Scheme of Examination

and Syllabus

for

Master of Computer Applications

Batch 2018 – 2019 Onwards

SGT University, Gurgaon, Haryana

SGT University, Gurgaon, Haryana

Scheme of Master of Computer Applications for Batch 2018-2019onwards

							1		
Paper Code	Title	L	Т	Р	Total	Int.	Ext.	Total	Credits
13050101	Computer Organization and Architecture	3	1	-	4	40	60	100	4
13050102	Problem Solving and Programming with C	4	-	-	4	40	60	100	4
13050103	Computer and Internet Fundamentals	4	-	-	4	40	60	100	4
13050104	Discrete Structure	3	1	-	4	40	60	100	4
	Human Values & Ethics	4	-	-	4	40	60	100	4
	PRACTIC	AL							
13050106	Programming Lab using C			4	4	40	60	100	2
13050107	Web Development Lab using PHP	-	-	4	4	40	60	100	2
13050108	Personality Development and Communication Skills - I	-	-	2	2	40	60	100	1
	Total	18	2	10	30	320	480	800	25
	Master of Computer Applic	atior	is S	emes	ter – II				
Paper Code	Title		Т	Р	Total	Int.	Ext.	Total	Credits
13050201	Software Engineering	3	1	-	4	40	60	100	4
13050202	Relational Data Base Management Systems	4	-	-	4	40	60	100	4
13050203	Object Oriented Programming with C++	4	-	-	4	40	60	100	4
13050204	Data and File Structures	4	-	-	4	40	60	100	4
13050205	Computer Oriented Statistical and Numerical Methods	3	1	-	4	40	60	100	4
	PRACTIC	AL							
13050206	Data Base Systems Lab	-	-	2	2	40	60	100	1
13050207	Data & File Structure-Lab			4	4	40	60	100	2
13050208	Object Oriented Programming Lab	-	-	4	4	40	60	100	2
13050209	Colloquium	-	-	2	2	40	60	100	1
	Total	18	2	12	32	360	540	900	26

Master of Computer Applications Semester – I

Int: Internal, Ext: External

SGT University, Gurgaon, Haryana

Scheme of Master of Computer Applications for Batch 2018-2019 onwards

Master of Computer Applications Semester – III									
Paper Code	Title	L	Т	Р	Total	Int.	Ext.	Total	Credits
13050301	Operating System	4	-	-	4	40	60	100	4
13050302	Theory of Computation	3	1	-	4	40	60	100	4
13050303	Data Communication and Networks	4	-	-	4	40	60	100	4
13050304	Java Programming	3	1	-	4	40	60	100	4
13050305	Business Process Management and Intelligence			-	4	40	60	100	4
	PRACT	ICA	L			-			
	Communication Network Lab	-	-	4	4	40	60	100	2
13050307	Unix/ Linux Programming Lab	-	-	2	2	40	60	100	1
13050308	 Java Programming and Internet Applications Lab 		-	4	4	40	60	100	2
13050309	Colloquium	-	-	2	2	40	60	100	1
	Total	18	2	12	32	360	540	900	26
	Master of Computer Applications Semester – IV								
Paper Code	Title	L	Т	Р	Total	Int.	Ext.	Total	Credits
13050401	Cloud Computing	4	-	-	4	40	60	100	4
13050402	Computer Graphics and Multimedia	3	1	-	4	40	60	100	4
13050403	Analysis & Design of Algorithms	3	1	-	4	40	60	100	4
13050404	Data Warehousing and Data Mining	4	-	-	4	40	60	100	4
13050405	Artificial Intelligence and Expert Systems	4	-	-	4	40	60	100	4
	PRACT	ICA	L						
13050406	Artificial Intelligence Lab	-	-	4	4	40	60	100	2
13050407	Computer Graphics Lab	-	-	4	4	40	60	100	2
13050408	Seminar	-	-	2	2	40	60	100	1
	Total	18	2	10	30	320	480	800	25

Int: Internal, Ext: External

SGT University, Gurgaon, Haryana Scheme of Master of Computer Applications for Batch 2018 2010									
Schel	Master of Comput	er Ap	vhh blica	ation	s Semes	$\frac{101^{\circ} f}{\text{ter} - 1}$		1 2010	-2017
Paper Code	Title	L	T	Р	Total	Int.	Ext.	Total	Credits
13050501	Advanced Web Technologies	4	-	-	4	40	60	100	4
13050502	Software Project Management	4	-	-	4	40	60	100	4
	Elective – I	3	1	-	4	40	60	100	4
	Elective – II (From Pool 2 / Pool 3)	3	1	-	4	40	60	100	4
	Elective – III (From Pool 4 / Pool 5)		1	-	4	40	60	100	4
13050523	Web Technologies Lab		-	4	4	40	60	100	2
13050524	Minor Project		-	6	6	40	60	100	3
13050525	Seminar	-	-	2	2	40	60	100	1
	Total	17	3	12	32	320	480	800	26
]	Int: Internal, Ext: External								
	Elective Pool – I								
	Information Retrieval System								
	Enterprise Re	Enterprise Resource Planning							
	System Netw	orking	g & 1	Admi	inistratio	n			
	Organization	al Beh	avio	ur					
	Elective Pool – II								
	Management	Inform	natio	on Sy	vstem				
	Enterprise Co	omputi	ng i	n Jav	a				
	Digital Signa	l Proce	essir	ıg					
	Advanced Da	itabase	e Ma	nage	ment Sy	stems			
	Elective Pool–III								
	Mobile Comp	outing	• •		•				
	Advanced Co	mpute	er Ne	etwoi	KS	1.5	4 1		
	Distributed L	BMS	and	Obje	ct Orien	ted Da	itabase	S	
	Microprocess	or and	i inte	errac	ing				
	Elective Pool– IV								
	Operation Re	search	1 01	ia a~	d Doci ar				
	Software Ou	ality A	arys	is an	u Design	L			
	Software Tes	ting	55UI	ance					
	Floctive Deel V	ung							
	Distributed C	nerati	ոցՉ	Vetor	ns				
	Advanced Co	mnute	ng S er At	<u>yster</u> chite	ns ecture an	d Para	llel		
	Processing	mput	11	CIIIC		uiu			
	Compiler Des	sign							
	Embedded S	ystem							

SGT University, Gurgaon, Haryana									
Scheme of Master of Computer Applications for Batch 2018-2019									
Master of Computer Applications Semester – VI									
Paper Code	Title	L	Т	Р	Total	Int.	Ext.	Total	Credits
13050601	Dissertation / Thesis	-	-	-	-	100	100	200	10
13050602	Project Seminar	-	-	-	_	40	60	100	5
	Total	-	-	-	_	140	160	300	15

Int: Internal, Ext: External

Note: The student will submit a synopsis for approval from the departmental committee in a specified format. The student will have to present the progress of the work through seminars and progress reports.

Semester V

MCA

1. Name of the Department- Computer Science & Engineering								
2. Course Name	Advanced Web	L	Т		P			
	Technology							
3. Course Code		3	0		0			
4. Type of Course (r	lse tick mark)		ΡΕΟ		OE ()			
					020			
5 Pro-requisite (if	Computer	6 Frequency (use	Even	Odd	Fither	Every		
anv)	Eundomontols	tick marks)	Lven	Ouu	Som ()	Som ()		
ully)	Fundamentais			(•	Sem ()	Selli ()		
7 Total Number of	Lasturas Tutorials	Draatical (accuming 1	2 woolco	of one co	mostor)			
7.1000000000000000000000000000000000000	Lectures, rutorials	Tutorials – 0	2 weeks Practic	<u>oi one se</u> al – 0	mester)			
Lectures = 50			Tache	ai – 0				
8. Course Description	n							
To help the students to	To help the students to understand the concept of HTML, CSS, Java script, PHP and MYSQL.							
9. Learning objectiv	es:							
Upon successful com	pletion of the cours	se in this discipline the	student	will be a	able to de	evelop a		
complete dynamic web	osite with data base	as backend.				_		
• To learn fundar	mental language of 1	internet i.e. HTML and c	cascading	style she	eets.			
• To learn basics	of client side JavaS	cript and server side pro	grammin	g constru	icts.			
• To design mult	imedia pages over v	veb.						
10. Course Outcomes	(COs):							
• How to design	and develop a dynamic	mic website.						
Basic knowled	ge of web services v	which are useful for the s	ame.					
 Acquainted with 	th the difference bet	ween client side and serv	ver side s	cripting.				
Import multime	edia pages over web							
11 Unit wise detailed	content							
Unit-1	Number of							
	lectures $= 10$							

HTML :- Basics of HTML, formatting and fonts, hyperlink, tables, images, forms, XHTML, Meta tags, Browser architecture and Web site structure. Overview and features of HTML5.

Style Sheets: Introduction to CSS, Need for CSS, basic syntax and structure using CSS, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, positioning using CSS.

Unit – 2	Number of	
	lectures = 9	

Java Script:-

Introduction, Client-Side JavaScript, Server-Side JavaScript, JavaScript Objects, JavaScript Security, Operators, Statements, Document and its associated objects, Events and Event Handlers, Core JavaScript (Properties and Methods of Each)

Unit – 3	Number of	
	lectures = 08	

PHP (Hypertext Preprocessor): Introduction, syntax, variables, strings, operators, if-else, loop, switch, array, function, form, mail, file upload, session, error, exception, filter, PHP-ODBC.

Unit – 4	Number of	
	lectures = 9	

MYSQL: Introduction to Database and MYSQL, RDBMS-Understanding Tables, Records & Fields, SQL language, MYSQL queries.

Working with MYSQL Admin: Working with PHP My admin, data types, creating Database and tables, dropping Database and tables, adding fields, selecting table, Altering fields properties.

12. Brief Description of self-learning / E-learning component The students will be encouraged to learn using the SGT E-Learning portal and choose the relevant

lectures delivered by subject experts of SGT University.

The link to the E-Learning portal.

https://elearning.sgtuniversity.ac.in/course-category/

13. Books Recommended

Text Books

• PHP for the Web: Visual QuickStart Guide, Ullman, Pearson Education; Fifth edition, 2017.

Reference Books

- Web Technologies: HTML, JAVASCRIPT, PHP, JAVA, JSP, ASP.NET, XML and Ajax, Black Book: HTML, Javascript, PHP, Java, Jsp, XML and Ajax, Black Book, Kogent Learning Solutions Inc., Dreamtech Press; 1 edition, 2009.
- Mastering HTML, CSS & Javascript Web Publishing, Laura Lemay, BPB Publications; First edition, 2016.
- Beginning HTML5 with CSS3, Christopher Murphy, Apress publisher, 1st ed. Edition, 2012.

Semester V

MCA

1.	1. Name of the Department- Computer Science & Engineering							
2.	Course Name	Advanced Web	L		Т		Р	
		Technology Lab						
3.	Course Code		0		0		2	
4.	4. Type of Course (use tick mark)		Core	(✔)	PE()		OE ()	
5.	Pre-requisite		6. F	requency (use	Even	Ddd	Either	Every
	(if any)		ti	ck marks)		000	Sem ()	Sem ()

					(•		
7. Total	l Number o	f Lectures, Tutorial	s, Practical (assuming	12 weeks o	of one ser	nester)	
Lectures	s = 0		Tutorials = 0	Practica	l = 12		
8. Cour	se Descript	ion			1.011	D	
To he	elp the stude	ents to understand the	concept of HTML, CSS	, Javascrip	ot and PH	Р	
9. Lear	ning object	ives:					
Upon su	ccessful con	mpletion of the cou	rse in this discipline t	he student	will be	able to d	evelop a
complete	dynamic w	ebsite with database	as backend.				-
-							
10. Cour	se Outcom	es (COs):					
• H	land on prac	ctice on HTML and	learned the need and ba	sics of CS	S and the	e concepts	of client
si	de JavaScri	pt				1	
• H	low to desig	n and develop a dyna	mic website.				
• In	nport multir	nedia pages over the	web.				
11 List	of Exporing	onte					
11. List (or Experim						
List of H	Experiment	s:					
1	Create a	Web Page using basic	c tags in html 5				
2	Write a p	rogram to create all t	ypes of list in HTML				
3	Create a t	table using Html 5 an	d CSS				
4	Write a p	rogram using labels,	radio buttons, and subm	it buttons			
5	Create a s	simple webpage using	g HTML				
6	Use fram	es to Include Images	and Videos.				
7	Add a Ca	scading Style sheet for	or designing the web page	ge.			
8	Design a	web page with validation	ation using JavaScript.				
9	How to m	hake all fields of a for	rm mandatory in javascr	ipt			
10	Create a r	egistration form and	validate it using javascr	ipt			
11	Perform of	database connectivity	in PHP				
12	Create a	dynamic web page us	ing PHP				
12. Brief	Descriptio	n of self-learning / F	E-learning component				
The s	The students will be encouraged to learn using Virtual Link.						
https:	://html-iitd.v	/labs.ac.in/List%20of	%20experiments.html				

		MCA					
1. Name of the Depart	tment- Computer	Science & Engineering	5		-		
2. Course Name	Software .						
	Project	L	Т		I		
	Management						
3. Course Code		3	0		0		
4. Type of Course (us	e tick mark)	Core (✓)	PE	0	OF	E ()	
5. Pre-requisite (if	Programming	6. Frequency (use	Even	Odd	Either	Every	
any)	Lang. and	tick marks)	0	(✓)	Sem ()	Sem ()	
	Software Engg.						
7. Total Number of L	ectures, Tutorials	, Practical (assuming 1	2 weeks o	f one se	mester)		
Lectures = 36		Tutorials = 0	Practica	$\mathbf{l} = 0$			
8. Course Description	l						
This course describes the	he key aspects of	a software project. It be	egins with	the job	descript	ion of a	
software manager and	then addresses th	nose topics germane to	successfu	ıl softw	are deve	lopment	
management, including	organizing the soft	tware development team	; interfaciı	ng with o	other engi	ineering	
organizations, assessing	development stan	dards; selecting the best	approach	and tail	oring the	process	
model; estimating softw	are cost and sched	ule; planning and docun	nenting the	e plan; s	taffing th	e effort;	
managing software cost	and schedule duri	ing development; risk er	ngineering	;; and co	ontinuous	process	
improvement.							
9. Learning objectives:							
• To understand th	e methods used to	evaluate and select proje	ects for inv	vestmen	t of funds		
• To gain knowled	lge on the principle	es and techniques of soft	ware proje	ect mana	gement		
• To introduce or	ganization behavi	or and general manage	ment tech	nniques	used for	project	
management							
10. Course Outcomes ((COs):						
 Apply project ma 	anagement concept	ts and techniques to an I'	T project.				
Identify issues the	nat could lead to IT	project success or failur	e.				
 Explain project r 	nanagement in teri	ms of the software develo	opment pr	ocess.			
• Describe the resp	oonsibilities of IT 1	project managers					
11. Unit wise detailed of	content						
Unit-1	Number of	PROJECT CONCEP	TS AND I	TS MA	NAGEM	ENT	
	lectures = 9	I ROULET CONCELL			GE		
					~		
Software Project Categ	gorization, Softwar	re VS other projects, S	Stakeholde	ers, Proj	ect Succ	ess and	
Failure, Software project	ct Activities Proje	ct life cycle models-ISC) 9001 m	odel-Ca	pability N	Maturity	
Model-Project Planning	Model-Project Planning-Project tracking-Project closure. Evolution of Software Economics -						
Software Management	Process Framew	ork: Phases, Software	Managen	nent Pla	annıng /	Project	
Organization and Responsibilities							
Unit – 2	Number of	COST ESTIMATION	I				
	lectures = 8						
Problems in Software	Estimation Algo	rithmic Cost Estimation	n Process	Function	on Points	SUM	
Problems in Software I	Estimation – Algo	orithmic Cost Estimation	n Process	, Function	on Points	, SLIM	

Semester V

(EVA) – Balanced Sco	ore Card.				
Unit – 3	Number of lectures = 10	SOFTWARE QUALITY MANAGEMENT			
Software Quality Factors – Software Quality Components – Software Quality Plan – Software Quality Metrics – Software Quality Costs – Software Quality Assurance Standard – Certification – Assessment. Software Configuration Management – Risk Management: Risk Assessment: Identification / Analysis / Prioritization					
Risk Control: Planning	g / Resolution / Mor	nitoring			
Failure Mode and Effe	ects Analysis (FME	A) ,Defect Management ,Cost Management.			
Unit – 4	Number of lectures = 19	PROJECT EVALUATION AND EMERGING TRENDS			
Strategic Assessment–Technical Assessment–Cost Benefit Analysis–Cash Flow Forecasting–Cost Benefit Evaluation Technique–Risk Evaluation–Software Effort Estimation. Emerging Trends: Import of the internet on project Management – people Focused Process Models					
12. Brief Description of self-learning / E-learning component The students will be encouraged to learn using the SGT E-Learning portal and choose the relevant lectures delivered by subject experts of SGT University. The link to the E-Learning portal. https://elearning.sgtuniversity.ac.in/course-category/					
13. Books Recommen	nded				
Text Books Bob hughes an Royce, W. "So Reference Books	d Mike Cotterell, "s oftware Project Man	Software Project Management" second edition,1999. agement: A Unified Framework", AddisonWesley, 1998.			
• Ramesh Gopal Reprint, 2011.	aswamy , "Managin	ng and global Software Projects", Tata McGraw Hill Tenth			
• Roger S.Pressi Hill, 2010.	nan, "Software Eng	ineering- A Practitioner's Approach", 7th Edition ,McGraw			
Daniel Galin, ' Wesley, 2003.	Software Quality A	Assurance: from Theory to Implementation", Addison-			
Fenton, N.E., Revised" Broo	and Pfleeger, S.L. ks Cole, 1998.	. "Software Metrics: A Rigorous and Practical Approach,			
• Demarco, T. a House,1999.	and Lister, T. "Peo	pleware: Productive Projects and Teams, 2nd Ed.", Dorset			

1. Name of the Department- Computer Science & Engineering					
2. Course Name	System Network				
	Administration	L	Т	P	
3. Course Code		3	0	0	
4. Type of Course (u	se tick mark)	Core (✓)	PE ()	OE ()	
5. Pre-requisite (if		Frequency (use tick	Even Odd	Either Every	
any)		marks)	() (🗸)	Sem () Sem ()	
6. Total Number of	Lectures, Tutorials	, Practical (assuming 1	2 weeks of one se	mester)	
Lectures = 36 Tutorials = 0 Practical = 0					
7. Course Description	n				
This course aims to gi	ve students in depth	information about secur	ity, host administr	ation and Unix	
commands					
8. Learning objectiv	es:				
To learn essential s	systems administrati	on skills related to opera	ting systems, syste	em and network	
service administrat	ion, computer and in	nformation security and	directory services	administration	
9. Course Outcomes	(COs):	.1 . 1 . 111 11			
Upon the comp	oletion of this course	e, the student will be able	to:	1. 1	
• To Install	the Unix operation	ng system, and apply	operating system	n updates, and	
configuratio	on changes.	1 / 0			
• To Install a	nd configure new ha	ardware/software			
• To Manage	user accounts				
To Perform	backups of data				
To Assess s	system security				
10. Unit wise detailed	content	1			
Unit-1	Number of				
	lectures = 9				
Network Administrat	tion:-system admin	histrator, network adm	ninistrator, phase	es of network	
administration, addres	ses in TCP/IP mod	lel, IP addressing, Sub	netting, Supernett	ing, NAT, Basic	
Concepts of proxy se	rver, web server, I	ONS and their respective	e configuration s	ettings. Various	
Interconnecting Devic	es; Hub, Switch, E	Bridges, Routers, Gatew	ay, repeater, brou	iter. Commands	
used in troubleshooting of TCP/IP: ping, netstat, tracert, traceroute, ifconfig and route command.					
Unit – 2	Number of				
lectures = 09					
System Administration: Introduction to system Administration, goals of system administrator, role of					
network and system administrator, unix operating system, comparison of various operating systems,					
file system-NFS, UFS and NTFS, System performance tuning					
Unit - 3	Number of				
	lectures = 9				
Host and inetwork Security: Types of computer security, aspects of security, types of attacks,					
mentioning Access Control Models APAC DAC MAC DPAC from the fittering rules detection					
and prevention of denial of service attack					
Tinit 1	Number of	Decian of annexim	nto P. Timo	aming and	
UIIII – 4	runner of	Design of experime	nts & Time s	and	

Semester V MCA

lectures = 09 forecasting Host management:-installation of Unix, Linux, windows OS, booting process in various OS, File allocation methods, User accounts, controlling user resources, Unix Commands, advantages and disadvantages of Shell scripting. 11 Priof Description of aslf learning (E learning component)

11. Brief Description of self-learning / E-learning component

The students will be encouraged to learn using the SGT E-Learning portal and choose the relevant lectures delivered by subject experts of SGT University.

The link to the E-Learning portal.

https://elearning.sgtuniversity.ac.in/course-category/

12. Books Recommended

Text Books

1. The unix programming environment, Brain Kemighen & Rob Pike, Pearson Education India; 1 edition, 2015.

Reference Books

- 1. Design of the Unix operating system, AT&T Bell Labs Maurice J. Bach, Pearson Education India; 1 edition, 2015.
- 2. Advanced Unix programmer's Guide, Stephen Prato Bpb publisher, 2008.
- 3. Unix Concepts and applications-Featuring SCO Unix and Linux, Sumitabha Das

Name of the Departm	MICA Nome of the Department, Computer Science, & Engineering			
1 Course Nome Software				
1. Course Maine	Testing	L	T P	
2. Course Code	Testing	3	0	0
3. Type of Course (u	se tick mark)	Core (✓)	PE ()	OE ()
4. Pre-requisite (if		5. Frequency (use	Even Odd	Either Every
any)		tick marks)	() (✓)	Sem () Sem ()
6. Total Number of I	Lectures, Tutorials	, Practical (assuming 1	2 weeks of one se	mester)
Lectures = 42 Tutorials = 0 Practical = 0				
7. Course Descriptio	7. Course Description			
This course presents th	e concepts and tech	niques for testing softwa	re and assuring its	quality. Topics
cover software testing	at the unit, module,	subsystem, and system l	evels, automatic a	nd manual
techniques for generati	ng and validating te	est data, the testing proce	SS	
8. Learning objectiv	es:			
Appreciate the fundam	entals of software to	esting and its application	through the softw	are life cycle.
Develop skills in desig	ning and executing	software tests suitable for	r different stages i	in the software
life cycle.				
Understand and apprec	tiate the role of software	ware testing in systems d	evelopment, deplo	syment and
maintenance.				
Develop a continuing i	nterest in software t	esting, and obtain satisfa	iction from its stuc	ly and practice.
Appreciate the respons	ibilities of software	testers within software p	projects, the profes	ssion and the
wider community.				
9. Course Outcomes	(COs):			
5. Course Outcomes				
Students who have comple	eted this course would	have learned		
-				
Various test pro	ocesess and continue	ous quality improvement		
• Types of errors	and fault models			
 Methods of test 	generation from re	quirements		
Behavior modeling using UML: Finite state machines (FSM)				
 Test generation 	from FSM models			
Input space modeling using combinatorial designs				
Combinatorial test generation				
• Test adequacy assessment using: control flow, data flow, and program mutations				
• The use of various test tools				
• Application of software testing techniques in commercial environments				
10. Unit wise detailed content				
Unit-1 Number of				
	lectures = 09			
		•		

Semester V MCA

Introduction: What is software testing and why it is so hard?, Some Software Failures, Error, Fault, Failure, Incident, Test Cases, Testing Process, Limitations of Testing, V Shaped Software Life Cycle Model, No absolute proof of correctness, Overview of Graph Theory. Verification Testing: Verification Methods, SRS Verification, Software Design Document Verification, Code Reviews, User Documentation Verification, Software Project Audits.			
Unit – 2	Number of lectures = 09		
Functional Testing: Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing, Cause Effect Graphing Technique. Structural Testing: Identification of Independent Paths: Control Flow Graph, DD-Paths, Cyclomatic Complexity, Graph Matrix, Control Flow Testing, Data Flow Testing, Slice Based Testing, Mutation testing.			
Unit – 3	Number of lectures – 09		
Use Case Testing: Use Case Diagrams and Use Cases, Generation of Test Cases from Use Cases, Applicability. Validity Checks: Strategy for Data Validity, Guidelines for Generating Validity Checks. Database testing. Selection, Minimization, Prioritization of test cases for Regression Testing: Regression Testing, Regression Test Case Selection, Prioritization guidelines, Priority category Scheme, Code Coverage Techniques for Prioritization of Test Cases, Risk Analysis.			
Unit – 4	Number of lectures = 09		
Testing Activities: Unit Testing, Levels of Testing, Integration Testing, System Testing, Debugging Object Oriented Testing: Issues in Object Oriented Testing, Path testing, Class Testing, state based testing, Object Oriented Integration and System Testing. Metrics and Models in Software Testing: What are Software Metrics, categories of Metrics, object Oriented Metrics used in testing, What should we measure during testing?, Software Quality Attributes. Prediction Model: Reliability Modes, Fault Prediction Model.			
 11. Brief Description of self-learning / E-learning component The students will be encouraged to learn using the SGT E-Learning portal and choose the relevant lectures delivered by subject experts of SGT University. The link to the E-Learning portal. https://elearning.sgtuniversity.ac.in/course-category/Software Testing 			
12. Books Recommended			
Text Books			

- William Perry, "Effective Methods for Software Testing", John Wiley & Sons, New York, Van Nostrand Reinhold, New York, 2nd Ed., 1995.
- □ Cem Kaner, Jack Falk, Nguyen Quoc, "Testing Computer Software", Van Nostrand Reinhold, New York, 2nd Ed., 1993.
- Boris Beizer, "Software Testing Techniques", Second Volume, Van Nostrand Reinhold, New York, . 2nd Ed., 1990.

Reference Books

Paul C. Jorgenson, Software Testing A Craftsman"s approach, CRC Press, 1997.

Roger S. Pressman, "Software Engineering – A Practitioner"s Approach", McGraw-Hill International Edition, New Delhi, 5th Ed., 2001.

Boris Beizer, "Black-Box Testing – Techniques for Functional Testing of Software and

Systems", John Wiley & Sons Inc., New York, 1995.

1. Name of the Depa	rtment- Computer Sc	tence & Engineering	5 	Г	1	0
2. Course Name	Wiodne Computing		1	L	1	ſ
5. Course Code	a tial marle)				2.0	
4. Type of Course (u	ise uck mark)	Core (V)	Fuen	044	Fither	Evory
5. Fre-requisite (ii		0. Frequency		(Vuu	Sem ()	Som ()
any)		(use tick marks)	0	(•)	Sen ()	Selli ()
7 Total Number of 1	Lectures Tutorials P	ractical (assuming 1	2 weeks (of one se	mester)	
Lectures = 32	$\frac{7.10 \text{ for a rounder of Lectures, rutorials, reduced (assuming 12 weeks of one semester)}{\text{Lectures} - 32}$					
8. Course Descriptio	on I a		Tuche	ui — 0		
This course will cover	various topics of mob	ile computing. netwo	rking, an	d system	s. includi	ng but
not limited to: applicat	ions of smartphones. c	ellular networks, emb	edded ser	isor syste	ems, local	ization
systems, energy efficie	ency of mobile devices	wearable and			,	
vehicular mobile syste	ms, mobile security	,				
9. Learning objectiv	es:					
To impart fund	damental concepts in	the area of mobile c	omputin	g, to pro	vide a c	omputer
systems perspe	ctive on the convergin	g areas of wireless no	etworking	g, embed	ded syste	ms, and
software, and to	o introduce selected top	bics of current researc	h interest	in the fie	eld.	
10. Course Outcomes	(COs):					
Understand fun	damentals of wireless	communications.				
Analyze securit	ty, energy efficiency, n	nobility, scalability, a	nd their u	nique ch	aracteristi	cs in
wireless networ	rks.	ioonity, seataonity, a		inque en		
Demonstrate ba	asic skills for cellular n	etworks design.				
Apply knowled	lge of TCP/IP extensio	ns for mobile and wir	eless net	working.		
11. Unit wise detailed	content					
Unit-1	Unit-1 Number of					
	lectures = 08					
Cellular Mobile V	Vireless Networks: Sy	stems and Design Fu	ndamenta	als, Prop	agation N	Iodels
Description of C	Cellular system, Freq	uency Reuse, Co	channel	and Ad	jacent cl	nannel
interference, Prop	agation Models for	Wireless Networks	, Multip	art Effe	cts in N	Mobile
Communication, I	Communication, Models for Multipart Reception Evolution of Modern Mobile Wireless					
Communication System.						
Unit – 2	Number of					
	lectures = 08					
First Generation Wireless Networks, Second Generation (2G) Wireless Cellular Networks,						
Major 2G standards, 2.5G Wireless Networks, Third Generation 3G Wireless Networks,						
Wireless Local Area Networks (WLANs), All-IP Network: Vision for 4GIssues in Mobile						
computing, Wireless Multiple Access protocols, channel Allocation.						
Unit – 3	Number of					
	lectures = 08					
Data management issues: mobility, wireless communication and portability, data replication						
Schemes, basic con	ncept of multihopping,	Adaptive Clustering	tor mobil	le Netwo	rk, Multi	cluster
Architecture. Location Management: Introduction, Location Based Services, Automatically						

Locating Mobile U	sers		
Unit – 4	Number of		
	lectures = 08		
Locating and Orga	nizing Services, Is	Use and future directions, mobile IP, Comparison of TCP	
wireless. Transact	ion management:	Introduction, Data Dissemination, Cache Consistency,	
Mobile transaction processing, mobile database research directions, Security fault tolerance for			
mobile N/W.			
12. Brief Description	of self-learning / E	-learning component	
https://elearning.sgtuni	versity.ac.in/course	-category/MOBILE COMPUTING	
11 0 1 0			
13. Books Recommended			
Text Books			
1. Mobile Cor	nmunications, Schil	ller, Pearson Education India; New edition.	
Reference Books			
1. Mobile Cor	nputing, Shambhu U	Upadhyaya, Abhjeet Chaudhary, Keviven Kwiat,	
Mark Weise	es , Kliuwer Acadm	ic Publishers.	
2. Principles of	of Mobile computing	g, UIWE Hansmann, Other Merk , Martin-S-Nickious,	
Thomas Sto	ohe, Springer interna	ational Edition.	
3. Mobile Cor	nputing, Sipra DasE	Bit, Biplab K. Sikdar, PHI, New Edition.	