES - BB	OSTF - VD	MAD - KS	WAD - KG (D1) MAD - KS (D2)
1:15 - 2:15	WMC - ARM ANNS - AR		MP - VD (D2)	WAD - KG	WAD - KG	
Recess						
2:30 - 3:30	MAD - KS (D1) OSTF - VD (D2)	MP - KG (D1) MAD - KS (D2)	WAD - KG (D1) OSTF - VD (D2)	MAD - KS	WMC - ARM ANNS - AR	Practical Exam / Placement
3:30 - 4:30	MAD - KS (D1) WAD - KG (D2)	OSTF - VD (D1) MAD - KS (D2)		Seminar(Sem - 2) / Placement	ES - Face	
QR-751-3.1 CLASS TIME TABLE, Rev No.: 01					Page No.: 01 of 01	

Faculties				Subjects	
VD	Prof. Vivek Dave	AR	Prof. Arpan Raval	MAD	Mobile Application Development
KG	Prof. Kaushal Gor	ARM	Prof. Abhishek Mehta	WAD	Web Application Development
BB	Prof. Bindi Bhatt	KS	Dr. Kamini Solanki	OSTF	Open Source Tools & Frameworks
				WMC	Wireless & Mobile Communication
				ANNS	Advance Network & Network Security
				ES	Employability Skills
				MP	Minor Project

Approved By: Head-MCA & Director - MCA

Note: Placement and Seminar Session shall be on Alternative Thursday. Placement Session shall also be on Alternative Saturday.

Schedule only for Work Integrated MCA3-M.Sc. IT3 Batch (ONLINE)

On Saturday	
Time	**Subject**
9:30 - 10:30	Web Application Development (KG)
10:30 - 11:30	Mobile Apps Development (KS)
12:15 - 1:15	Open Source Tools & Framework (VD)
1:15 - 2:15	Wireless & Mobile Communication (ARM)
2:30 - 3:30	Employability Skills
3:30 - 4:30	Minor Project (VD)
On Sunday	
Time	**Subject**
9:30 - 10:30	Mobile Apps Development (KS)
10:30 - 11:30	Web Application Development (KG)
12:15 - 1:15	Open Source Tools & Framework (VD)
1:15 - 2:15	Wireless & Mobile Communication (ARM)
2:30 - 3:30	Employability Skills

MCA SEM-5 (PU) Teaching Scheme

Subject Code	Subject	Teaching Scheme (Hrs/Week)				Examination Scheme External		Internal			Total
		L	T	P	C	T	P	T	C.E.	P	
05201301	Mobile Apps Development	3	0	6	6	60	30	20	20	20	150
05201302	Web Application Development	4	0	4	6	60	30	20	20	20	150
	Elective-II	3	0	2	4	60	30	20	20	20	150
	Elective-III	3	1	0	4	60	0	20	20	0	100
05293302	Employability Skills	2	0	0	2	0	0	0	100	0	100
05201303	Minor Project	0	0	2	1	0	60	0	20	20	100
	Total	**15**	**1**	**14**	**23**	**300**	**150**	**100**	**120**	**80**	**750**

	Elective-II
05201331	Big Data and Analytics
05201332	Cloud Computing
05201333	Open Source Tools and Frameworks
05201334	Data Warehousing and Mining
05201335	System Software

	Elective-III
05201336	Business Intelligence
05201337	Agile Software Development
05201338	Wireless and Mobile Communications
05201339	Software Testing and Quality Assurance
05201340	Advanced Network and Network Security

Important Links related to Subjects of Current Term

Subject	Name of Faculty	Link of Google A-Z Site of your Subject:	Link of Google Classroom of your Subject:	Google Classroom CODE:	Link for Online Session:
05201301 – MAD	Dr. Kamini Solanki	https://sites.google.com/a/paruluniversity.ac.in/mad_pu_mca_2016/home/academic-docs/2009-10-odd/course-coordinator	https://classroom.google.com/u/0/c/MzQ4MzUwNzgyNjE3	ajtrkte	https://meet.google.com/lookup/fwzwrkd4zl
05201302 - WAD	Prof. Kaushal Gor	https://sites.google.com/paruluniversity.ac.in/ wad-kg	https://classroom.google.com/u/0/c/MzUxNjA1NjkyOTk2	ebvcikk	https://meet.google.com/exu-tbaf-zxb
05201333 - OSTF	Prof. Vivek Dave	https://sites.google.com/paruluniversity.ac.in/ostf/mca-semester-5-open-source-tools-frameworks	https://classroom.google.com/c/Njk3MzY5OTgxN1pa	2pcbzln	https://meet.google.com/pce-cttw-vye
05201338 – WAMC	Prof. Abhishek Mehta	https://sites.google.com/paruluniversity.ac.in/wacm/wireless-and-mobile-communications?authuser=0	https://classroom.google.com/c/MzQ4NjY3MDA1NTYw?cjc=2fyjl5v	2fyjl5v	https://meet.google.com/bbu-uedh-qbb
05201340 - ANNS	Prof. Arpankumar G Raval	https://sites.google.com/paruluniversity.ac.in/anns-05201340-mca-21-22/home	https://classroom.google.com/c/MzUxNjE0NTI3ODU0?cjc=pzkg63d	pzkg63d	https://meet.google.com/ezk-uuis-sjs
05293302 - ES	Prof. Bindi Bhatt	NA	https://classroom.google.com/c/MzYwMzkwMTYyNDQz?cjc=iay2tih	iay2tih	https://meet.google.com/waz-dpab-ubb

ASSIGNMENT/LAB MANUAL SUBMISSION SCHEDULE A.Y. 2021-22 (ODD TERM)				
SUBJECT	**Assignment-1 (TH/PR)**	**Assignment-2 (TH/PR)**	**Assignment-3 (TH/PR)**	**Assignment-4 (TH/PR)**
MAD	05.07.2021	19.08.2019	16.09.2019	14.10.2019
WAD	06.07.2021	20.08.2019	17.09.2019	15.10.2019
OSTF	07.07.2021	21.08.2019	18.09.2019	16.10.2019
WAMC / ANNS	08.07.2021	22.08.2019	19.09.2019	17.10.2019
Final Term Submission on 16/08/2021				

WEEKLY CLASS TEST SCHEDULE A.Y. 2021-22 [ODD]	
Date	**Semester-5**
28.06.2021	05201301 - Mobile Application Development
05.07.2021	05201302 - Web Application Development
12.07.2021	05201333 - Open Source Tools and Frameworks
19.07.2021	05201338 – Wireless and Mobile Communication / 05201340 – Advanced Networking and Network Security
26.07.2021	05201301 - Mobile Application Development
16.08.2021	05201302 - Web Application Development
23.08.2021	05201333 - Open Source Tools and Frameworks
30.08.2021	05201338 – Wireless and Mobile Communication / 05201340 – Advanced Networking and Network Security

Mid Theory Exam Time Table ODD Term A.Y. 2021-22		
Date	**Time**	**Semster-5**
02.08.2021 Monday	09.30 AM to 11:00 AM	05201301 Mobile Apps Development
03.08.2021 Tuesday	09.30 AM to 11:00 AM	05201302 Web Appl. Development
04.08.2021 Wednesday	09.30 AM to 11:00 AM	05201333 Open Source Tools & Frameworks
05.08.2021 Thursday	09.30 AM to 11:00 AM	05201338 – Wireless and Mobile Communication / 05201340 – Advanced Networking and Network Security

Mid Practical Exam Time Table ODD Term A.Y. 2021-22		
Date	**Time**	**Semster-5**
02.08.2021 Monday	12.30 PM Onward	05201301 Mobile Apps Development
03.08.2021 Tuesday	12.30 PM Onward	05201302 Web Appl. Development
04.08.2021 Wednesday	12.30 PM Onward	05201333 Open Source Tools & Frameworks
05.08.2021 Thursday	09.30 AM Onward	05201303 Minor Project Viva
06.08.2021 Friday	09.30 AM Onward	05201303 Minor Project Viva

Schedule for Monthly Mock Competitive Exam at PIET-MCA & PICA [A.Y 2021-22]					
Faculty of IT & Computer Science, Parul University					
Sr. No	**Date**	**Day**	**Time**	**Mock Exam Type**	**Candidates**
1	22-Jul-21	Thursday	3:30-4:30 pm	CMAT/AMCAT	UG & PG Students of FITCS
2	26-Aug-21	Thursday	3:30-4:30 pm	CMAT/AMCAT	UG & PG Students of FITCS
3	23-Sep-21	Thursday	3:30-4:30 pm	CMAT/AMCAT	UG & PG Students of FITCS
4	21-Oct-21	Thursday	3:30-4:30 pm	CMAT/AMCAT	UG & PG Students of FITCS
5	25-Nov-21	Thursday	3:30-4:30 pm	CMAT/AMCAT	UG & PG Students of FITCS
6	23-Dec-21	Thursday	3:30-4:30 pm	CMAT/AMCAT	UG & PG Students of FITCS
7	20-Jan-22	Thursday	3:30-4:30 pm	CMAT/AMCAT	UG & PG Students of FITCS
8	17-Feb-22	Thursday	3:30-4:30 pm	CMAT/AMCAT	UG & PG Students of FITCS
9	24-Mar-22	Thursday	3:30-4:30 pm	CMAT/AMCAT	UG & PG Students of FITCS
10	19-May-22	Thursday	3:30-4:30 pm	CMAT/AMCAT	UG & PG Students of FITCS

WEEKLY Practical-Viva-Voce schedule for MCA/M.Sc. IT/IMCA Students of 2021-22 ODD Term					
	Date	**Subject Code**	**Subject Name**	**Candidates**	**Time**
1	19.06.2021	05201301	Mobile Apps Development	MCA-001 to MCA-072	02:30 pm - 04:30 pm
2	26.06.2021	05201302	Mobile Apps Development	MCA-073 to MCA-083, MScIT001 - MScIT010, MCA-5 & IMCA-9	02:30 pm - 03:30 pm
3	03.07.2021	05201302	Web Application Development	MCA-001 to MCA-072	02:30 pm - 04:30 pm
4	10.07.2021	05201302	Web Application Development	MCA-073 to MCA-083, MScIT001 - MScIT010, MCA-5 & IMCA-9	02:30 pm - 03:30 pm
5	17.07.2021	05201333	Open Source Tools and Frameworks	MCA-001 to MCA-072	02:30 pm - 04:30 pm
6	24.07.2021	05201302	Open Source Tools and Frameworks	MCA-073 to MCA-083, MScIT001 - MScIT010, MCA-5 & IMCA-9	02:30 pm - 03:30 pm
7	14.08.2021	05201301	Mobile Apps Development	MCA-001 to MCA-072	02:30 pm - 04:30 pm
8	21.08.2021	05201302	Mobile Apps Development	MCA-073 to MCA-083, MScIT001 - MScIT010, MCA-5 & IMCA-9	02:30 pm - 03:30 pm
Note: All Candidates will be given 5 minutes. All Students must join one after another and not at once.					

Syllabus
PARUL UNIVERSITY
Faculty of IT & Computer Science
MCA / M.Sc. IT / IMCA
SEMESTER – III / V /

Subject Code: 05201301 (For MCA & M.Sc. IT) / 05301501 (For IMCA)
Subject Name: Mobile Apps Development

Prerequisite: Exposure to java and basic RDBMS.

Rationale: To provide awareness of the mobile application development using android.

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Getting started with Mobility**: Mobility landscape, Mobile platforms, Mobile apps development, Overview of Android platform, Architecture for Mobile Computing - 3- tier architecture, Design considerations for mobile computing, Setting up the mobile app development environment along with an emulator, Case study - Mobile app development.	20%	10
2	**Building blocks of Mobile apps**: App user interface designing - mobile UI resources (layout, UI elements, drawable, menu), Activity - states and life cycle, interaction amongst activities, App functionality beyond user interface - threads, async task, Services - states and life cycle, Notifications, Broadcast receivers, Telephony and SMS APIs, Native data handling - on device file I/O, Shared preferences, Mobile databases such as SQLite and enterprise data access (via Internet/Intranet).	25%	12
3	**Sprucing up Mobile apps**: Graphics and animation - custom views, canvas, animation APIs, multimedia- audio/video playback and record, Location awareness and native hardware access (sensors such as accelerometer and gyroscope).	25%	10
4	**Testing Mobile apps**: Debugging mobile apps, White box testing, Black box testing and test automation of mobile apps, JUnit for Android, Robotium, MonkeyTalk.	15%	7
5	**Taking apps to Market and Wireless Languages**: Versioning, signing and packaging mobile apps, distributing apps on mobile market place, Wireless Languages - markup languages, HDML, WML, HTML, cHTML, XHTML, VoiceXML.	15%	7

Reference Books:

1. Android Application Development All in one for Dummies Barry Burd
2. Teach Yourself Android Application Development In 24 Hours Sams teach yourself; 3rd
3. Mobile Apps Development Anubhav Pradhan, Anil V Deshpande
4. Android Wireless Application Development Lauren Darcey and Shane Conder; Pearson Education; 2nd

5. Professional Android 2 Application Development Reto Meier; Wiley India Pvt Ltd

Subject Code: 05201302 (For MCA&M.Sc. IT) / 05301502 (For IMCA)
Subject Name: Web Application Development

Prerequisite: Fundamental knowledge of Object oriented programming, DBMS and HTML.

Rationale: To provide basic understanding of .NET framework and knowledge of developing dynamic and rich web application in conjunction with event handling, state management and data access.

Contents:

Sr.	Topic	Weightag	Teaching Hrs.
1	**Introduction**: ASP.NET framework, The origin of .NET technology, Common Language Runtime (CLR), Common Type System (CTS), Common Language Specification (CLS), Microsoft Intermediate Language (MSIL), Just - in time compiler, Framework base classes.	10%	6
2	**ASP.NET Controls, UI Design & Coding**: **ASP.NET server controls:** Controls - buttons, textboxes, labels, checkboxes, radio buttons, list controls and other web server controls, web.config and global.asax files. **Programming ASP.NET web pages:** Web page, Data types and variables, Statements, Organizing code, Object oriented basics of C#.	25%	12
3	**ASP.NET Validation Controls, State Management & Navigation**: **Validation Control:** Controls, Basic validation controls, Validation techniques, Using advanced validation controls. **State Management:** Using view state, Using session state, Using application state, Using cookies and URL encoding. **Master Pages:** Creating master pages, Content pages, nesting master pages, Accessing master page controls from a content page. **Navigation:** Site navigation, Using site navigation controls.	25%	14
4	**Data Access through ADO.NET**: Basic features of ADO.NET, Using SQL data sources, Grid view control, Detail view control, Form view control, List view and other controls, Using object data sources.	20%	10
5	**Advanced ASP.NET**: AJAX extension, LINQ, Stored procedure, Working with XML data. **ASP.NET MVC:** Overview of Model-View-Controller, Model-View-Controller and ASP.NET, Routes and URLs, Controllers, Views.	20%	12

Reference Books:

1. Professional ASP.Net
   Bill Evjen, Scott Hanselman, Devin Rader; Wrox Publication
2. ASP.NET 4 Unleashed
   Stephen Walther, Kevin Hoffman, Nate Dudek; Sams Publication
3. NET 4.0 Programming Black Book

Subject Code: 05201303 (For MCA&M.Sc. IT) / 05301503 (For IMCA)
Subject Name: Minor Project

Prerequisite: Knowledge of Software Engineering, DBMS, programming language/tool.

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Guidelines**: Student will be assigned one or more Information Technology (IT) system development projects. The IT project development involves part or all phases of System Development Life Cycle (SDLC), thus providing student with experience of analyzing, designing, testing, implementing and evaluating information systems. The domain area of the project should be related to the current or future status of IT and computer applications. Major components of the project should include identification of the system, deciding the aims & objectives to be achieved and modules to be studied. It also includes	100%	

Elective - II
Subject Code: 05201333 (For MCA&M.Sc. IT) / 05301533 (For IMCA)
Subject Name: Open Source Tools and Frameworks

Prerequisite: Fundamental concepts of object oriented programming.

Rationale: To develop proficiency in creating applications using python programming language & Django framework, Joomla.

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction**: History, features and basic elements of python, Branching programs, Strings and Input, Iteration.	5%	4
2	**Functions, Scoping and Abstraction**: Functions, Scope, Recursion, Global variables, Modules, Files.	10%	4

3	**Lists, Tuple and Dictionaries**: Lists-introduction, accessing list, operations, working with lists, function and methods, lists and mutability, Tuple - introduction, accessing tuples, operations, working with lists, function and methods, Dictionaries - introduction, accessing values in dictionaries, working with dictionaries, properties, functions.	15%	6
4	**Exceptions and Assertions**: Handling exceptions, Exceptions as a control flow mechanism, Assertions.	10%	4
5	**Classes, OOPs Concepts and Regular Expressions**: Abstract Data Types and Classes, Inheritance, Encapsulation and information hiding. **Regular Expressions**: Matching and Searching, Modifiers, Patterns.	15%	6
6	**Database and Networking**: Introduction, Connections, Executing queries, Transactions, Handling error. **Networking**: Socket, Socket Module, Methods, Client and server, Internet modules.	15%	8
7	**Django Framework**: Introduction, Django and Python, Model, View and Template, Installing Django, Core files-models.py, urls.py, views.py, setting up database connection, Managing users and the Django admin tool, Django forms, Unit testing with Django.	15%	8
8	**Case study on Joomla**: Introduction, downloading, installing, administration, Organizing Contents-importing templates, configuring templates, adding dynamic contents to template, Page - create, edit, delete, Creation of sub- pages, Organizing media, Navigation - home page/default page of web site, More navigation controls with content types, Page cloning, Operations on multiple pages, Extension - downloading, installing and configuring.	15%	8

Reference Books:

1. Introduction to Computation and Programming Using Python John V Guttag
2. Joomla! A User's Guide Barrie M. North; Prentice Hall
3. Beginning Python: Using Python 2.6 and Python 3.1 James Payne
4. Lightweight Django Julia Elman and Mark Lavin; O'Reilly Media

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Elective - III
Subject Code: 05201338 (For MCA&M.Sc. IT) / 05301538 (For IMCA)

Subject Name: Wireless and Mobile Communications

Type of Course: IMCA, M.Sc. (IT), MCA

Prerequisite: Basics of computer networking.

Rationale: To provide a comprehensive overview and advanced knowledge of modern mobile and wireless communication systems, understanding on the challenges and opportunities brought by the wireless medium in designing current and future wireless communication systems and networks.

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction**: History of wireless communications, Wireless network architecture, Types of wireless communications, Propagation modes, Wireless communications - applications, security, concern, standards, benefits, future. Mobile communication – evolution, current scenario, fundamental techniques, Needs of mobile user, SOC and AOC client.	16%	8
2	**Mobile Technologies and Mobile IP**: Spread spectrum technology, Radio frequency identification, Wireless broadband, Bluetooth, WiMAX, Wi-Fi. **Mobile IP:** Introduction, Advertisement, Registration, TCP connections, Two level addressing, Abstract mobility management model, Performance issue, Routing in mobile host, Adhoc networks. **Mobile transport layer:** Indirect TCP, Snooping TCP, Mobile TCP, Time out freezing, Selective retransmission, Transaction oriented TCP ,IPv6	18%	10
3	**Global System for Mobile Communications (GSM) and Short Message Service (SMS)**: GSM architecture, Entities, Call routing in GSM, PLMN Interface, GSM addresses and identities, Network aspects in GSM, Mobility management, GSM frequency allocation, Introduction to SMS, SMS architecture, SM MT, SM MO, SMS as information bearer, Applications.	12%	6

4	**General Packet Radio Service (GPRS)**: GPRS and packet data network, GPRS network architecture, GPRS network operations, Data services in GPRS, Applications for GPRS, Billing and charging in GPRS.	14%	6
5	**Wireless Application Protocol (WAP), MMS, CDMA and 3G**: Evolution of wireless data and WAP,WAP-Layered architecture and protocol stack, WAP gateway, MMS - architecture, Transaction flows, Roaming, Device management, IS-95, Comparison of CDMA and GSM network, 3G network and comparison with other generation networks.	20%	9
6	**Wireless LAN and Voice over Internet Protocol (VoIP)**: WLAN- introduction, evolution, architecture, advantages, types, deploying and configuring of WLAN, VoIP - convergence,H.323 framework for VoIP, Session initiation protocol, Comparison between H.323 and SIP, Real time protocols, Convergence technologies, Call routing, Applications, Mobile VoIP.	20%	9

***Continuous Evaluation:**

Reference Books:

1. Mobile Computing (Textbook)
Asoke K Telukder, Roopa R Yavagal; TMH
2. The complete reference
J2ME James Keogh;
McGraw-Hill
3. Programming for Mobile and Remote Computers
G. T. Thampi; Dreamtech
4. Handbook of Wireless Networks and Mobile
Computing Ivan Stojmenovic; Wiley

Elective - III
Subject Code: 05201340 (For MCA&M.Sc. IT) / 05301540 (For IMCA)
Subject Name: Advanced Network and Network Security

Prerequisite: Data communications and networking.

Contents:

Sr.	Topic	Weightage	Teaching Hrs.

1	**High speed Networks and Ad-hoc Networks**: Introduction to high speed networks, Overview of Internet Protocol(IP), Frame relay, X.25, Asynchronous Transfer Mode (ATM), Congestion and traffic management - frame relay, ATM network, Ad-hoc Networks - introduction, mobility, routing in Mobile Ad-hoc Networks (MANET), Bluetooth, Wireless sensor networks, Internetworking design issues – tunnelling, routing, fragmentation.	15%	9
2	**Internet Addressing and IP**: Internet addressing, IPv4 - classful addressing scheme, dotted decimal notation, Subnet addressing, IP multicasting, IPv6 - addressing scheme, colon, hexadecimal, Address space assignment, Internet Control Message Protocol, Virtual Private Network and Network Address Translator.	15%	8
3	**Network Security Fundamentals**: Computer security concepts, Threats, Attacks, Security requirements, Scope of computer security, Cryptographic tools, The Open System Interconnection (OSI) Security architecture-Security services, Security mechanisms, A model for network security, Classical encryption techniques – symmetric, asymmetric.	20%	11
4	**Authentication and Access Control**: User authentication, Mechanisms of authentication - password based authentication, token based authentication, biometric authentication, remote user authentication, Access control - principles, subjects, objects and access rights, Message authentication codes, Message Digest Algorithm (MD5), Digital signatures and authentication protocols - digital signatures, authentication protocols, digital signature standards.	20%	9
5	**Web Security and IP Security**: Web security considerations, Secure Socket Layer and Transport Layer Security, Secure Shell, Encapsulating Security Payload, Combining Security Associations, IP Security.	15%	8
6	**Intrusion Detection and Firewalls**: Intruders, Intrusion detection, Password management, Need for firewalls, Firewall - characteristic and types, Firewall basing, Firewall location and configurations.	15%	5

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. High Speed Network and Internet- Performance and Quality of Service (TextBook) W. Stallings; PHI
2. Network Security Essentials: Applications and Standards

(TextBook) William Stallings; Pearson Education; Fourth Edition

3. Cryptography and Network Security Behrouz Forouzan; TMH Publication,2007
4. Information Systems Security Nina Godbole; Wiley Publication
5. Cryptography and Network Security William Stallings

Subject Code: 05293302 (For MCA&M.Sc. IT) / 05393502 (For IMCA)
Subject Name: Employability Skills

Prerequisite:
Rationale: Cracking GD & PI is imperative during campus placements

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/ Week	Lab Hrs/		T	P	T	CE	P	
0	2	-	2	-	-	-	100	-	100

Lect - Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Listening-Skill Building IL16-01W**:	5%	1
2	**Listening-Skill Building IL16-02W**:	5%	1
3	**Listening-Skill Building IL16-03W**:	5%	1
4	**Paragraph Completion**:	5%	1
	Paragraph Jumbles:	5%	1
6	**Reading Comprehension**:	5%	1
7	**Writing-Skill Building IW 16-01W**:	5%	1
8	**Writing-Skill Building IW 16-02**:	5%	1
9	**Writing-Skill Building IW 16-03W**:	3%	1
10	**Speaking-Skill Building IS 16-01W**:	5%	1

11	**Speaking-Skill Building IS 16-02W**:	5%	1
12	**Speaking-Skill Building IS 16-03W**:	5%	1
13	**GD Mock**:	5%	2
14	**PI Mock**:	5%	2
15	**Resume Writing and checking the resume**:	5%	2
16	**Debate Mock**:	5%	2
17	**Extempore Mock**:	5%	2
18	**Sentence Completion**:	5%	1
19	**Reading-Skill Building IS 16-01W**:	2%	1
20	**Extra Worksheet**:	5%	1
21	**Case Studies: Design Solutions, Focus on Value, Engage Deeply, Think in Enlightened Self-Interest, Practice Imaginative Sympathy, Demonstrate Trust Behavior**:	5%	5

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. How to Crack Group Discussion & Personal Interview M.B.Sivaramakrishnan
2. Word Power Made Easy Norman Lewis; Goyal Publishers

Contact Details of Faculties for Current Term

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