Curriculum (Scheme of Examination)

&

Revised Syllabus

for

B.Tech

CSE, CSE (Animation & Game Design, Data Analytics, Financial Computing and Networking & Cyber Security), Information Technology, Information Technology (Cloud Computing)

Batch 2017-18 onwards



SGT University Gurgaon

Choice Based Credit System w.e.f. 2017-2018

B.Tech

CSE, CSE (Animation & Game Design, Data Analytics, Financial Computing and Networking & Cyber Security), Information Technology, Information Technology (Cloud Computing)

Subject	Course title		Sc	hedule	9		Marl	ζ.	Remark s
Code	Course the	L	Т	Р	С	Int •	Ext	Tota l	
13020301	Technical Skills for Computer Engineers - I Practical	0	0	2	1	40	60	100	
13020302	Professional communication (Soft skills) III – Practical	0	0	4	2	40	60	100	
	Elective-III	2	0	0	2	40	60	100	
	Elective-IV	2	0	2	3	40	60	100	
13020306	Data Structure and Algorithms using C	3	0	0	3	40	60	100	
13020307	Computer Architecture & Organization	3	0	0	3	40	60	100	
13020308	Discrete Mathematics	3	1	0	4	40	60	100	
13020309	Digital Electronics	3	0	0	3	40	60	100	
13020310	Data Structure & Algorithms Lab - Practical	0	0	2	1	40	60	100	
13020311	Digital Electronic Lab - Practical	0	0	2	1	40	60	100	
13020312	Industrial Exposure I - Practical	-	-	-	1	40	60	100	

III SEMESTER

	Elective-III
13020303	Psychology & Sociology
	MOOC Course *
	Elective-IV
13020304	Foreign Language German I
13020305	Foreign Language French I
	MOOC Course *

*MOOC courses will be decided on the basis of list displayed on swayam.gov.in every semester.

CSE, CSE (Animation & Game Design, Data Analytics, Financial Computing and Networking & Cyber Security), Information Technology, Information Technology (Cloud Computing)

Subject	Course title		Sch	edul	e		Mar	Remarks	
Code	e Course title		Т	Р	С	Int.	Ext.	Total	
13020401	Aptitude Building - Practical	0	0	4	2	40	60	100	
13020402	Technical Skills II (Linux) - Practical	0	0	2	1	40	60	100	
	Elective-V	2	0	2	3	40	60	100	
	Elective-VI	2	0	2	3	40	60	100	
13020406	Numerical Methods and Random Process	3	1	0	4	40	60	100	
13020407	Object Oriented Programming Using C++	3	0	0	3	40	60	100	
13020408	Database Management System	3	0	0	3	40	60	100	
13020409	Operating System	3	0	0	3	40	60	100	
13020410	Computer Graphics	3	0	0	3	40	60	100	
13020411	C++ Programming Lab - Practical	0	0	2	1	40	60	100	
13020412	Database Management System Lab - Practical	0	0	2	1	40	60	100	
13020413	Computer Graphics Lab - Practical	0	0	2	1	40	60	100	
13020414	Industrial Training I - Practical	0	0	0	1	40	60	100	

IV SEMESTER

	Elective-V
13020405	Universal Human Values
	MOOC Course*
	Elective-VI
	MOOC Course*
13020403	Foreign Language French II
13020404	Foreign Language French II

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Subject	Course title	Schedule					Marl	Remarks	
Code	Course the	L	Т	Р	С	Int.	Ext.	Total	
13020501	Personality & Career Building - Practical	0	0	4	2	40	60	100	
	Elective-VII	0	0	2	1	40	60	100	
13020503	Entrepreneurship Development	2	0	0	2	40	60	100	
13020504	Computer Networks	3	0	0	3	40	60	100	
13020505	Analysis and Design of Algorithms	3	0	0	3	40	60	100	
13020506	Compiler Design	3	0	0	3	40	60	100	
13020507	Software Engineering	3	0	0	3	40	60	100	
13020508	Computer Networks Lab - Practical	0	0	2	1	40	60	100	
13020509	Software Engineering Lab - Practical	0	0	2	1	40	60	100	
13020510	Industry Exposure II - Practical	-	-	-	1	40	60	100	
	Elective-VII			•		•			
13020502	Technical skills for CSE III - Practical	0	0	2	1	40	60	100	
	MOOC Course *								
	Elective-VIII								
13020511	E-Commerce	3	0	0	3	40	60	100	Elective
13020512	Soft Computing	3	0	0	3	40	60	100	Elective
13020513	Data Compression	3	0	0	3	40	60	100	Elective
13020514	Data Warehousing and Data Mining	3	0	0	3	40	60	100	Elective
	Open Elective			•		•			
	(1/11/111)						-	-	
13030515	Production Planning & Control	3	0	0	3	40	60	100	Elective
13030516	Advanced Machining Process	3	0	0	3	40	60	100	Elective
13030517	Fuels & Combustion	3	0	0	3	40	60	100	Elective
13030518	Refrigeration & Air Conditioning	3	0	0	3	40	60	100	Elective
13010519	Traffic Engineering	3	0	0	3	40	60	100	Elective
13010527	Open Channel flow	3	0	0	3	40	60	100	Elective
13010522	Air & Noise Pollution	3	0	0	3	40	60	100	Elective
13010528	Resource Management and Control in Construction	3	0	0	3	40	60	100	Elective
13040523	Electronic Measurements & Instrumentation	3	0	0	3	40	60	100	Elective
13040524	Transmission Lines and Networks	3	0	0	3	40	60	100	Elective
13040525	Advanced digital Signal Processing	3	0	0	3	40	60	100	Elective

V SEMESTER

13040526	Electromechanical Energy Conversion	3	0	0	3	40	60	100	Elective
	MOOC Course *					40	60		

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Calling Calls			Sche	edule			Marl	K	Remarks			
Subject Code	Course the	L	Т	Р	С	Int.	Ext.	Total				
13020601	Campus to Corporate - Practical	0	0	4	2	40	60	100				
	Elective –IX											
	Group-I/Group-II/Group-III/Group-IV/Group- V/Group-VI/Group-VII											
13020609	Industrial Training II - Practical	-	-	-	1	40	60	100				
Elective-IX												
13020602	Technical Skills IV - Practical	0	0	2	1	40	60	100				
	MOOC Course*											
	Elective-X,	XI						•				
13020610	Distributed System	3	0	0	3	40	60	100	Elective			
13020611	Wireless & Mobile Communication	3	0	0	3	40	60	100	Elective			
13020612	Enterprise Resource Planning	3	0	0	3		60	100	Elective			
						<mark>40</mark>						
13020626	Mobile Computing	3	0	0	3	40	60	100	Elective			
13020627	High Speed Networks	3	0	0	3	40	60	100	Elective			
13020628	Business Intelligence	3	0	0	3	40	60	100	Elective			
13020629	Big Data Analytics	3	0	0	3	40	60	100	Elective			
13020630	Cryptography and Network Security	3	0	0	3	40	60	100	Elective			
	Open Elect	ive										
	(1/11/111)	T	T	r					1			
13030614	Automobile Engineering	3	0	0	3	40	60	100	Elective			
13030615	Rapid Manufacturing Technologies	3	0	0	3	40	60	100	Elective			
13030616	Mechatronics	3	0	0	3	40	60	100	Elective			
13030617	Mechanical Vibration	3	0	0	3	40	60	100	Elective			
13010619	Pre-Stressed Concrete	3	0	0	3	40	60	100	Elective			
13010631	Renewable Energy Sources	3	0	0	3	40	60	100	Elective			
13010632	Urban Water Resource Management	3	0	0	3	40	60	100	Elective			
13010620	Architecture and Town Planning	3	0	0	3	40	60	100	Elective			
13040622	Digital Image Processing	3	0	0	3	40	60	100	Elective			
13040623	Digital Logic Design with PLDs and VHDL	3	0	0	3	40	60	100	Elective			
13040624	ASIC Design	3	0	0	3	40	60	100	Elective			
13040633	Microwave & Radar	3	0	0	3	40	60	100	Elective			
	MOOC Course*					40	60					

VI SEMESTER

*MOOC courses will be decided on the basis of list displayed on swayam.gov.in every semester.

Group1 (CSE)-VI Sem

Subject Code	Course title		Sche	edule		Mark			
Subject Code		L	Т	Р	С	Int.	Ext.	Total	
13020603	Industrial Economy and Management	2	0	0	2	40	60	100	
13020604	Probability & Statistics	3	0	0	3	40	60	100	
13020605	Theory of Automata & Formal Language	3	0	0	3	40	60	100	
13020606	Software Development & Testing Methodology	3	0	0	3	40	60	100	
13020607	Advanced Java	3	0	0	3	40	60	100	
13020608	Advance Java Programming Lab - Practical	0	0	2	1	40	60	100	

Group-II (Animation and Gaming) – VI Semester

Subject	Course title		Sche	dule		Mark			
Code	Course the	L	Т	Р	С	Int.	Ext.	Total	
	Multimedia and computer Graphics	3	0	0	3	40	60	100	
	Fundamental of Animation	3	0	0	3	40	60	100	
	Introduction to 3D Animation and Modeling	3	0	0	3	40	60	100	
	Multimedia and computer Graphics-Lab	0	0	2	1	40	60	100	
	2D-Aniation Lab	0	0	2	1	40	60	100	
	3D-Animation Lab	0	0	2	1	40	60	100	

Group-III (Networking & Cyber Security) – VI Semester

Subject	Course title		Sche	dule		Mark			
Code	Course the	L	Т	Р	С	Int.	Ext.	Total	
	Information Security Fundamentals	3	0	0	3	40	60	100	
	IT Data Security	3	0	0	3	40	60	100	
	Physical Security	3	0	0	3	40	60	100	
	Routing and Switching-Lab	0	0	2	1	40	60	100	
	Dynamic Paradigm in Cyber Security-Lab	0	0	2	1	40	60	100	
	IT Data Security-Lab	0	0	2	1	40	60	100	

Group-IV: CSE (Data Analytics) – VI Semester

Subject			Sche	dule		Mark			
Code	Course the	L	Т	Р	С	Int.	Ext.	Total	
	Probability & Applied Statistical Method-I	3	0	0	3	40	60	100	
	Statistical Package for the Social Sciences (SPSS)	3	0	0	3	40	60	100	
	Statistical Inference-I	3	0	0	3	40	60	100	

SPSS-Lab	0	0	2	1	40	60	100
R- Programming -Lab	0	0	2	1	40	60	100
Big Data Lab using Hadoop	0	0	2	1	40	60	100

Group-V: CSE- (Financial Computing) – VI Semester

Subject	Course title		Sche	dule		Mark			
Code	Course the	L	Т	Р	С	Int.	Ext.	Total	
	Optimization in Finance-I	3	0	0	3	40	60	100	
	Probability and Stochastic Process	3	0	0	3	40	60	100	
	Mathematical Finance-I	3	0	0	3	40	60	100	
	Accounting-Lab (Tally)	0	0	4	2	40	60	100	
	Optimization and Simulation -Lab	0	0	2	1	40	60	100	

Group-VI –IT (Cloud Computing) – VI Semester

Subject	Course title		Sche	dule		Mark			
Code	Course the	L	Т	Р	С	Int.	Ext.	Total	
	Cloud Storage Infrastructure	3	0	0	3	40	60	100	
	Cloud Computing Architecture	3	0	0	3	40	60	100	
	Cloud Security	3	0	0	3	40	60	100	
	Web Designing Lab using PHP	0	0	2	1	40	60	100	
	Cloud Computing-Lab	0	0	2	1	40	60	100	
	Big Data Lab using Hadoop-Lab	0	0	2	1	40	60	100	

Group-VI –IT – VI Semester

Subject Code	Course title		Sche	dule		Mark			
Subject Code	Course the	L	Т	Р	C	Int.	Ext.	Total	
	Industrial Economy and Management	2	0	0	2	40	60	100	
	Probability & Statistics	3	0	0	3	40	60	100	
	Principles of Programming Language	3	0	0	3	40	60	100	
	Software Development & Testing Methodology	3	0	0	3	40	60	100	
	Advanced Java	3	0	0	3	40	60	100	

		Advance Java Programming Lab - Practical	0	0	2	1	40	60	100
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B.Tech

CSE, CSE (Animation & Game Design, Data Analytics, Financial Computing and Networking & Cyber Security), Information Technology, Information Technology (Cloud Computing) SEMESTER

VII

Subject	Guerran (44)	Schedule					Marl	Remarks			
Code	Course the	L	Т	Р	С	Int.	Ext.	Total			
13020704	Industrial/Research Project Phase I - Practical	0	0	0	4	40	60	100			
	Group-I/Group-II/Group-III/Group- IV/Group- V/Group-VI/Group-VII										
	Elective-XI & XII										
13020706	Cloud Computing	3	0	0	3	40	60	100	Elective		
13020707	Bio Informatics	3	0	0	3	40	60	100	Elective		
13020703	Internet of Things	3	0	0	3	40	60	100	Elective		
13020726	Ethical Hacking	3	0	0	3	40	60	100	Elective		
13020710	Software Project Management	3	0	0	3	40	60	100	Elective		
13020711	Image Processing & Pattern Recognition	3	0	0	3	40	60	100	Elective		
13020712	Real Time System	3	0	0	3	40	60	100	Elective		
13020713	Advanced Data base Management System	3	0	0	3	40	60	100	Elective		
Open Elective											
	(1/11/111)										
13030714	Fluid Power System	3	0	0	3	40	60	100	Elective		
13030715	Finite Element Analysis	3	0	0	3	40	60	100	Elective		
13030716	Nuclear Power Engineering	3	0	0	3	40	60	100	Elective		
13030717	Robotics	3	0	0	3	40	60	100	Elective		
13010718	Radar Remote Sensing	3	0	0	3	40	60	100	Elective		
13010719	Construction Economics and Financial Management	3	0	0	3	40	60	100	Elective		
13010727	Intelligent Transportation System	3	0	0	3	40	60	100	Elective		
13010728	River Engineering	3	0	0	3	40	60	100	Elective		
13040729	Wireless Sensor Networks	3	0	0	3	40	60	100	Elective		
13040723	Sensors & Transducers	3	0	0	3	40	60	100	Elective		
13040703	Internet of things	3	0	0	3	40	60	100	Elective		
13040730	Optical Communication	3	0	0	3	40	60	100	Elective		
	MOOC Course *					40	60				

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Group1- (CSE)

Subject	Course title		Sch	edule	Mark			
Code	Course the	L	Т	Р	С	Int.	Ext.	Total
13020701	Artificial Intelligence	3	0	0	3	40	60	100
13020702	Professional Ethics for Computer Engineers	2	0	0	2	40	60	100
13020708	Neural Networks	3	0	0	3	40	60	100
13020731	Android Apps Development	3	0	0	3	40	60	100
13020705	Neural Networks Lab - Practical	0	0	2	1	40	60	100
13020732	Android Apps Development-Lab	0	0	2	1	40	60	100

Group-II (Animation and Gaming) – VII Semester

Sechie et Carde	Course title		Sche	dule		Mark			
Subject Code	Course title	L	Т	Р	С	Int.	Ext.	Total	
	Scripting for Animation and Gaming	3	0	0	3	40	60	100	
	Texturing and Light Techniques	3	0	0	3	40	60	100	
	Game Production	3	0	0	3	40	60	100	
	Virtual Reality	3	0	0	3	40	60	100	
	Game Production Lab	0	0	2	1	40	60	100	
	Digital Editing and Motion Graphics-Lab	0	0	2	1	40	60	100	
	3D- Modeling Lab	0	0	4	2	40	60	100	

Group-III (Networking & Cyber Security) – VII Semester

Subject Code	Course title		Sche	dule		Mark			
Subject Code	Course the	L	Т	Р	С	Int.	Ext.	Total	
	IT Application Security	3	0	0	3	40	60	100	
	IT System Security	3	0	0	3	40	60	100	
	IT Network Security	3	0	0	3	40	60	100	
	Information Coping Technique	3	0	0	3	40	60	100	
	IT Application Security-Lab	0	0	2	1	40	60	100	
	Scaling Networks-Lab	0	0	2	1	40	60	100	
	IT System Security-Lab	0	0	4	2	40	60	100	

Group-IV (Data Analytics) – VII Semester

Subject Code	Course title		Sche	dule		Mark			
Subject Code	Course the	L	Т	Р	C	Int.	Ext.	Total	
	Probability & Applied Statistical Method-II	3	0	0	3	40	60	100	
	Econometric	3	0	0	3	40	60	100	
	Statistical Inference-II	3	0	0	3	40	60	100	
	Multivariate Analysis	3	0	0	3	40	60	100	

Cloud Computing	3	0	0	3	40	60	100
Cloud Computing -Lab	0	0	2	1	40	60	100

Group-V (Financial Computing) – VII Semester

Subject Code	Course title		Sche	dule		Mark			
Subject Code	Course due	L	Т	Р	С	Int.	Ext.	Total	
	Optimization in Finance-II	3	0	0	3	40	60	100	
	Financial Derivative	3	0	0	3	40	60	100	
	Mathematical Finance-II	3	0	0	3	40	60	100	
	Corporate Finance	3	0	0	3	40	60	100	
	Time Series Analysis and Simulation	3	0	0	3	40	60	100	
	MATLAB/OCTAVE-Lab	0	0	2	1	40	60	100	

Group-VI (Cloud Computing) – VII Semester

Subject Code	Course title		Sche	dule		Mark			
Subject Code	Course title	L	Т	Р	С	Int.	Ext.	Total	
	Cloud Computing Platforms	3	0	0	3	40	60	100	
	Managing Virtual Environments	3	0	0	3	40	60	100	
	Cloud Application Development	3	0	0	3	40	60	100	
	Data Sciences & Big Data Analytics	3	0	0	3	40	60	100	
	Data Centre Virtulization	3	0	0	3	40	60	100	
	Design and Development of Cloud Applications-Lab	0	0	2	1	40	60	100	

Group-VI (Information Technology) – VII Semester

Subject			Schedule				Mark		
Code	Course the	L	Т	Р	С	Int.	Ext.	Total	
	Information Retrieval	3	0	0	3	40	60	100	
	IT in Forensic Science	2	0	0	2	40	60	100	
	Neural Networks	3	0	0	3	40	60	100	

Android Apps Development	<mark>3</mark>	0	0	3	40	60	100
Neural Networks Lab - Practical	0	0	2	1	40	60	100
Android Apps Development-Lab	0	0	2	1	40	60	100

B.Tech

CSE, CSE (Animation & Game Design, Data Analytics, Financial Computing and Networking & Cyber Security), Information Technology, Information Technology (Cloud Computing)

SEMESTER VIII

Subject Code	Course title		Schedule			Mark			Remarks
Subject Code	Course the	L	Т	Р	С	Int.	Ext.	Total	
13020802	Industrial/Research Project Phase II - Practical	0	0	10	15	50	150	200	

Semester VII B. Tech (Computer science & Engineering)

1. Name of the Depart	rtment- Computer Se	cience & Engineering				
2. Course Name	Android	L	Т		Р	
	Application					
	Development					
3. Course Code		3	0		0	
4. Type of Course (us	se tick mark)	Core (V)	PE()		OE ()	
5. Pre-requisite (if	OOPS	6. Frequency (use	Even	Odd	Either	Every
any)		tick marks)	0	()	Sem ()	Sem ()
7. Total Number of I	Lectures, Tutorials, F	Practical (assuming 12	weeks of	one sem	lester)	
Lectures = 36		Tutorials = 0	Practic	al = 0		
8. Course Description	n		•			
This course provides	a basic understandin	g of Android developm	nent, incl	luding th	e use of	content
providers, creating aud	dio and video services	. This course focuses on	helping p	eople be	come an A	Android
application developer	and releasing high-qua	ality apps to the marketp	lace. Lea	rn about (the variou	is stages
of development on t	the Android platforn	n and study topics rel	lated to	UI, appl	ication s	services,
permissions and secur	ity, graphics and vide	o resources, data persist	ence, mo	nitoring	tools, mo	bile app
marketing, application	hosting and more. D	evelop core Java develo	pment sk	ills while	e you exp	lore key
concepts for building	rich applications using	g advanced features. Lea	arn from i	instructor	rs	
and guest speakers wo	orking in the industry.					
9. Learning objectiv	ves:					
• learn the set up	o and installation of A	ndroid.				
learn Android	App development					
learn user inter	rfaces and Controls.					
10. Course Outcome	s (COs):					
Understand the	e basics of Android de	evices and Platform.				
• Acquire know	ledge on basic buildin	g blocks of Android pro	ogrammin	g require	ed for Ap	р
development	development					
Understand persistence Data storage mechanism in Android						
Understand ad	• Understand advanced application concepts like networking, Animations and Google Maps					
services etc	services etc					
• Develop and p	ublish Android applic	cations in to Android Ma	arket			
11. Unit wise detailed	l content	1				
Unit-1	Number of					
	lectures = 09					

Introduction: Introdu	ction to mobile applic	cation development, trends, introduction to various				
platforms, introduction	platforms, introduction to smart phones					
Android platform: A	ndroid platform featur	res and architecture, versions, comparison added features				
in each version. ART	(Android Runtime), A	ADB (Android Debug Bridge).				
Development enviro	ment/IDE: Android	studio and its working environment, gradle build system,				
emulator setup						
Application anatomy	v: Application framew	ork basics: resources layout, values, asset XML				
representation and ger	nerated R.Javafile					
Unit – 2	Number of					
	lectures = 09					
GUI for Android: Int	roduction to activities	s, activities life-cycle, Android v7 support library form				
API21 for lower versi	on support					
Intent: intent object,	intent filters, adding c	categories, linking activities, user interface design				
components and a second						
Views and View Gro	ups: Basic views, picl	ker views, adapter views, Menu, App Bar etc, basics of				
screen design; differen	nt layouts. App widge	ts.				
Lollipop Material de	sign: new themes, new	w widgets, Card layouts. Recycler View				
Fragments: Introduct	ion to activities, activi	ities life-cycle.				
Unit – 3	Number of					
	lectures = 09					
Different Data persiste	ence schemes: Shared	preferences, File Handling, managing data using SQLite				
database. Content pro	viders: user content pr	ovider, Android in build content providers.				
Services: introduction	to services – local ser	rvice, remote service and binding the service, the				
communication betwe	en service and activity	v Intent Service, Multithreading: Handlers, AsyncTask				
Android network prog	ramming: HttpUrlCo	prection Connecting to REST-based and SOAP based				
Web services Broad	post receivers: Local Br	and anothing to KLST based and SOTH based				
Web services. Dibau C	ast receivers. Locarbi	Vadeastivianager, Dynamic broadcast receiver, System				
Broadcast. Pendingint	ent, Notifications. Tel	lephony Manager: Sending SMS and making calls.				
Unit – 4	Number of					
	lectures = 9					
Location based service	es: Google maps V2 s	ervices using Google API,				
Animations and Graph	nics: Property Animat	ion, View Animations, Drawable Animations				
Media and Camera Al	Media and Camera API: Working with video and audio inputs, camera API					
Sensor programming: Motion sensors, Position sensors, Environmental sensors,						
Publishing Android Apps: Guide lines, policies and process of uploading Apps to Google play						
12. Brief Description	of self-learning / E-l	earning component				
The students will be encouraged to learn using the SGT F-I earning portal and choose the relevant						
lectures delivered by subject experts of SGT University						
The link to the E Learning portal						
The link to the E-Lear	The link to the E-Learning portal.					
https://elearning.sgtun	aversity.ac.in/course-c	category/				

13. Books Recommended

Text Books

- Dawn Griffiths, David Griffiths, "Head First: Android Development", OReilly2015, ISBN: 9781449362188
- David Tainar Mobile Computing: Concepts Methodologies, Tools & Applications.

Reference Books

- Barbara L Ciaramtaro Mobile technology consumption
- Paul Deital, HarveyDeital, Alexander Wald, "Android 6 for Programmers , App Driven approach", 2015, Prentice Hall , ISBN: 9780134289366
- http://developer.android.com/training/index.htmlas on Date 21.4.2016

Android Application Development Lab

tment- Computer	Science & Engineering				
Android	L	Т		Р	
Application					
Development Lab					
	0	0		2	
se tick mark)	Core (🗸)	PE()		OE ()	
OOPS	6. Frequency (use	Even	Odd	Either	Every
	tick marks)		(1)	Sem ()	Sem ()
ectures, Tutorials,	Practical (assuming 12	weeks o	f one sen	nester)	
, , ,	Tutorials = 0	Practic	al = 24	,	
n					
ves:					
this course is to					
Android application					
ies					
r activity communicat	ion				
I application.					
s (COs):					
id application hierarchy. o activity to activity com broid UI components nplement menus, notific class plement context menu an he applications using An	, UI components and their pur munication using intents and ations & implement notificati nd option menu as a part of an droid AVD.	pose transfer da on using N ndroid app.	ta between	/among inte	ents.
nts					
 Create a basic mobile application Working with forms Android App- working with intents Apply style and theme in an android app Create an Android app that does payment process via a context menu Create an Android app that does a currency converter operations using an options menu Create an Android notification app that displays notification about the messages received Create an Android app for sending data from first activity to second activity. Create an Android app for getting result from second activity (Using startActivityForResult) Create an Android app for storing user data using SQLITE 12. Brief Description of self-learning / E-learning component					
	tment- Computer S Android Application Development Lab ie tick mark) OOPS dectures, Tutorials, dectures, Tutorials, ie tick mark) OOPS dectures, Tutorials, dectures, the students will id application hierarchy, dectures, the students will id applications using An	tment- Computer Science & Engineering Android L Application Development Lab 0 0 ce tick mark) Core (✓) OOPS 6. Frequency (use tick marks) ectures, Tutorials, Practical (assuming 12 Tutorials = 0 1 res: * this course is to android application ies r activity communication I application. (COS): outries, the students will be able to id application hierarchy, UI components and their purpolativity to activity communication using intents and broid UI components and their purpolativity to activity communication using intents and broid UI components and provents and provents applement menus, notifications & implement notificati class plement context menu and option menu as a part of are applications using Android AVD. Its e application ing with intents ne in an android app pp that does payment process via a context menu pp that does a currency converter operations usir otification app that displays notification about th pp for sending data from first activity to second app for getting result from second activity (Using pp for storing user data using SQLITE of self-learning / E-learning component	tment- Computer Science & Engineering Android L T Application 0 0 Development Lab Oere () PE() OOPS 6. Frequency (use tick marks) Even tick marks) OOPS 6. Frequency (use tick marks) Even tick marks) .ectures, Tutorials, Practical (assuming 12 weeks of Tutorials = 0 Practice 1 rest This course is to undroid application Image: Course is to undroid application ies r activity communication Image: Course is to undroid application ies activity communication using intents and their purpose of activity to activity communication using intents and transfer data froid UI components anglement menus, notifications & implement notification using N class plement menus, notifications & implement notification using N class android AVD. its its te application generation application about the message pip that does payment process via a context menu pp that does a currency converter operations using an optio offication app that displays notification about the message pip for sending data from first activity to second activity. pp for getting result from second activity (Using startActive pip for storing user data using SQLITE of self-learning / E-learning component	tment- Computer Science & Engineering Android L T Application Development Lab T 0 0 0 ee tick mark) Core (\checkmark) PE() OOPS 6. Frequency (use tick marks) Even (\checkmark) Odd (\checkmark) eetures, Tutorials, Practical (assuming 12 weeks of one sen Tutorials = 0 Practical = 24 n Fes: Practical = 24 tist on course is to .ndroid application Image: Course is to .ndroid application ies r activity communication Image: Course is to .ndroid application ies r activity communication using intents and their purpose activity to activity communication using intents and transfer data between troid UI components applement menus, notifications & implement notification using Notification class plement context menu and option menu as a part of android app. ee applications using Android AVD. its Image: Course of the top top the top	tment- Computer Science & Engineering Android L T P Application 0 0 2 Development Lab 0 0 2 e tick mark) Core (\checkmark) PE() OE () OOPS 6. Frequency (use tick marks) Even Odd Either (\checkmark) Sem () ectures, Tutorials, Practical (assuming 12 weeks of one semester) Tutorials = 0 Practical = 24 1 Tutorials = 0 Practical = 24 1 res: This course is to undroid application Sem () ies ractivity communication I I 1 application. Image:

Cloud Computing

1. Name of the Depar	tment: Computer S	Science & Engineering				
2. Course Name	Cloud	L	Т		Р	
	Computing					
3. Course Code	13020706	3	0		0	
4. Type of Course (us	e tick mark)	Core ()	PE(√)		OE ()	
5. Pre-requisite (if	OS and CN	6. Frequency (use	Even	Odd	Either	Every
any)		tick marks)	0	(√)	Sem ()	Sem
						0
7. Total Number of L	ectures, Tutorials,	Practical (assuming 12	weeks of	f one sen	nester)	
Lectures = 36		Tutorials = 0	Practica	al = 0		
8. Brief Syllabus						
Introduction of delive	ery models in Clou	d Computing				
Infrastructure as a So	ervice (laaS)					
Platform as a Service	(PaaS) & Software	as a Service (SaaS)				
Cloud computing Rei	erence Architectui	e (CCRA)				
9. Learning objectiv	es:					
The objective of this	course is to:					
i. learn cloud con	nputing delivery mo	del IaaS				
ii learn cloud con	nputing delivery mo	del PaaS				
iii. learn cloud con	nputing delivery mo	del SaaS.				
10. Course Outcomes	•					
On completion of this	course, the students	will be able to				
i. Understand	the concepts of virt	ualization				
ii. Understand	Cloud delivery mo	dels in details				
iii. Understand	briefly Cloud Com	puting Reference Archite	ecture			
iv. Understand	how Cloud Compu	ting Architecture can ena	able trans	formation	n, busines	S
developmen	nt and agility in an c	organization				
11. Unit wise detailed	content					
Unit-1	Number of	Title of the unit:Intro	duction o	of deliver	ry models	s in
	lectures = 9	Cloud Computing				
Introduction to cloud d	lelivery models, List	t various cloud delivery	nodels, A	Advantage	es of deliv	/ery
models in cloud, trade-off in cost to install versus flexibility, Cloud service model architecture.						
				G	• /7	
Unit – 2	Number of	Title of the unit:Infra	structure	e as a Sei	vice (laa	<u>S)&</u>
	lectures =9	1 1	• • •	T G		_
Introduction to Infrastr	ucture as a Service	delivery model, characte	ristics of	IaaS, Arc	chitecture	,
examples of IaaS, App	incadility of IaaS in	the industry.				
Unit - 3	Number of	Title of the un	t• Plat	form	ac a	Service
	loctures = 0	(Doos) & Software of a	Sorvice	$(\mathbf{S}_{00}\mathbf{S})$	us a	
	1ectures = 9	(raas) a soutware as a	Service	(Saas)		

Introduction to Platform as a Service delivery model, characteristics of PaaS, patterns, architecture and examples of PaaS, Applicability of PaaS in the industry.

Introduction to Software as a Service delivery model, characteristics of SaaS, Architecture, examples of SaaS, Applicability of SaaS in the industry.

Unit - 4	Number	of	Title	of	the	unit:	Cloud	computing
	lectures = 9			Re	fereno	ce Arch	itecture	(CCRA)

Introduction to Cloud computing reference architecture (CCRA), benefits of CCRA, Architecture overview, versions and application of CCRA for developing clouds.

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

This course provides a hands-on comprehensive study of Cloud concepts and capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Business Process as a Service (BPaaS). IaaS topics start with a detailed study the evolution of infrastructure migration approaches from VMWare/Xen/ KVM virtualization, to adaptive virtualization, and on-demand resources provisioning. PaaS topics cover a broad range of Cloud vendor platforms including Google App Engine, Microsoft Azure, OpenStack and others as well as a detailed study of related platform services such as storage services that leverage Google Storage, Amazon S3, Amazon Dynamo, or other services meant to provide Cloud resources management and monitoring capabilities.

13. Books Recommended (3 Text Books + 2-3 Reference Books)

- Cloud Computing Architecture (IBM ICE)
- Cloud computing for Dummies (November 2009) Judith Hurwitz, Robin Bloor, Marcia Kaufman, Fern Halper
- IBM Cloud Computing http://www.ibm.com/cloud-computing/us/en/
- Cloud Computing: A Hands-on Approach by Arshdeep Bahga
- Cloud Computing Paperback by Anandamurugan and T.Priyaa

Artificial Intelligence

Name of the Departm	ent- Computer Sci	ience and Engineering				
1. Course	Artificial	L	Т		Р	
Name	Intelligence					
2 Course Code		2	0		2	
2. Course Code		5	U		2	
3. Type of Course	(use tick mark)	Core (✔)	PE()		OE ()	
4. Pre-requisite	Knowledge of	5. Frequency	Even	Odd	Either	Every
(if any)	linear algebra,	(use tick	0	(•	Sem ()	Sem ()
	developing	marks)				
	algorithms					
6. Total Number of	of Lectures, Tutori	als, Practical (assuming	12 week	s of one	semester	·)
Lectures = 36		Tutorials = 0	Practic	al = 24		
7 Course Descrip	tion					
• Artificial intell	igence (AI) is a rese	earch field that studies ho	w to real	ize the in	telligent l	numan
behaviors on a	computer The ultir	nate goal of AI is to mak	e a comr	uter that	can learn	nlan
and solve probl	lems autonomously	nate goar of 711 is to max	e a comp	uter that		, pian,
	ienns automonnousry.					
8. Learning objec	tives:					
• The objective of	of the course is to p	present an overview of an	tificial in	ntelligend	e (AI) pr	rinciples
and approaches	8.					
• Develop a basi	c understanding of t	the building blocks of AI	as presen	nted in te	rms of in	telligent
implement a sn	all AI system in a t	team environment	ogic, and	i learnin	g. Studer	nts will
 The knowledge 	of artificial intellio	ence plays a considerable	e role in o	some ann	lications	students
develop for co	rses in the program			some app	incations	students
9. Course Outcom	nes (COs):					
Upon successful comp	letion of this course	students will:				
• Students will b	e able to design a ki	nowledge based system,.				
• Students have 1	read and analyzed ir	nportant historical and cu	Irrent trei	nds addre	ssing arti	ficial
intelligence.	5	1			U	
• Students will b	e be familiar with te	erminology used in this to	pical are	a,		
10. Unit wise detailed content						
Unit-1	Number of	Title of the unit: Intro	duction			
	lectures = 08					
			1 1	1 • 1 • . •		
Describing the eras of	computing, differen	ne of AL machine lacri	and prol	Dabilistic	systems,	types of
learning neural netwo	practical application	portance applications N	P introd	luction d	ifferent	nachine
NLP processes, tools a	ind services for NLF	P, identifying NLP use ca	ses, defin	ning CV.	history of	f CV

and its advancement with AI, listing tools and services for CV, identifying CV use cases ,what is cognitive computing, characteristics of cognitive systems, the landscape of cognitive computing in the industry.

Unit – 2	Number of	Title of the unit: IBM Watson
	lectures = 10	

What is IBM Watson, how it works, how Watson technology is made available to developers and organizations, how Watson technology is being applied to solve real world problems DeepQA architecture, why IBM decided to commercialize Watson, evolution of Watson services from the original, DeepQA architecture to the present, Recognizing the Watson services available today on the IBM Cloud, Listing the Watson services. **Watson Services:**Capabilities of each Watson service, purpose of training the various Watson services to adapt them to a closed-domain, Listing the Watson services that can be trained, Listing the Watson services that cannot be trained, Describing what Watson Knowledge studio is, Listing the Watson services that can be trained with Watson Knowledge Studio, Using Watson API Explorer to interact with the Watson services REST API, to test your calls to the API, and to view live responses from the server.

Unit – 3	Number of	Title of the unit: NLP
	lectures = 08	

What is NLP, different NLP processes, listing tools and services for NLP, Identifying NLP use cases, different components of NLP, challenges within NLP, NLP pipeline, concepts of information extraction and sentiment analysis, capabilities of IBM Watson Natural Language Classifier (NLC), how to train Watson NLC, capabilities of Watson Natural Language Understanding (NLU) service and its input and output, along with the discovery service, capabilities of the Watson Tone Analyzer service and its input and output, Watson Discovery service instance, Creating a collection, Adding content to a collection, Building queries, Using the Discovery API.

Unit – 5	Number of	Title of the unit: Introduction to ChatBot
	lectures = 10	

What is chatbot, common applications of chatbots, Identifying factors that drive the growing popularity of chatbots, examples of tools and services that you can use to create chatbots, What is a workspace, intent, entity, dialog, dialog nodes, How the nodes in a dialog are triggered, How the dialog flow is processed, The advanced features of a chatbot, Creating a workspace, Defining intents, Defining entities, Building a dialog, Creating a Watson Conversation service instance, Creating a Conversation workspace, Adding intents, Building a dialog, Test in Slack, Defining CV, Know the history of CV and its advancement with AI, Listing tools and services for CV, Identifying CV use cases, Defining the main pipeline within a CV application.

Understanding how feature extraction works. Understanding how image classification and recognition works, Defining known techniques and classifiers that are used today for CV, Describing the IBM Watson Visual Recognition service, Listing the features available with Watson Visual Recognition, output provided by the Watson Visual Recognition service, Explaining the capabilities of the default classifier, difference between a default and a custom classifier ,how to train a custom

classifier, Creating a Watson Visual Recognition service and obtain the API key value, Using Visual Recognition API methods to: Classifying images, Detecting faces in an image, Recognizing text in an image, Creating and training a custom classifier, Creating Application using Artificial Concepts and IBM watsong, Data Visualization

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/

Journal papers; Patents in the respective field.

12. Books Recommended

- The Cambridge Handbook of Artificial Intelligence, Keith Frankish, Cambridge University Press, 2014.
- Machine Intelligence: Demystifying Machine Learning, Neural Networks and Deep Learning, Suresh Samudrala, Notion Press; 1 edition, 2019.
- Artificial Intelligence 3e: A Modern Approach, Russell, Pearson Education India; 3 edition, 2015
- ARTIFICIAL INTELLIGENCE Third Edition, Kevin Knight, McGraw Hill Education; 3 edition, 2017.

Artificial Intelligence Lab

1. Name of the Department- Computer Science & Engineering						
2. Course Name	Artificial	L	Т	Р		
	Intelligence Lab					
3. Course Code		0	0	2		
4. Type of Course (us	e tick mark)	Core (🗸)	PE ()	OE ()		
5. Pre-requisite (if		6. Frequency (use	Even Odd	Either Every		
any)		tick marks)	(•)	Sem () Sem ()		
7. Total Number of L	ectures, Tutorials,	Practical (assuming 12	weeks of one s	emester)		
Lectures = 0	, ,	Tutorials = 0	Practical = 24			
8. Course Description	1					
9. Learning objectiv	es:					
• To acquire kno	wledge on intelliger	nt systems and agents, fo	rmalization of k	nowledge,		
reasoning with	and without uncerta	ainty, machine learning a	nd applications	at a basic level.		
To Design appr	ropriate heuristics for	or a particular problem				
10. Course Outcomes	(COs):					
Understand bas	sic principles and teo	chniques of intelligent sy	stems and their	practical		
applications.						
Formalization a	and design of systen	ns capable of automated	reasoning.			
Implementation	n and application of	machine learning techni	ques in prediction	on problems.		
Implementation	n and application of	data mining techniques				
Formalize and	implement constrair	nts in search problems				
11. List of Experimen	nts					
1. Program to implement binary search algorithm.						
2. Program to implem	nent quick sort algor	rithm.				
3. Program to implem	ent depth first span	ning tree.				
4. Program to implem	ient Knapsack probl	em.				
5. Program to implem	nent Strassen Multip	lication.				
6. Program to implem	ent Matrix Multipli	cation using Divide and	Conquer Appro	ach.		
c. rogram to impion	ione manine manuph	Search asing Divide and	conquer rippio			

7. Program to implement the Traveling Salesman Problem.

8. Program to implement Depth First Search using Traversal Method.

9. Program to implement Breadth First Search using Traversal Method.

10. Study of Machine Learning and Machine learning algorithms.

11.Program to implement 8 -Queen Problem.

12.Program to implement 15 –Puzzle problem.

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

https://nlp-iiith.vlabs.ac.in/ http://vlab.co.in/participating-institute-iiit-hyderabad

Internet of Things

1. Name of the Department- Computer Science & Engineering							
2. Course Name	Internet of Things	L	L T P		Р		
3. Course Code		3 0 0					
4. Type of Course (use tick mark)	Core ()		PE	(✔)	OE ()	
5. Pre requisite	Web Fundamentals	7. Frequency	Eve	en	Odd	Either	Every
6. (if any)		(use tick	0		(🗸)	Sem ()	Sem ()
		marks)					
8. Total Number of Lectures, Tutorials, Practical (assuming 12 weeks of one semester)							
Lectures = 36		Tutorials = 0	Pra	octic	al = 0		
9. Brief Syllabus							
An overview of Inter	rnet of Things technology	and architecture asso	ciate	d wi	th IoT sy	stem,. Di	scussion
of important protoco	ol required for IoT comm	unication. The Interne	et of	Thi	ngs cover	rs a huge	range of
industries and use ca	ases that scale from a sing	gle constrained device	up to	o ma	assive cro	DSS-	
platform deploymen	ts of embedded technolog	gies and cloud systems	s con	nect	ting in re	al-time.	
10. Learning object	tives: The objective of the	is course is to impart l	know	ledg	ge on IoT	', its archi	tecture
and various prote	ocols, processor for devel	lopment & case study	of Io	Т ар	plication	ns.	
11. Course Outcom	es: On completion of this	s course, the students	will ł	be al	ble to		
• Overview of	IoT						
• Understand t	he Architectural						
• Understand t	he various IoT Protocols						
• Real Time A	pplications – Case study						
12. Unit wise detail	ed content						
Unit-1 Number	of lectures = 09	Introduction to IOT	1				
Basics of IoT system	n, Characteristics of IoT,	Physical design of Io7	ſ, Lo	gica	l design	of IoT,	
Functional blocks of	IoT, Communication mo	odels & APIs					
Unit-2 Number	of lectures = 09	IOT Protocols					
Bluetooth Low Ener	gy, Zigbee Smart Energy	, TLS, DTLS, CoAP,	OM	A, N	IAC 802	.15.4 etc.	
Unit-3 Number	of lectures = 09	IOT Processors					
Raspberry Pi / Ardiu	no Processor: Features &	z hardware involved ir	the	pro	cessor, Pi	rogrammi	ng
concepts & instruction	ons, Programming examp	oles.					
Unit-4 Number	of lectures = 9	IoT Applications					
Lighting as a service	e, Intelligent Traffic syste	ms, Smart Parking, Sı	nart	wate	er manag	ement, Ca	ase
study: IOT for Smar	t city Barcelona.						

13. 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.

14. Books Recommended

- Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand, StamatisKarnouskos, David Boyle, "From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence", 1 st Edition, Academic Press, 2014.
- Bernd Scholz-Reiter, Florian Michahelles, "Architecting the Internet of Things", ISBN 978-3-642-19156-5 e-ISBN 978-3-642-19157-2, Springer
- Daniel Minoli, "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", ISBN: 978-1-118- 47347-4, Willy Publications
- Vijay Madisetti and ArshdeepBahga, "Internet of Things (A Hands-onApproach)", 1 st Edition, VPT, 2014.

NEURAL NETWORKS

1. Name of the Department : Computer Science Engineering								
2. Course Name	Neural Network	L	T P					
3. Course Code	13020708	3	0		2			
4. Type of Course (use tick mark)	✓ Core	PE () OE ()					
5. Pre-requisite (if any)	CN	6. Frequency (use tick marks)	Even	✓ Odd ()	Either Sem ()	Every Sem ()		
7. Total Number of	Lectures, Tutoria	lls, Practical (assuming 1	14 weeks of one se	mester)				
Lectures = 42Tutorials = 0Practical = 28								
8. Brief Syllabus This course will cover image processing, an reinforcement learning these models on prace	er basic neural network nd computer visior ng) and application tical problems.	work architectures and lea n. Three forms of learnin is of these will be discuss	arning algorithms, g will be introduc ed. The students v	for applications in p ed (i.e., supervised, vill have a chance to	oattern reco , unsuperv o try out so	ognition, ised and everal of		
 9. Learning object The objective of this 1. make student 2. teach student 3. teach learning 4. teach concept 10. Course Outcometer 	 9. Learning objectives: The objective of this course is to make students familiar with basic concepts and tool used in neural networks teach students structure of a neuron including biological and artificial teach learning in network (Supervised and Unsupervised) teach concepts of learning rules. 10. Course Outcomest 							
On completion of thi	s course, the studer	nts will be able to:-	ning algorithms					
1. Learn Basic	ineural network a							
2. Learn traini	ng, verification and	l validation of neural netw	ork models					
3. Design sing	le and multi-layer f	feed-forward neural netwo	orks					
4. Understand	training of recurren	nt Hopfield networks and	associative memor	y concepts.				
11. Unit wise detail	ed content							
Unit-1	Unit-1 Number of lectures = 10 Title of the unit: Introduction							
Structure of biological neurons relevant to ANNs., Models of ANNs; Feedforward & feedback networks; learning rules; Hebbian learning rule, perception learning rule, delta learning rule, Widrow-Hoff learning rule, correction learning rule, Winner –lake all learning rule, etc.								
Unit - 2Number of lectures = 8Title of the unit: Single layer Perception Classifier and Multi-layer Feed forward Networks								
Classification model, Features & Decision regions; training & classification using discrete perceptron, algorithm, single layer continuous perceptron networks for linearly separable classifications, linearly non-separable pattern classification, Delta learning rule for multi-perceptron layer, Generalized delta learning rule, Error back- propagation training, learning factors, Examples.								
Unit - 3	Number of lectures = 8	Title of the unit: Single	e layer feedback N	letworks				
Basic Concepts, Hop recurrent	field networks, Tra	iining & Examples. Assoc	iative memories: I	inear Association, H	Basic Conc	cepts of		
Unit - 4	Number of	Title of the unit: Auto	associative memo	ry				

	lectures = 8						
Retrieval algorithm, storage algorithm; By directional associative memory Architecture, Association encoding & decoding, Stability.							
Unit - 5	Number oflectures = 8	Title of the unit: Self organizing networks					
UN supervised le	UN supervised learning of clusters, winner-take-all learning, recall mode, Initialization of weights, seperability						
12. Brief Description of self learning / E-learning component							
12. Brief Descri	iption of self learning	/ E-learning component					
12. Brief Descri	iption of self learning	/ E-learning component					
12. Brief Descri	iption of self learning	/ E-learning component					
12. Brief Descri	iption of self learning	/ E-learning component					
12. Brief Descri13. Books Reco	iption of self learning mmended (3 Text Bo	/ E-learning component oks + 2-3 Reference Books)					
12. Brief Descri 13. Books Reco <i>i.</i>	iption of self learning mmended (3 Text Bo Introduction to Artifi	/ E-learning component pks + 2-3 Reference Books) icial Neural systems - Jacek M. Zurada, 1994, Jaico Publ. House					
12. Brief Descri 13. Books Reco <i>i.</i> ii.	iption of self learning mmended (3 Text Bo Introduction to Artifi Neural Networks	/ E-learning component poks + 2-3 Reference Books) <i>icial Neural systems - Jacek M. Zurada, 1994, Jaico Publ. House</i> :A Comprehensive formulation - Simon Haykin					
12. Brief Descri 13. Books Reco <i>i.</i> ii. iii.	iption of self learning mmended (3 Text Bo Introduction to Artifi Neural Networks Neural Networks	/ E-learning component bks + 2-3 Reference Books) icial Neural systems - Jacek M. Zurada, 1994, Jaico Publ. House :A Comprehensive formulation - Simon Haykin – Kosko					
12. Brief Descri 13. Books Reco <i>i.</i> ii. iii. iii.	iption of self learning mmended (3 Text Bo Introduction to Artifi Neural Networks Neural Networks Neural Network	/ E-learning component pks + 2-3 Reference Books) <i>icial Neural systems - Jacek M. Zurada, 1994, Jaico Publ. House</i> : A Comprehensive formulation - Simon Haykin – Kosko Fundamentals – N.K. Bose					

1. Name of the Depar	tment- Computer S	Science & Engineering				
2. Course Name	Neural Network	L	Т	Р		
	Lab					
3. Course Code		0	0	2		
4. Type of Course (us	e tick mark)	Core (🖌)	PE()	OE ()		
5. Pre-requisite (if		6. Frequency (use	Even Odd	Either Every		
any)		tick marks)	(✔)	Sem () Sem ()		
7. Total Number of L	ectures. Tutorials.	Practical (assuming 12	weeks of one sen	nester)		
Lectures = 0	,,	Tutorials = 0	Practical = 24			
8. Course Description	1					
14. Learning objectives:						
The objective of this course	e is to					
5. make students fami	liar with basic concepts	and tool used in neural netwo	orks			
7. teach learning in ne	twork (Supervised and	Unsupervised)				
8. teach concepts of le	earning rules.					
15. Course Outcomes:						
On completion of this cours	se, the students will be a	ble to:-				
5. Learn Basic Neur	al Network architecture	and basic learning algorithms	S			
6. Learn training, ver	rification and validation	of neural network models				
7. Design single and	multi-layer feed-forwar	d neural networks				
8. Understand trainin	ng of recurrent Hopfield	networks and associative me	mory concepts.			
9. List of Experiment	s					
Study of Matlab						
(a) Write a program to p	erform basic operatio	ons in Matlab				
(b) To perform matrix o	perations in Matlab					
(a) Introduction to scrip	<mark>t file in Matlab</mark>					
(b) Write a program to c	calculate the factorial	of a number by creating a	script file by using v	while loop		
(c) Write a program in N	Natlab to find the fact	orial by creating a function	n file by using for loo	op		
(a) Write a program in N	/latlab to plot multipl	e curves in single plot by c	reating a script file			
(b) Write a program in N	latlab for plotting mu	altiple curves in single figur	re			
(a) write a program in N	(a) Write a program in Matlab to plot Activation function used in neural network					
(b) Write a program in Matlab to plot piecewise continuous activation function (threshold and signum						
(a) To realize gatos using	Mccullob Ditt mode	in Matlah				
(h) Write a program to i	mnlement XOR gate	ising Mcclloh-Pitts neuron				
(a) Write a program to c	reate the Percentron	using GUI in Matlah				
(b) Write a program in N	Natlab to create `Perc	ceptron using commands				
(a) Write a program in N	Aatlab to classify the	Classes using Perceptron				
(b) Write a program in N	1atlab for Pattern Clas	sification using Perceptron	n network			
Write a program in Matlab for creating a Back Propagation Feed-forward neural network						

To design a Hopfield Network which stores 4 vectors

Write a program to illustrate how the perception learning rule works for non-linearly separable problems

Write a program to illustrate Linearly non-separable vectors

Professional Ethics for Computer Engineers

г

Name of the Departi	nent- Computer Scie	nce and Engineering	-				
Course Name	Professional	L	Т		Р		
	Ethics for						
	Computer						
	Engineers						
Course Code		2	0		0		
Course Coue		2	U		U		
Type of Course (use	tick mark)	Core (✓)	PE()		OE ()		
Pre-requisite (if	Universal Human	Frequency (use tick	Even	Odd	Either	Every	
any)	Values	marks)	0	(✔)	Sem ()	Sem ()	
Total Number of Le	ctures, Tutorials, Pra	ctical (assuming 12we	eks of or	ne semes	ter)		
Lectures = 24		Tutorials = 0	Practio	cal = 0			
Course Description							
he methodology of thi	s course is universally	adaptable, involving a	systema	tic and I	nter-relati	onship f	
echnology growth and	l social, economic ar	nd cultural growth. It	is free f	rom any	dogma o	or value	
escriptions. This subje	ct mainly deals with v	workmanship culture, se	ocial and	l ethical	responsibi	lities of	
Computer Engineers.							
Learning objectives:							
o create an awareness	in Computer Engineer	s about Ethics in engine	eering pr	ofession.			
i. To understand profe	ssional responsibility	of an engineer.	01				
ii. To appreciate ethica	l dilemma while disch	arging duties in profess	ional life				
Course Outcomes (C	COs):						
On completion of this c	ourse, the students wil	l be able to					
i. Understand the professional life	significance of value i	nputs in a classroom &s	start appl	ying ther	n in their		
ii. Understand the	role of a human being	in ensuring harmony in	society	and natu	e.		
iii. Distinguish bety	veen ethical and uneth	ical practices, and start	working	out the s	trategy to		
actualize a harmonious environment wherever they work.							
Unit wise detailed content							
Unit-1	Number of	Engineering knowled	lge as so	cial and	professio	nal	
	lectures = 09	activities					
cience, Technology and	nd Engineering as kn	owledge and as social	and pr	ofessiona	al activitie	s.Inter-	
elationship of teo	chnology growth	and social, econ	omic	and c	ultural	growth;	

istorical perspective. Ancient, medieval and modern technology/industrial revolution and its impact; heIndian Science and Technology.

ocial and human critiques of technology; Mumford and Ellul. Rapid technological growth and Depletion of resources; reports of the club of Rome; limits to growth; sustainable development. nergy crisis, renewable energy resources. Environmental degradation and pollution; eco friendly echnologies; environmental regulations; environmental ethics. Technology and the arms Race; the nuclear threat. Appropriate technology movement of Schumacher; later developments.

Unit – 3	Number of lectures = 9	Technology and the
		developing nations

echnology and the developing nations; problems of technology transfer; technology Assessment/impact analysis. Human operator in engineering projects and industries; problems of Man-machine interaction; impact of assembly line and automation; human centered technology. ndustrial hazards and safety; safety regulations, safety engineering.

Unit – 4 Number of lectures = 9 Engineering profession

ngineering profession; ethical issues in engineering practice; Conflicts between business demands and rofessional ideals; social and ethical responsibilities of the engineer; codes of professional ethics; whistle blowing and beyond; case studies.

Brief Description of self-learning / E-learnig 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/

Journal papers; Patents in the respective field.

Books Recommended

Text Books

. Baum, R.J., ed, Ethical Problems in Engineering

Reference Books

. Beabout, G.R., Wennemann, D.J., Applied Professional Ethics.

River Engineering

Name of the Department- Civil Engineering							
Course Name	River	L	T		Р		
	Engineering						
Course Code		3	0		0		
Type of Course (use	tick mark)	Core ()	PE(✓)		OE ()		
Pre-requisite (if	Universal Human	Frequency (use tick	Even Odd		Either	Every	
any)	Values	marks)	0	(✔)	Sem ()	Sem ()	
Total Number of Le	ctures, Tutorials, Pra	ctical (assuming 12wee	eks of on	e semest	er)		
Lectures = 36		Tutorials = 0	Practic	al = 0			
Course Description	_						
Aultipurpose river use; ractices; river structure mpact minimization.	natural physical proce es; design practices; in	esses in alluvial rivers; c npact of river modificati	hannel m on; prob	odificati lem analy	on ysis; and		
Learning objectives:							
. To understand theore 2. To inculcate the be	tical concepts of water nefits of fluvial system	and sediment movement to the society.	nts in riv	ers.			
Course Outcomes (C	COs):						
he students will be abl	le to						
. Appreciate the comp	lex behavior of rivers.						
2. They will gain th	e skills to take up rese	arch activities in river e	ngineerir	ıg.			
Unit wise detailed co	ontent	D ' D ('					
Unit-1	Number of	River Functions					
	ectures = 09						
r <mark>imary function of a ri</mark>	ver – River uses and m	neasures – Water and Se	diment l	oads of r	iver –		
Rivers in India, Hima	laya and Peninsular.						
River training works a	and river regulation wo	orks – Flood plain mana	gement -	- waves a	ind tides i	n	
Estuaries - Interlinking of rivers – River Stabilization							
Unit – 2	Number of	River Hydraulics					
	lectures = 09						
hysical Properties and	Equations – Steady flo	ow in rivers – uniform a	nd non u	niform –			
urbulence and velocity	y profiles – resistance o	coefficients – Boundary	conditio	ns and ba	ack water	S	
Transitions – Rating Curve – Unsteady flow in rivers : Propagative of surface waves –							

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Characteristics, flood waves – kinematic and diffusion analogy – velocity of propagation of flood

waves – Flood wave – Maximum

Unit – 3

Number of lectures = 9

River Mechanics

River Equilibrium : Stability of Channel – regime relations – river bend equilibrium – hydrauliceometry of downstream - Bars and meandering - River dynamics – degradation andggradations of river bed – Confluences and branches – River Data base.Unit – 4Number of lectures = 10River Surveys and Model

Mapping – Stage and Discharge Measurements – Sediments – Bed and suspended load Physical ydraulic Similitude – Rigid and mobile bed – Mathematical – Finite one dimensional – multi – imensional – Water Quality and ecological model

Brief Description of self-learning / E-learnig 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/

Journal papers; Patents in the respective field.

Books Recommended

anson PL.Ph., Lvan BendegamJvanden Berg, Mdevries A. Zanen (Editors), Principles of River Engineering – The non tidal alluvial rivers – Pitman . Pierre Y. Julien ., "River Mechanics" ,Cambridge University Press

3. K.L Rao, INDIA"s WATER WEALTH - Orient Longman Ltd.