PERIYAR MANIAMMAI INSTITUTE OF SCIENCE & TECHNOLOGY

PERIYAR MANIAMMAI
INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University)
Established Under Sec. 3 of UGC Act, 1956 • NAAC Accredited
think • innovate • transform

Criterion 1 – Curricular Aspects

Key Indicator 1.1 Curriculum Design and development

Metric 1.1.3 Average percentage of courses having focus on employability/ entrepreneurship/ skill Development offered by the department.

DEPARTMENT OF SOFTWARE ENGINEERING

SYLLABUS COPY OF THE COURSES HIGHLIGHTING THE FOCUS ON EMPLOYABILITY/ ENTREPRENEURSHIP/ SKILL DEVELOPMENT

1. List of courses for the programmes in order of

S. No.	Programme Name
i.	Master of Sciences(Software Engineering) (Full Time)
ii.	Bachelor of Sciences(Computer Science)(Full Time)
iii.	Bachelor of Sciences(Animation & Multimedia) (Full Time)
iv.	Master of Sciences (Computer Science)(Full Time)

2. Syllabus of the courses as per the list.

Legend : Words highlighted with **Blue Color** - Entrepreneurship
Words highlighted with **Red Color** - Employability
Words highlighted with **Purple Color** - Skill Development

1. List of Courses

S.No.	Name of the Course	Course Code	Year of Introduction	Activities bearing to Employability/ Entrepreneurship/ Skill development
Master of Sciences(Software Engineering) (Full Time)				
1.	Internship Programme	YSE701	2011-12	Employability: Real time project
2.	Software Testing and Quality Assurance	YSE801	2011-12	**Employability :** Activities in software testing
3.	Big Data Analytics using R	YSE802	2017-18	Employability: Seminar, Quiz , Assignment , Case Study
4.	Software Project Reports Preparation	YSE803	2014-2015	**Employability :** Improving document preparation attitude of students
5.	Machine Learning Algorithms	YSE804	2021-22	Employability: Seminar, Quiz , Assignment , Case Study
6.	Cloud Computing	YSE805A	2016-17	Employability: Seminar, Quiz , Assignment , Case Study
7.	Mobile Application Development	YSE901	2016-17	Employability: Seminar, Quiz , Assignment , Case Study
8.	Cyber Security	YUM902	2017-18	Employability: Seminar, Quiz , Assignment , Case Study
9.	Enterprise Resource Planning	YSEE93	2015-16	Employability: Seminar, Quiz , Assignment , Case Study
10.	Big Data Analytics	YSEE95	2015-16	Employability: Seminar, Quiz , Assignment , Case Study
11.	Project Phase I	YSE906	2011-12	Employability: Real time project
12.	Main Project Phase II	YSE1001	2011-12	Employability : Real Time Projects
Bachelor of Sciences (Computer Science) (Full Time)				
13.	Basic English Communication Skills	XGL101	2019-20	**Skill development**- Group Discussion , Spoken and Written communication training ,
14.	Ariviyal Tamil/ Comprehensive English	XGL102A/ XGL102B	2019-20	**Skill development** - Group Discussion , Spoken and Written communication training ,

15.	Programming Methodologies	XBC103	2020-21	Employability: Seminar, Quiz , Assignment , Case Study
16.	Algebra, Calculus & Analytical Geometry	XBC104	2019-20	Employability: Seminar, Quiz , Assignment , Case Study
17.	Human Ethics, Values, Rights, and Gender Equality	XUM106	2019-20	**Skill development -**Paper Presentation, poster
18.	Computer Fundamentals	XBC105	2019-20	Employability: Seminar, Quiz , Assignment , Case Study
19.	Advanced English Communication Skills	XGL201	2021-22	**Skill development:-** Improving communication skill to handle the problems
20.	Data Structures	XBC203	2021-22	**Employability:** Seminar, Quiz , Assignment , Case Study ,
21.	Discrete Mathematics	XBC204	2019-20	**Skill development:** Solving the real world problem by mathematically
22.	Digital Electronics	XBC205	2019-20	**Employability:** Seminar, Quiz , Assignment , Case Study ,
23.	Multimedia Systems	XBC301	2019-20	Employability: Seminar, Quiz , Assignment , Case Study
24.	Operating System	XBC302	2019-20	Employability: Seminar, Quiz , Assignment , Case Study
25.	Algorithms	XBC303	2021-22	Employability: Seminar, Quiz , Assignment , Case Study
26.	Allied Physics	XBC304	2019-20	Employability: Seminar, Quiz , Assignment , Case Study
27.	R Programming	XBC306	2019-20	Employability: Seminar, Quiz , Assignment , Case Study
28.	Object Oriented Programming	XBC401	2020-21	**Employability:** Seminar, Quiz , Assignment , Case Study , Project
29.	Database Management Systems	XBC402	2020-21	**Employability:** Seminar, Quiz , Assignment , Case Study
30.	Statistics	XBC403	2020-21	**Employability: S**eminar, Quiz , Assignment , Case Study

31.	Principles of Management	XBC404	2020-21	**Employability:** Seminar, Quiz , Assignment , Case Study
32.	Angular JS	XBC406	2020-21	**Employability:** Seminar, Quiz , Assignment , Case Study
33.	Software Engineering	XBC501	2020-21	Employability: Seminar, Quiz , Assignment , Case Study
34.	Data Base Management System	XBC502	2020-21	Employability: Seminar, Quiz , Assignment , Case Study
35.	Data Warehousing and Data Mining	XBC503	2020-21	Employability: Seminar, Quiz , Assignment , Case Study
36.	Statistics	XBC504	2020-21	Employability: Seminar, Quiz , Assignment , Case Study
37.	Digital Image Processing	XBC505B	2020-21	Employability: Seminar, Quiz , Assignment , Case Study
38.	IPT 21 Days	XBC507	2020-21	Employability: Seminar, Quiz , Assignment , Case Study
39.	Angular JS	XBC508	2020-21	Employability: Seminar, Quiz , Assignment , Case Study
40.	Cloud Computing	XBC601	2021-22	Employability: Seminar, Quiz , Assignment , Case Study
41.	Web Technologies	XBC602	2021-22	Employability: Seminar, Quiz , Assignment , Case Study
42.	Ethical Hacking	XBC603	2021-22	Employability: Seminar, Quiz , Assignment , Case Study
43.	Internet of Things	XBC604A	2021-22	Employability: Seminar, Quiz , Assignment , Case Study
44.	Software Testing and Quality Assurance	XBC605A	2021-22	Employability: Seminar, Quiz , Assignment , Case Study
45.	Project Work	XBC606	2021-22	Employability: Seminar, Quiz , Assignment , Case Study
Bachelor of Sciences(Animation & Multimedia) (Full Time)				
46.	Basic English Communication Skills	XGL101	2019-20	**Skill development** - Group Discussion , Spoken and Written communication training ,
47.	Ariviyal Tamil/ Comprehensive English	XGL102A/ XGL102B	2015-16	**Skill development** - Group Discussion , Spoken and Written communication

				training ,
48.	Foundation of Art	XAM103	2021-22	Skill development -
49.	Principles of Animation	XAM104	2015-16	Skill development -
50.	Introduction To Computer Graphic Design	XAM105	2021-22	Skill development -
51.	Advanced English Communication Skills	XGL201	2020-21	**Skill development:-** Improving communication skill to handle the problems
52.	Entrepreneurship Development	XVM203	2015-16	Employability: Seminar, Quiz , Assignment , Case Study
53.	Vector Graphics	XAM203	2021-22	Employability: Seminar, Quiz , Assignment , Case Study
54.	Digital Photography	XAM204	2018-19	**Employability:**Digital Art, Infographics
55.	Basics of Clay Modeling	XAM205	2015-16	**Skill development:**Drawing a model, infographics, digital art
56.	Digital Imaging Skills	XAM301	2018-19	Skill Development :
57.	Character & Environment Sketching	XAM302	2015-16	Skill Development : Skteching
58.	Audio & Video Editing	XAM303	2015-16	Skill Development : Editing works
59.	2D Animation	XAM304	2015-16	Skill Development : Editing works
60.	Drawing skills	XAM305	2019-20	Skill Development : Drawinigs
61.	Image Editing Skills	XAM401	2015-16	**Skill development:**Drawing a model, infographics, digital art
62.	Compositing Techniques	XAM402	2016-17	**Employability**
63.	Basics of Clay modelling	XAM403	2015-16	**Skill development:**Drawing a model, infographics, digital art

64.	Fundamentals of Cinematography	XAM404	2018-19	**Employability :**effects Project
65.	Digital Matte Painting	XAM406	2019-20	**Employability:** shortfilms
66.	Web Design	XAM501	2016-17	Employability: Web Design Works
67.	3D Modeling	XAM502 A	2016-17	Employability: 3D Models
68.	Script Writing and Story Board Designing	XAM503A	2016-17	Skill Development : Script Writing
69.	Media Technologies	XAM504B	2016-17	Employability
70.	Stop Motion Animation	XAM505	2019-20	Skill Development
71.	In Plant Training	XAM507	2014-15	Employability
72.	Digital Television Production	XAM601	2016-17	**Employability :** Animation Projects
73.	3D Animation	XAM602	2016-17	**Employability:** 3D Animation advertisement
74.	Film Making	XAM603 A	2016-17	**Employability :** Projects
75.	Texturing& Shading	XAM604B	2020-21	**Employability :** Posters
76.	Project Work	XAM604	2016-17	**Employability :** Projects
Master of Sciences (Computer Science)(Full Time)				
77.	Advanced Operating system	YBC101	2021-22	**Employability:** Seminar, Quiz , Assignment , Case Study
78.	Internet of Things	YBC102	2021-22	**Employability:** Seminar, Quiz , Assignment , Case Study
79.	Advanced Computer Architecture	YBC103	2021-22	**Employability:** Seminar, Quiz , Assignment , Case Study
80.	Advanced Database Management System	YBC104	2021-22	**Employability:** Seminar, Quiz , Assignment , Case Study
81.	Web Technologies	YBC105	2021-22	**Employability:** Seminar, Quiz , Assignment , Case

				Study
82.	Virtual and Augmented reality	YCS201	2021-22	Employability: Seminar, Quiz , Assignment , Case Study
83.	Advanced Java Programming	YCS202	2021-22	**Employability:** Seminar, Quiz , Assignment , Case Study , Project
84.	Machine Learning	YCS203	2021-22	Employability: Seminar, Quiz , Assignment , Case Study
85.	Artificial Intelligence	YCS204C	2021-22	Employability: Seminar, Quiz , Assignment , Case Study
86.	Pervasive Computing	YCS205C	2021-22	Employability: Seminar, Quiz , Assignment , Case Study

SYLLABUS – M.Sc.(SOFTWARE ENGINEERING)

YSE901			MOBILE APPLICATION DEVELOPMENT	L	T	P	C
				3	0	1	4
C	P	A		L	T	P	H
2.5	0.25	0.25		3	0	2	5

PREREQUISITE: YSE303, YSE503

Course Outcomes		Domain	Level
After the completion of the course, students will be able to			
CO1	***Recognize*** the significance of Android development	Cognitive	Remember
CO2	***Summarize*** the knowledge on java, xml with android and ***detect*** about the android development.	Cognitive Psychomotor	Understand Perception
CO3	***Manipulate*** and utilize the layout, resources and user interface.	Cognitive Affective	Application Receiving
CO4	To ***know*** about the database in android	Cognitive	Understand
CO5	***Design*** and test the android environment using exception handling, accessing the cloud data.	Cognitive	Create

UNIT I	INTRODUCTION	9+6

Overview of JAVA Programming – Inheritance – Polymorphism – Android software layers – Android libraries – Components of android application – Application life cycle – Android studio – android project structure – Android manifest file – Structure of manifest file

Lab: 1. Installing Android

2. Create a simple application

UNIT II	ANDROID SDK TOOLS AND OTHERS	9+6

Android SDK tools – activity – methods to remember – Fragments – views – List vies and list activity – Intents and intent filter – native action

Lab: 1. Working with fragments

2. Working with Intents and intent filters.

3. Creating contact based application.

UNIT III	ANDROID LAYOUT, RESOURSES AND UI	9+6

Views – Layout – customized view – Resources – themes and style – material design – User interaction – dialogs – Activities – Toasts – menus – context menus – Additional menu – pop up

menu

Lab:

1. Working with views
2. Creating Dialogs and toasts
3. Working with Pop-up Menu

UNIT IV	ANDROID STORAGE, SQLite and NOTIFICATIONS	9+6

Android storage options – File I/O – connecting to the internet – Databases in android – content providers – custom content provider – creating notifications – actions – expandable notification – layouts – priority

Lab: 1. Quotes provider app

2. SQLite database app

. 3. Implement notification

UNIT V	ANDROID ADAVANCED DEVELOMENT	9+6

Exception handling – Location based services – finding your current location using GPS -Accessing cloud storage – Bluetooth – NFC – managing WiFi – Telephony and SMS.

Lab: 1. Working with exception handling

2. Finding your location using GPS.

3. Bluetooth communication / SMS communication..

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	0	30	75

TEXTBOOKS

1. Professional Android 4 Application Development, 3rd edition, retomeier, wiley publication 2012.

REFERENCES:

1. Programming Android, 1st Edition, ZigurdMednieks, Laird Dornin, G. Blake Meike, Masumi Nakamura, Oreilly publications, 2011.

E-REFERENCES

1. https://www.tutorialspoint.com/mobile_development_tutorials.htm
2. https://www.theserverside.com/tutorial/Mobile-application-development-tutorial

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

M.Sc. SE	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	2	1	1	1	1	2	1	1	1
CO2	3	2	2	2	2	2	2	2	1

CO3	2	2	2	2	3	2	2	2	1
CO4	3	2	2	2	2	2	2	3	1
CO5	3	3	3	3	3	3	3	3	1
Average	3	2	2	2	2	2	2	2	1

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

YSE902			**CYBER SECURITY**	**L**	**T**	**P**	**C**
				3	**0**	**0**	**3**
C	**P**	**A**		**L**	**T**	**P**	**H**
3	**0**	**0**		**3**	**0**	**0**	**3**

PREREQUISITE: YSE403

Course Outcomes		**Domain**	**Level**
After the completion of the course, students will be able to			
CO1	***Describe***the importance of information systems and ***Classify***the threats and attacks in networks.	Cognitive	Remember Understand
CO2	***Describe***and***Defend*** the concepts of information security.	Cognitive	Remember Understand
CO3	***Define*** and ***Defend***the project activity planning and risk management.	Cognitive	Remember Understand
CO4	***Predict*** and ***Apply*** the appropriate biometric system for security.	Cognitive	Understand Apply
CO5	***Identify*** and ***Apply*** the perfect law and Act in real life.	Cognitive	Remember Apply

UNIT I	**INTRODUCTION AND THREATS TO INFORMATION SYSTEMS**	**9**

History of Information Systems and its Importance, basics, Changing Nature of Information Systems, Need of Distributed Information Systems, Role of Internet and Web Services, Information System Threats and attacks, Classification of Threats and Assessing Damages. Security in Mobile and Wireless Computing- Security Challenges in Mobile Devices ,authentication Service Security, Security Implication for organizations, Laptops Security Concepts. Brief review of Internet Protocols-TCP/IP, IPV4, IPV6. Functions of various networking components-routers, bridges, switches, hub, gateway and Modulation Techniques.

UNIT II	**BUILDING BLOCKS OF INFORMATION SECURITY**	**9**

Basic Principles of Information Security, Confidentiality, Integrity, Availability and other terms in Information Security, Information Classification and their Roles. Security Threats to E Commerce,

Virtual Organization, Business Transactions on Web, E Governance and EDI, Concepts in Electronics payment systems, E Cash, Credit/Debit Cards.

UNIT III	PHYSICAL AND BIOMETRIC BASED SECURITY	9

Physical Security - Needs, Disaster and Controls, Basic Tenets of Physical Security and Physical Entry Controls, Access Control- Biometrics, Factors in Biometrics Systems, Benefits, Criteria for selection of biometrics application, Design Issues in Biometric Systems, Interoperability Issues, Economic and Social Aspects, Legal Challenges. Models for Information Security- ISO 27001, SSE-CMM, Information Security Vs Privacy.

UNIT IV	CRYPTOGRAPHY, FIREWALLS, NETWORK SECURITY, INTRUSION DETECTION AND VPN	9

Cryptography- Applications and its roles, Digital Signature. Firewalls – need, proxy servers, Design and Implementation Issues, Policies. Network Security- Basic Concepts, Dimensions, Perimeter for Network Protection, Network Attacks, Need of Intrusion Monitoring and Detection, Intrusion Detection. Virtual Private Networks- Need, Use of Tunneling with VPN, Authentication Mechanisms, Types of VPNs and their Usage, Security Concerns in VPN.

UNIT V	LAW, LEGAL FRAMEWORK AND ETHICS	9

Cyber Crime, Information Security and Law, Types & overview of Cyber Crimes, Cyber Law Issues in E-Business Management, Overview of Indian IT Act, Ethical Issues in Intellectual property rights, Copy Right, Patents, Data privacy and protection, Domain Name, Software piracy, Plagiarism, Issues in ethical hacking.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45			45

TEXT BOOKS

1. Nina S.Godbole, 2009. "*Information Systems Security*", John wiley& sons India Private Limited,
2. Mark Merkow, Jim Breithaupt, "*Information Security*", Pearson Education.
3. Yadav, D S., 2001. "*Foundations of Information Technology*", New Age International
4. publisher, Delhi.

REFERENCES:

1. Corey Schou, Daniel Shoemaker, 2006. "*Information Assurance for the Enterprise*", Tata McGraw Hill.
2. VivekSood, 2001. "Cyber Laws Simplified", Mc Graw Hill Education private Limited.
3. Steven M. Furnell, 2005 ., "Computer Insecurity", Springer Publisher.

E – REFERENCES:

1. https://www.cryptool.org/en/
2. https://www.metasploit.com/
3. http://sectools.org/tool/hydra/
4. http://www.hping.org/
5. http://www.winpcap.org/windump/install/
6. http://www.tcpdump.org/
7. https://www.wireshark.org/

8. https://ettercap.github.io/ettercap/ 9. https://www.concise-courses.com/hacking- tools/top-ten/ 10. https://www.cirt.net/Nikto2 11. http://sqlmap.org/

B.Sc (Animation and Multimedia) Employability

XGL101			COMMUNICATION SKILLS IN ENGLISH	L	T	P	SSC
				2	0	0	24
C	P	A		L	T	P	SSH
1	0	1		2	0	0	24

PREREQUISITE: Nil

COURSE OUTCOMES		DOMAIN	LEVEL
On the successful completion of this course students would be able to			
CO1	Choose and **identify** different styles to various forms of public speaking skills and presentation skills.	Cognitive	Knowledge
CO2	**Understand** and identify the proper tone of language required in writing and speaking.	Cognitive	Understand
CO3	**Adapting** the speech structures and developing the speech outline.	Psychomotor	Adapting
CO4	Ability to **communicate** and develop presentation skills.	Affective	Reasoning
CO5	**Calibrates** the speaker to face the audience without any anxiety.	Psychomotor	Reasoning

UNIT I		6
Introduction to public speaking; functions of oral communication; skills and competencies needed for successful speech making; importance of public speaking skills in everyday life and in the area of business, social, political and all other places of group work		
UNIT II	**12**	**6**
Manuscript, impromptu, rememorized and extemporaneous speeches; analyzing the audience and occasion; developing ideas; finding and using supporting materials.		
UNIT III		**6**
Organization of Speech; introduction, development and conclusion; language used in various types of speeches; Adapting the speech structures to the Audience; paralinguistic features		

UNIT IV		6
Basic tips; how to present a paper/assignment etc; using visual aids to the speeches; using body language to communicate.		
UNIT V	**12**	**6**
Public speaking and speech anxiety, public speaking and critical listening Speech practice (4-6 speeches per student)		

LECTURE	TUTORIAL	SS	TOTAL
30	-	30	60

REFERENCES:

1. Technical Writing – April, 1978, by **Gordon H. Mills** (Author), **John A. Walter** (Author)
Effective Technical Communication: A guide for scientists and Engineers. Author: Barun K. Mitra, Publication: Oxford University press. 2007

XAM102A			**mwptpay;jkpo;**	L	T	P	C
				3	0	0	3
C	P	A		L	T	P	H
2.9	0.1	0		3	0	0	3

PREREQUISITE: Nil

	COURSE OUTCOMES	DOMAIN	LEVEL
After the completion of the course, students will be able to			
CO1	***Recognize(milahsk; fhZjy;)***gy;NtWmwptpay; Jiwrhu;e;jEl;gq;fs;>fiyr; nrhy;yhf;fcj;jpfs; Nghd;wtw;iwj; jkpo;nkhop %yk; mwpe;Jnfhs;sy;.	Cognitive	Remember
CO2	***Choose (njupTnra;jy;)***tlnkhopNtu;r;nrhw;fs;>Gtpapay;>epytpay; gw;wpg; goe;jkpo; ,yf;fpaq;fs; %yk; mwpe;Jnfhs;sy;.	Cognitive	Remember
CO3	***Describe(tpsf;Fjy;)***njhy;fhg;gpak; %yk; mwptpay; nra;jpfisczu;jy;.	Cognitive Psychomotor	Understand Set
CO4	***Apply (gad;gLj;Jjy;)***gy;NtWfy;tpj;Jiwrhu;e;jgpupTfs;>gy;NtWfy;tpj;Jiwrhu;e;jgpupTfs; Fwpj;JnjspTngwy;.	Cognitive	Apply
CO5	***Analyze(gFj;jy;)***mwptpay; rpWfijfspd; Njhw;wk; kw;Wk; tsu;r;rpepiyehlfq;fspd; gq;FFwpj;JnjspTngWjy;.	Cognitive	Analyze

myF– 1	mwptpay;jkpo; mwpKfk;	9
mwptpay;jkpo; - nghwpapay;>njhopy;El;gk;>kUj;Jtk;>cotpay;. jkpopy; mwptpay; - jkpopy; El;gk;.gilg;Gg; gzp–nrhy;yhf;fcj;jpfs; - El;gkhdNtWghLfisczu;e;Jnrhy;yhf;fk; nra;jy; - fiyr;nrhw;fs; - ,e;jpankhopfSf;Fg; nghJthdfiyr; nrhw;fiscUthf;Fjy; - tlnkhopNtu;r;nrhw;fiskpFjpahff; nfhz;bUj;jiyg; gad;gLj;Jjy;.		
myF– 2	gpwmwptpay; Jiwfs;	9
Gtpapay;>epytpay; gw;wpgoe;jkpo; ,yf;fpak; Fwpg;gpLk; jfty;fs; - njhy;fhg;gpak; Fwpg;gpLk capupay;>kz;zpay; gw;wpambg;gilr; nra;jpfs; - jkpo; kUj;Jtf; fy;tp - mwptpay; jkpOf;F ,jopay; cj;jpfs - tsu; jkpo;.		
myF– 3	gy;NtWfiyfspy; mwptpay;	9
nkhopapay; fy;tp–fl;llf; fiyf;fy;tp–rKjhaf;fy;tp–Nra;ikf;fy;tp–kz;zpay;>Gtpapay;>fzf;fpay; Mfpait,ize;jfy;tp - ,f;fhyf; fy;tpg; nghJepiy–fiy>mwptpay; - vd;gtw;wpd; tpsf;fq;fs;.		
myF– 4	mwptpay; jkpopy; rpWfijfspd; gq;F	9
rpWfij -,yf;fzk; cUthf;Fk; cj;jpfs; - rpwe;jrpWfijfs; - rpWfij tiffs; - ey;yrpWfijcUthf;fk; - tuyhW–r%fk; - nkhopngau;g;Gkw;Wk; mwptpay; rpWfijfs;.		
myF–5	mwptpay; jkpopy; ehlfq;fspd; gq;F	9
ehlfk; - ehlf ,yf;fzk;> ,Utifehlfq;fs; - gbg;gjw;Fupaehlfk; - ebg;gjw;Fupaehlfk; - rupj;jpuehlfk;>r%fehlfk; - eifr;Ritehlfq;fs; - mnkr;#u; ehlfq;fs; - njhopy;Kiwehlfq;fs;.		

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	---	---	45

Nkw;ghu;itEhy;fs;:

1. mwptpay; jkpo; - lhf;lu; th.nr. Foe;ijr;rhkp
2. tsu; jkpo; - ,jo;fs;
3. ,yf;fpatuyhW–rpWfijgw;wpaJ
4. ,yf;fpatuyhW–Gjpdk;gw;wpaJ

XAM103			ANIMATION ART	L	T	P	C
				2	0	2	4
C	P	A		L	T	P	H
3	1	0		2	0	4	6

PREREQUISITE: 3D animation

COURSE OUTCOMES		DOMAIN	LEVEL
After the completion of the course, students will be able to			
CO1	***Recognize*** the importance of animation.	Cognitive	Remember
CO2	***Demonstrate***the character drawing.	Cognitive	Understand
CO3	***Analyze*** the storyboard and animatics.	Cognitive	Analyze
CO4	***Formulate*** the frame by frame animation.	Cognitive	Create
CO5	***Organize*** the animation special effects.	Cognitive	Create

UNIT I	INTRODUCTION	6+12

What is mean by Animation – Why we need Animation – History of Animation – Uses of Animation – Types of Animation – Principles of Animation – Some Techniques of Animation – Animation on the WEB – 3D Animation – Special Effects - Creating Animation.

Lab Practical –I,

1. All Shapes drawing.
2. Stick figure drawing

UNIT II	CHARACTER LIBRARIES	6+12

Planning your animation-script-design-storyboards-animatics-animation-animation method-Animation efficiencies-compositing and editing-making your project plan-delivery specifications-format-dimensions- frame rate-aspect ratio-schedule-script-designs-storyboards-character libraries.

Lab Practical –II,

3. Anatomy drawing.
4. Portrait drawing

UNIT III	STORYBOARDS AND ANIMATICS	6+12

Storyboards -Drawing storyboards on paper (traditional) –Acting-Drawing digitally-Drawing directly into software. Animatics -Acting in digital boards -Building animatics- Technical issues Aspect ratio - Pixel aspect ratio- Image size-Frame rate- Action safe and title safe - Exporting from After Effects - Importing into animation software.

Lab Practical –III,

5. Full figuredrawing.
6. Illustration and perspective drawing.
7. Storyboard and Animatics drawing.

UNIT IV	FRAME BY FRAME ANIMATION	6+12

The character library Animating a scene - First pass: blocking and timing poses -Second pass: in betweening and body acting-Third pass: lip sync . -Lip sync-Fourth pass: eye acting and expressions. Timing and animation-Blocking the animation -Adding breakdowns -Adding inbetweens - Facial animation and lip sync-Using shape tweens.

Lab Practical –IV,

8. Walk cycledrawing.
9. Character drawing.

UNIT V	ANIMATION SPECIAL EFFECTS	6+12

Highlights and shadow modeling-Preparing the shadow model layer - Modeling the silhouette - Water Fire ,Smoke, Debris - Factors that increase file size, length-After Effects is a nondestructive program - Trimming- Pans and zooms - Export features Render queue - Transitions - Sound editing . Filters-Masks, painting, and text tools-Disadvantages of using After Effects.

Lab Practical –IV,

10. Landscapedrawing.
11. Creative drawing.
12. Digital Art.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
30	-	60	90

REFERENCES:

1. Foundation Flash Cartoon Animation by Tim Jones Barry J. Kelly Allan S. Rosson David Wolfe.

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PSO 1	PSO 2
CO1	2	1	1	1	1	1	1	2	1
CO2	1	1	3	1	1	2	1	2	2
CO3	1	1	2	1	2	1	1	3	1
CO4	2	1	1	1	2	1	1	3	1
CO5	2	2	1	2	2	1	1	2	1
AVG	**2**	**1**	**2**	**1**	**2**	**1**	**1**	**2**	**1**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM 104			PRINCIPLES OF ANIMATION	L	T	P	C
				4	1	0	5
C	P	A		L	T	P	H
4	1	0		4	1	0	5

PREREQUISITE: Nil

COURSE OUTCOMES		DOMAIN	LEVEL
After the completion of the course, students will be able to			
CO1	***Recognize*** the importance of drawing and the animation.	Cognitive	Remember
CO2	***Choose*** the methods to make the drawings for animation.	Cognitive	Remember
CO3	***Describe*** the stages of animation and ***achieve*** the knowledge on animation.	Cognitive Psychomotor	Understand Set
CO4	***Apply*** the body languages concepts in making animated characters.	Cognitive	Apply
CO5	***Analyze*** the different actions to be performed by the character to make the realistic animation.	Cognitive	Analyze

UNIT I	**INTRODUCTION**	**15**

Drawings with the help of basic shapes, Animal study, Human anatomy, Shading techniques, Live model study, Introduction- Importance of confidence, Difference between "looking at the drawing" and "seeing the drawing", What is observation, Procedure- How to approach, Importance of Guideline- Line of action, Overcome the fear, Drawing for animation.

UNIT II	**MAKE DRAWINGS FOR ANIMATION**	**15**

An Introduction on how to make drawings for animation, Shapes and forms, About 2d and 3d drawings Caricaturing – fundamentals, Exaggeration, Attitude, Silhouettes, Boundary- breaking exercises and warm ups, gesture drawing, Line drawing and quick sketches, Drawing from observation, memory and imagination.

UNIT III	**STAGES OF ANIMATION**	**15**

Drawing for Animation, Exercises and warm ups on pegging sheet, Quick Studies from real life, Sequential movement drawing, Caricaturing the Action. Thumbnails, Drama and psychological effect, Motion Studies, Drawing for motion.

UNIT IV	**BODY LANGUAGE**	**15**

The Body language, Re-defining the drawings, Introduction to animation production process, Basic Principles in animation.

UNIT V	**ACTIONS OF CHARACTERS**	**15**

Squash and stretch, Anticipation, Staging, Straight ahead and pose to pose, Follow through and overlapping action, Slow in and slow out, Arcs, Secondary action, Timing, Exaggeration, Solid drawing, Appeal, Mass and weight, Character acting, Volume, Line of action, Path of action, Walk cycles-animal and human.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
60	15	---	75

REFERENCES:

1. Graphics & Animation Basics , By Suzanne Weixel / Cheryl Morse
2. Basic Animation Ht25 - Walter Foster , By Walter Foster
3. Cartooning Basic Animation Ht25 - Walter Foster , By Walter Foster
4. Computer Graphics &Animation , By PrajapatiAk
5. Introduction To 3d Graphics & Animation Using Maya/Cd ,By Adam Watkins
6. www.animationmentor.com/animation-program/animation-basics.

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	3	1	2	2	1	2	2	1	2
CO2	2	3	1	2	2	1	2	1	3
CO3	2	1	3	1	1	2	0	1	2
CO4	3	2	2	2	1	0	2	2	2
CO5	3	1	2	1	0	1	1	2	1
AVG	**3**	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**2**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM 105			GRAPHICS DESIGN	L	T	P	C
				4	0	1	5
C	P	A		L	T	P	H
4	1	0		4	0	2	6

PREREQUISITE: Visual design

COURSE OUTCOMES		DOMAIN	LEVEL
After the completion of the course, students will be able to			
CO1	***Understand*** and ***recognize*** the Graphic Design concepts and its applications.	Cognitive	Understand Remember
CO2	***Understand*** the elements of design and ***Apply*** it to ***produce*** own shapes and color design.	Cognitive Psychomotor	Understand Apply Set
CO3	***Understand*** *the* principles of design and ***Apply*** it to ***develop*** a	Cognitive	Understand

	page for Website and print media.	Psychomotor	Apply Set
CO4	***Understand*** the poster design concepts and ***develop*** posters for advertisement and academic poster presentation.	Cognitive Psychomotor	Understand Apply Set
CO5	***Understand*** and ***equip*** themselves for self-employment and ***develop*** Presentation and Communication Skills.	Cognitive Affective	Understand Remember Receiving Responding

UNIT I	**INTRODUCTION TO THE GRAPHIC DESIGN**	**12+6**

Introduction to the Graphic Design Industry - History of Graphic Design - Future of Graphic design - Introduction to the equipment. The introduction of each piece of equipment would be tied to a relevant graphics project.

Lab

Using Photoshop: 1. Color Design
2. Shape Design

UNIT II	**ELEMENTS OF DESIGN**	**12+6**

Elements of Design -Colour - Line - Shape - Space- Texture - Value : Principles of Design Balance , Contrast, Emphasis/Dominance ,Harmony ,Movement/Rhythm , Proportion Repetition/ Pattern, Unity , Variety.

Lab

Using Photoshop: 1. Text & Shape Design

UNIT III	**TYPOGRAPHY**	**12+6**

Typography -Anatomy of a letter- Typefaces - Typographic Measurement - Typographic Standards - Typographic Guidelines - Creating images for print & web -Formats -Resolution. Raster Vs Vector -Editing Images - Ethics - Copyright laws.

Lab

Using Photoshop:
1. Page Design for Web
2. Page Design for Print

UNIT IV	**POSTER DESIGN**	**12+6**

Poster Design - Concept of Poster - Importance of posters - Qualities of a good poster - Project work on poster design - Calendar/Postage stamp design - Pennants/Buntings/Flags.

Lab

Using Photoshop: 1. Advertisement Poster Design
2. Academic Poster Design
3.Calendar Design

UNIT V	**GRAPHIC DESIGN CAREERS**	**12+6**

Careers in graphic design - Graphic Design careers and job avenues -Competencies for Employment employable skills - Building an artist portfolio - Setting up graphic design enterprise - Factors to consider - Building a portfolio of works - Meaning and Purpose - Hard and Soft copies.

Lab

Using Photoshop: 1. Personal Portfolio Design
2. Company Portfolio Design

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
60	**-**	**30**	**90**

REFERENCES:

1. Thinking with Type: A Primer for Designers: A Critical Guide for Designers,Writers, Editors, & Students Paperback – September 2, 2004 By Ellen Lupton.
2. Jennifer's-Introduction to Typography -An Advanced Communication Design Project-by Jennifer Simmer-Winter Term 2005
3. Typography- A guide to setting perfect type-by James Felici-Second Edition
4. Poster Design -A guide for FIMS students & staff: How to produce effective & attractive scientific posters
5. Policing Cyber crime by Petter Gottschalk-Bookboon.com
6. Portfolio Guidelines- All you need to know about your portfolio
7. Elements of Design (The Basics of Graphic Design)-net material
8. About Graphic Design- e-copy –net material
9. The Visual Display of Quantitative Information Hardcover – January 1, 2001,byEdward R. Tufte

Web Resources:

Poster Design:

1.https://www.ncsu.edu/project/posters/index.html

2.http://www.posterpresentations.com/html/free_poster_templates.html

Cyber crime:

3. http://www.posterpresentations.com/html/free_poster_templates.html

4. www.tutorialspoint.com

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A &M	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	3	2	2	1	2	1	1	1	0
CO2	2	3	3	3	2	2	3	3	0
CO3	2	3	3	3	2	2	3	3	0
CO4	2	3	3	3	1	2	3	3	0
CO5	2	3	3	1	3	2	3	1	0
AVG	**2**	**3**	**3**	**2**	**2**	**2**	**3**	**2**	**0**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XUM106			HUMAN ETHICS, VALUES, RIGHTS AND GENDER EQUALITY	L	T	P	C
				3	0	0	3
C	P	A		L	T	P	H
2.5	0	0.5		3	0	0	3

PREREQUISITE: Nil

	COURSE OUTCOMES	DOMAIN	LEVEL
On the successful completion of this course students would be able to			
CO1	***Relate*** and ***Interpret*** the human ethics and human relationships.	Cognitive	Remember Understand
CO2	**Explain** and **Apply** gender issues, equality and violence against women.	Cognitive	Understand Apply
CO3	***Classify*** and ***Develop*** the identify of human rights and their violations	Cognitive Affective	Analyse Reasoning
CO4	***Classify***and***Dissect*** necessity of human rights and report on violations.	Cognitive	Understand Analyse
CO5	***List*** and **respond** to family values, universal brotherhood, fight against corruption by common man and good governance.	Cognitive	Remember

UNIT I	**9**

HUMAN ETHICS AND VALUES: Human Ethics and values - Understanding of oneself and others- motives and needs- Social service, Social Justice, Dignity and worth, Harmony in human relationship: Family and Society, Integrity and Competence, Caring and Sharing, Honesty and Courage, WHO's holistic development - Valuing Time, Co-operation, Commitment, Sympathy and Empathy, Self respect, Self-Confidence, character building and Personality.

UNIT II	**9**

GENDER EQUALITY: Gender Equality - Gender Vs Sex, Concepts, definition, Gender equity, equality, and empowerment. Status of Women in India Social, Economical, Education, Health, Employment, HDI, GDI, GEM. Contributions of Dr.B.R. Ambethkar, ThanthaiPeriyar and Phule to Women Empowerment.

UNIT III	**9**

WOMEN ISSUES AND CHALLENGES: Women Issues and Challenges- Female Infanticide, Female feticide, Violence against women, Domestic violence, Sexual Harassment, Trafficking, Access to education, Marriage. Remedial Measures – Acts related to women: Political Right, Property Rights, and Rights to Education, Medical Termination of Pregnancy Act, and Dowry Prohibition Act.

UNIT IV	**9**

HUMAN RIGHTS: Human Rights Movement in India – The preamble to the Constitution of India, Human Rights and Duties, Universal Declaration of Human Rights (UDHR), Civil, Political, Economical, Social and Cultural Rights, Rights against torture, Discrimination and forced Labour, Rights and protection of children and elderly. National Human Rights Commission and other statutory Commissions, Creation of Human Rights Literacy and Awareness. - Intellectual Property Rights (IPR). National Policy on occupational safety, occupational health and working environment

UNIT V		9

GOOD GOVERNANCE AND ADDRESSING SOCIAL ISSUES:

Good Governance - Democracy, People's Participation, Transparency in governance and audit, Corruption, Impact of corruption on society, whom to make corruption complaints, fight against corruption and related issues, Fairness in criminal justice administration, Government system of Redressal. Creation of People friendly environment and universal brotherhood.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	-	-	45

REFERENCES:

1. Aftab A, (Ed.), Human Rights in India: Issues and Challenges, (New Delhi: Raj Publications, 2012).
2. Bajwa, G.S. and Bajwa, D.K. Human Rights in India: Implementation and Violations (New Delhi: D.K. Publications, 1996).
3. Chatrath, K. J. S., (ed.), Education for Human Rights and Democracy (Shimala: Indian Institute of Advanced Studies, 1998).
4. Jagadeesan. P. Marriage and Social legislations in Tamil Nadu, Chennai: Elachiapen Publications, 1990).
5. Kaushal, Rachna, Women and Human Rights in India (New Delhi: Kaveri Books, 2000)
6. Mani. V. S., Human Rights in India: An Overview (New Delhi: Institute for the World Congress on Human Rights, 1998).

XGL201			ENGLISH FOR EFFECTIVE COMMUNICATION	L	T	P	SS	C
				2	0	0	2	2
C	P	A		L	T	P	SS	H
1.5	0	0.5		2	0	0	2	4

PREREQUISITE: Nil

COURSE OUTCOMES		DOMAIN	LEVEL
On the successful completion of this course students would be able to			
CO1	Ability to **identify** the features of a technical project report and Knowledge on the linguistic competence to write a technical report	Cognitive	Creating
CO2	Ability to ***integrate*** both technical COURSE skill and language skill to write a project.	Cognitive	Understand
CO3	Confidence to **present** a project in 10 to 15 minutes	Cognitive	Create
CO4	The learner ***identifies*** and absorbs the pronunciation of sounds in English Language and learns how to mark the stress in a word and in a sentence properly	Cognitive	Create
CO5	The program enables the speaker speaks clearly and fluently with confidence and it trains the learner to listen actively and critically.	Psychomotor	Perception

UNIT I		**6**
Basic principles of good technical writing, Style in technical writing, out lines and abstracts, language used in technical writing: technical words, jargons etc		
UNIT II		**6**
Special techniques used in technical writing: Definition, description of mechanism, Description of a process, Classifications, division and interpretation		
UNIT III		**6**
Report/ project layout the formats: chapters, conclusion, bibliography, annexure and glossary, Graphics aids etc - Presentation of the written project 10 – 15 minutes		
UNIT IV		**6**
Sounds of English Language; vowels, consonants, diphthongs , word stress, sentence stress, intonation patterns, connected speech etc. - Vocabulary building – grammar, synonyms and antonyms, word roots, one-word substitutes, prefixes and suffixes, idioms and phrases.		
UNIT V		**6**
Reading comprehension – reading for facts, meanings from context, scanning, skimming, inferring meaning, critical reading, active listening, listening for comprehension etc.		

LECTURE	TUTORIAL	SS	TOTAL
30	-	30	60

REFERENCES:

1. Technical Writing – April, 1978, by **Gordon H. Mills** (Author), **John A. Walter** (Author).
2. **Effective Technical Communication**: A guide for scientists and Engineers. Author: Barun K. Mitra, Publication: Oxford University press. 2007.

Software for lab:

English Teaching software (Young India Films)

XES202			**ENVIRONMENTAL STUDIES**	**L**	**T**	**SS**	**C**
				2	**0**	**1**	**2**
C	**P**	**A**		**L**	**T**	**SS**	**H**
1.5	**0**	**0.5**		**2**	**0**	**1**	**3**

PREREQUISITE: Nil

	COURSE OUTCOMES	**DOMAIN**	**LEVEL**
On the successful completion of this course students would be able to			
CO1	***Describe***the significance of natural resources and ***explain*** anthropogenic impacts.	Cognitive	Remember Understand
CO2	***Illustrate*** the significance of ecosystem, biodiversity and natural geo bio chemical cycles for maintaining ecological balance.	Cognitive	Understand
CO3	***identify*** the facts, consequences, preventive measures of major pollutionsand ***recognize*** the disaster phenomenon	Cognitive Affective	Reasoning Receiving
CO4	***Explain*** the socio-economic, policy dynamics	Cognitive	Understand

	and***practice***the control measures of global issues for sustainable development.		Analyze
CO5	***Recognize*** the impact of population and the concept of various welfare programs, and ***apply***themodern technology towards environmental protection.	Cognitive	Understand Apply

UNIT I	**INTRODUCTION TO ENVIRONMENTAL STUDIES AND ENERGY**	**6**

Definition, scope and importance – Need for public awareness – Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over-utilization of surface and ground water, flood, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – Role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles.

UNIT II	**ECOSYSTEMS AND BIODIVERSITY**	**6**

Concept of an ecosystem – Structure and function of an ecosystem – Producers, consumers and decomposers – Energy flow in the ecosystem – Ecological succession – Food chains, food webs and ecological pyramids – Introduction, types, characteristic features, structure and function of the (a) Forest ecosystem (b) Grassland ecosystem (c) Desert ecosystem (d) Aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to Biodiversity – Definition: genetic, species and ecosystem diversity - Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT III	**ENVIRONMENTAL POLLUTION**	**6**

Definition – Causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – Solid waste management: Causes, effects and control measures of urban and industrial wastes – Role of an individual in prevention of pollution – Pollution case studies – Disaster management: flood, earthquake, cyclone and landslide.

UNIT IV	**ENERGY AND WATER CONSERVATION**	**6**

Urban problems related to energy – Water conservation, rain water harvesting, watershed management – Resettlement and rehabilitation of people; its problems and concerns, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, Wasteland reclamation – Consumerism and waste products – Environment Protection Act – Air (Prevention and Control of Pollution) Act – Water (Prevention and control of Pollution) Act – Wildlife Protection Act – Forest Conservation Act – Issues involved in enforcement of environmental legislation – Public awareness

UNIT V	**HUMAN POPULATION AND THE ENVIRONMENT**	**6**

Population growth, variation among nations – Population explosion – Family welfare programme – Environment and human health – Human rights – Value education - HIV / AIDS – Women and Child welfare programme– Role of Information Technology in Environment and human health – Case studies.

LECTURE	SS	PRACTICAL	TOTAL
30	15	-	45

TEXT BOOKS

1. Miller T.G. Jr., Environmental Science, Wadsworth Publishing Co, USA, 2000.
2. Townsend C., Harper J and Michael Begon, Essentials of Ecology, Blackwell Science, UK, 2003
3. Trivedi R.K and P.K.Goel, Introduction to Air pollution, Techno Science Publications, India, 2003.

REFERENCES:

1. Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media, India, 2009.
2. Cunningham, W.P.Cooper, T.H.Gorhani, Environmental Encyclopedia, Jaico Publ., House, Mumbai, 2001.
3. S.K.Dhameja, Environmental Engineering and Management, S.K.Kataria and Sons, New Delhi, 2012.
4. Sahni, Disaster Risk Reduction in South Asia, PHI Learning, New Delhi, 2003.
5. Sundar, Disaster Management, Sarup& Sons, New Delhi, 2007.
6. G.K.Ghosh, Disaster Management, A.P.H.Publishers, New Delhi, 2006.

E RESOURCES

1. http://www.e-booksdirectory.com/details.php?ebook=10526
2. https://www.free-ebooks.net/ebook/Introduction-to-Environmental-Science
3. https://www.free-ebooks.net/ebook/What-is-Biodiversity
4. https://www.learner.org/courses/envsci/unit/unit_vis.php?unit=4
5. http://bookboon.com/en/pollution-prevention-and-control-ebook
6. http://www.e-booksdirectory.com/details.php?ebook=8557

XAM203			DIGITAL ART AND DESIGNING	L	T	P	C
				3	0	2	5
C	P	A		L	T	P	H
3	2	0		3	0	4	7

PREREQUISITE: Animation Art

COURSE OUTCOMES	DOMAIN	LEVEL

After the completion of the course, students will be able to			
CO1	***Recognize*** the concept of design principles.	Cognitive	Remember
CO2	***Sketch*** an art using different tools.	Cognitive	Apply
CO3	***Examine*** various perspectives of drawing.	Cognitive	Apply
CO4	***Describe*** the various methods of drawings.	Cognitive	Remember
CO5	***Design*** a fine art using appropriate properties and methodologies.	Cognitive	Analyze

UNIT I	**INTRODUCTION**	**9+12**

The creative impulse - Looking at life and art – thinking about life and art : recording and communicating - understanding art-Line, communication, and the impulse to order – characteristics of line –directionality of line-line and shape – line and value – line and texture – interpretation of the quality of line – closure and continuity – the expressive language of line.

Lab Practical –I,

1. Basic drawing and all line drawings.
2. Texture creative drawing.
3. Stick figure drawing.

UNIT II	**SHAPES**	**9+12**

Shapes - terms with shape – types of shape – positive and negative shapes – the shaped canvas – shape as icon. Value: Shades of gray – descriptive and expressive properties of value.

Lab Practical –II,

13. All shapes drawing.
14. Still life drawing.
15. Creative Repeat drawing.

UNIT III	**COLOR AND LIGHT**	**9+12**

Color and light – properties of color – color mixing- color and Principles of Design – color schemes – other uses of color Texture: Types of Texture – texture and design – texture as subject-Space-actual Space – multiple perspectives – amplified perspective – parallel perspective.

Lab Practical –II,

16. Perspective drawings, Basic Colors.
17. Color wheel-hue, saturation, value.
18. Perspective drawings.

UNIT IV	**ACTUAL MOTION**	**9+12**

Actual motion – implied motion - illusion of motion – time and motion in film and video – Unity and Variety: Ways to achieve unity – unity with variety - conceptual and symbolic unity and disunity.

Lab Practical –II,

19. Layout drawing.
20. Storyboard and animatics drawing.
21. Pen drawing.

UNIT V	**EMPHASIS AND FOCAL POINT**	**9+12**

Emphasis and focal point- Relationships between emphasis and focal point – methods of creating emphasis and focal point – multiple focal points – degree of emphasis – absence of focal point- Balance and Rhythm: actual balance and pictorial balance – pictorial balance – types of balance – achieving balance in asymmetrical compositions – all over pattern – imbalance – types of rhythm - Scale – proportion.

Lab Practical –II,

22. Life study drawing.
23. Nature study drawing.
24. Creative drawing.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	-	60	105

REFERENCES:

1. Louis FichnerRathus, 2007, Foundations of art & design, Wadsworth Publishing Co Inc.
2. Alan Pipes, 2004, Foundations of art + design, Laurence King Publishing.
3. www.slideshare.net.
4. www.proko.com

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	3	2	1	0	1	1	1	1	1
CO2	2	2	3	2	1	2	2	1	1
CO3	1	1	2	1	2	1	1	1	1
CO4	1	1	2	1	2	3	1	1	1
CO5	1	1	2	1	2	2	1	1	1
AVG	2	1	2	1	2	2	1	1	1

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM204			DIGITAL PHOTOGRAPHY	L	T	P	C
				3	0	2	5
C	P	A		L	T	P	H
3	2	0		3	0	4	7

PREREQUISITE: Nil

COURSE OUTCOMES		DOMAIN	LEVEL
After the completion of the course, students will be able to			
CO1	***Recognize*** the concept of Photography.	Cognitive	Remember
CO2	***Know*** an art using different type of photography.	Cognitive	Apply

CO3	***Examine*** various digital image and processing.	Cognitive	Apply
CO4	***Describe*** the various methods of image retouching	Cognitive	Remember
CO5	***Design*** a photo story for visualization.	Cognitive	Analyze

UNIT I	**INTRODUCTION**	**9+12**

Basics of Photography –Aperture - Shutter Speed – ISO - Balancing Exposure - Scene Modes - Exposure Compensation – Histogram - RGB/CMYK Color Model - Basic White Balance - Depth of field - Half Press Focus - Composition (Rule of Thirds).

Lab: Rule of Thirds

Composition

UNIT II	**TYPES OF PHOTOGRAPHY**	**9+12**

Travel Photography & Focusing and Bracketing - Portraiture Photography & Flash Photography - Sports & Nature photography - Macro Photography & Panning and Metering Modes - Outing Portrait - Night Photography & Photography Effect - Night & Events Outing - Basic Studio processing.

Lab: Landscape

Candid Shots

UNIT III	**DIGITAL IMAGE AND PROCESSING**	**9+12**

Digital image method of storing and processing digital image:Raster and Vector method - Representation of digital image: Resolution – Pixel Depth - – Pixel Aspect Ratio – Dynamic Colour Range – File Size – Colour Models – Image Compression – File Formats – Calculating image resolution for outputs.

Lab: Portraits

Panorama

UNIT IV	**DIGITAL RETOUCHING & IMAGE ENHANCEMENT**	**9+12**

Image size – Resolution – Selection tools and techniques – History – Retouching tools – Layers – Photo mounting - techniques – Incorporation of text into picture. Digital Manipulation: Applying selective effects to images and filters with masks and different digital darkroom effects.

Lab: Images Retouching

UNIT V	**PHOTO STORY VISUALIZATION**	**9+12**

Visualization - Concept development - Creativity - One line story - Composition - Camera Movements - Shot - Scene - Atmosphere and Mood - Light and Color

Lab: Stop motion animation

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
45	**-**	**60**	**105**

REFERENCES:

1. Galer.M, 2015, “Introduction to Photography”, First Edition, Focal Press, France.
2. Miller 2008 “Digital Story telling” Focal Press (Elsevier)
3. Julian Calder, John C Carrett - “The 35 mm Photographer’s hand book”, Marshall edition

London,1999
4. John Cant Antine and Julia Valice - " The Thames –" Hudson manual of Professional Photography", Thames- Hudson, 1983.
5. Tom Ang- " Digital Photography", Mitchell Beazley, Octupus Publishing group Ltd London. UK 2001.
6. Anchell.S, 2015, "Digital Photo Assignments", First Edition, Focal Press, France.

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	3	2	1	0	1	1	1	1	1
CO2	2	2	3	2	1	2	2	1	1
CO3	1	1	2	1	2	1	1	1	1
CO4	1	1	2	1	2	3	1	1	1
CO5	1	1	2	1	2	2	1	1	1
AVG	**2**	**1**	**2**	**1**	**2**	**2**	**1**	**1**	**1**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM205			**VISUAL DESIGN**	**L**	**T**	**P**	**C**
				4	**1**	**0**	**5**
C	**P**	**A**		**L**	**T**	**P**	**H**
4	**1**	**0**		**4**	**1**	**0**	**5**

PREREQUISITE: Nil

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
After the completion of the course, students will be able to			
CO1	***Recognize*** the visual effects basics and its types.	Cognitive	Remember
CO2	***Summarize*** and ***Classify*** the fluid and fire effects with other effects.	Cognitive Psychomotor	Understand Perception
CO3	***Comparing*** the paint effects and liquid effects with other effects.	Cognitive Cognitive	Understand Analyze
CO4	***Implementing*** and ***applying*** special effects with Visual Effects.	Cognitive	Understand
CO5	***Experimenting*** and ***checking*** the visual effects in 2D and 3D effects.	Cognitive	Create

UNIT I	**INTRODUCTION**	**15**

Visual Effects- Description- Types- Particles – Analysis- Size- Sand Effects – Smoke Effects Fire Effects – Cloud Effects – Snow Effects.

UNIT II	**FLUID EFFECTS**	**15**

Fluid Effects-Coloring- designing Clouds Background – Designing Fog Effects – Explosion Effects– Fire Effects with flames - Space Effects and designs- Designing Thick Smoke.

UNIT III	PAINT EFFECTS	15
Designing Paint Effects – Coloring paints- Designing Trees and green effects – Designing Weather and seasons –Effects on seasons- Designing Glass image – Designing Different glass reflection- Designing Glow Effects – Liquid Effects and Reflection design.		
UNIT IV	**SPECIAL EFFECT**	**15**
Special effect – Acquisition shooting progress – common types of special effects – Designing effects of Hair and shape – Designing Fur Effects- Designing Clothes and effects.		
UNIT V	**VISUAL EFFECTS TOOL AND ADVANCED FUNCTIONS**	**15**
Visual Effects Tool and advanced functions– Converting images from 2D to 3D Pictures – Creating 3D Effects- Differentiation 2D effects and 3D effects.		

LECTURE	TUTORIAL	PRACTICAL	TOTAL
60	15		75

REFERENCES:

1. Visual Effects Cinematography Zoran Perisic, The Morgan Kaufmann Series in Computer Graphics,2012.
2. The Art and Science of Digital Compositing (The Morgan Kaufmann Series in Computer Graphics) by Ron Brinkmann ,2011.Doug sahlin, Flash MX Action script for designers, Wiley publishing, 2002.
3. Visual effect Society (VES), Jeffrey A. Okun, Susan Zwerman, 2010, Elsevier inc.

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	2	2	2	2	2	2	2	1	1
CO2	2	2	3	2	3	2	2	1	1
CO3	2	2	2	3	2	2	2	1	1
CO4	2	2	2	2	2	2	2	2	1
CO5	3	2	2	3	2	2	3	3	1
AVG	2	2	2	2	2	2	2	1	1

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM301			DIGITAL IMAGING SKILLS	L	T	P	C
				1	0	1	2
C	P	A		L	T	P	H
1	1	0		1	0	2	3

PREREQUISITE: Nil

COURSE OUTCOMES	DOMAIN	LEVEL

After the completion of the course, students will be able to			
CO1	***Describe and Express*** basic concepts in Digital imaging.	Cognitive	Remember Understand
CO2	***Identify and Interpret***fundamentals of image file formats.	Cognitive	Remember Understand
CO3	***Compose and Formulate***digital image production	Psychomotor Affective	Origination Organization
CO4	***Identify and Explain*** the common image production	Cognitive	Knowledge Evaluation
CO5	***Initiate and Organize a***colour image processing and compression.	Psychomotor Affective	Origination Organization

UNIT I	**DIGITAL IMAGING BASICS**	**3+6**

What is digital imaging - What is image -Bitmaps and Pixmaps - Representing grey levels or color – RGB Colour space – Digital output media – Image as surface – Usage of different colours – Computing negative image – Contrast and brightness.
Lab:
Image Restoration

UNIT II	**IMAGE FORMATS**	**3+6**

Raster graphics and vector graphics – Vector graphics format – Raster graphics format – File formats
Lab:
File formats saving

UNIT III	**DIGITAL IMAGE PRODUCTION**	**3+6**

Resolution – PPI – Pixels – DPI – Lossy vs Loseless – RGB vs CMYK – Production of digital images – Image file size.
Lab:
Creating images

UNIT IV	**COMMON IMAGE EDITING**	**3+6**

Cropping – Resizing – Batch processing – Removing red eye – File management – ACDSee, Picasa – Rasterising.
Lab:
Image manipulation

UNIT V	**COLOUR IMAGE PROCESSING AND COMPRESSION**	**3+6**

Colour Fundamentals – colour models – colour transformation – image sharpening – noise removal– Compression – meaning – various methods of compression – Exporting output.
Lab:
Colour correction

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
15	**0**	**30**	**45**

REFERENCES:

1. Michale Langford "Basic Photography",FocalPressOxford Auckland Boston Johannesburg Melbourne New Delhi (UNIT : I, II and III)
2. David E Elkins , "The Camera Assistant's Manual "Focal PressOxford Auckland Boston Johannesburg Melbourne New Delhi (UNIT : IV and V)
3. David Samuelson,2009 , "Motion Picture Camera Techniques"
4. Verne Carlson,2003 ,"The Professional Lighting Handbook"
5. Blain Brown,2003,"The Filmmakers Pocket Reference"

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	2	2	3	2	2	1	1	1	2
CO2	2	2	3	2	2	1	1	1	2
CO3	2	1	2	1	1	1	1	1	2
CO4	1	1	1	2	1	2	2	1	2
CO5	3	2	2	3	3	1	1	1	2
AVG	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**2**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM302			**CHARACTER & ENVIRONMENT SKETCHING**	**L**	**T**	**P**	**C**
				2	**0**	**2**	**4**
C	**P**	**A**		**L**	**T**	**P**	**H**
2	**2**	**0**		**2**	**0**	**4**	**6**

PREREQUISITE: Animation Art

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
After the completion of the course, students will be able to			
CO1	***Recognize*** the significance of Pencil Drawing.	Cognitive	Remember
CO2	***Express*** the different ways of line drawing perspective in Pencil drawing.	Cognitive	Understand
CO3	***Employ*** the understanding of the lights in Pencil drawing.	Cognitive	Apply
CO4	***Utilize*** the various shading methods effectively in making the realistic drawings.	Cognitive	Apply
CO5	***Design*** and ***Draw*** the drawings using different types of pencils.	Cognitive Psychomotor	Create Set

UNIT I	**HISTORY OF PENCIL DRAWING**	**6+12**

Materials and Tools: Choosing the Right Kind and Quality-Pencil, Eraser, Drawing Pad, Drawing board, Paper Stumps or Cone Blenders, Pencil, Ruler Sharpener. BASICS IN DRAWING AND SKETCHING-The Different types of Pencil Grips-Tripod Grip, Extended Grip, Underhand Grip, And Overhand Grip.

Lab Practical –I

1. Basic drawing
2. Human Anatomy drawing
3. Landscape drawing

UNIT II	**LINES PERSPECTIVE**	**6+12**

Lines-Flat Lines, Accent Lines, Contour Lines, Scumble/Scribbling, Cross Hatch Line ,Smudge Pointillism. Basic Perspectives in Drawing- An Introduction on Perspectives - Linear perspective, Zero Point Perspective, One Point perspective ,Two Point Perspective ,Three-Point perspective, Isometric Perspective ,Atmospheric Perspective. Basic Drawing Shapes.

Lab Practical –II

4. All Shapes drawing
5. Perspective drawing

UNIT III	LIGHTING	6+12

Basic Elements of Light, Shadows, and Shading - Light, Shadows and Shadow Box. Constructing a Simple Shadow box, Kinds and Quality of Light, Hard Light, Soft light. Basic Elements of Shading - The Highlight or Full Light, The Cast Shadow, The Halftone The Reflected Light, The Shadow Edge.

Lab Practical –III

1. Still life Drawings.
2. Outdoor drawing

UNIT IV	SHADING	6+12

Different Shading Techniques - Regular Shading, Irregular Shading, Circular Shading, directional Shading. Add Tones and Values -Tips on Tones and Values, Examples on Shading.

Lab Practical –IV

1. Types of Shade, Tones
2. Color, Color wheel, Hue, Saturation, value.

UNIT V	FINISHING TOUCHES	6+12

Erasing and Dusting, Mixed Media Applications -Watercolor Pencils, Oil Colored Pencils, Drawing with Pencils in Oil Painting, Pen and Ink Drawing, Wall Painting, Cartoon Drawing , Tips to Draw Faster.

Lab Practical –V

1. Water color work
2. Oil color work
3. Pen &Ink Drawing

LECTURE	TUTORIAL	PRACTICAL	TOTAL
30	-	60	90

REFERENCES:

1. Pencil Drawing - A Beginner's Guide (e-book) – http://nicheempires.com.
2. Basic Drawing Techniques by Richard Box Pub: Winsor &Newton, (U.S.A)
3. The Complete Book of drawing techniques -a professional guide for the artist by Peter Stanyer.
4. Still Life by Sanjay Shelar, JyotsanaPrakashan(India).Pub.
5. Drawing and Anatomy by Victor Perard , Kingsport Press Pub(U.K).
6. https://in.pinterest.com/explore/environment-sketch
7. www.craftsy.com / Online Classes/Art & Photo.

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc.	PO							PSO	
A&M	1	2	3	4	5	6	7	1	2

CO1	3	2	3	2	2	1	2	1	2
CO2	2	3	2	2	1	2	0	1	1
CO3	2	2	3	1	2	1	1	2	3
CO4	3	2	1	3	1	2	2	1	1
CO5	2	1	3	2	0	1	1	2	3
AVG	**2**	**2**	**3**	**2**	**1**	**1**	**1**	**1**	**2**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM 303			**AUDIO AND VIDEO EDITING**	**L**	**T**	**P**	**C**
				4	**0**	**1**	**5**
C	**P**	**A**		**L**	**T**	**P**	**H**
4	**1**	**0**		**4**	**0**	**2**	**6**

PREREQUISITE: Computer Fundamentals

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
After the completion of the course, students will be able to			
CO1	***Recognize*** the basics and objectives of editing.	Cognitive	Remember
CO2	***Discuss*** the various types of editing.	Cognitive	Understand
CO3	***Explain*** 2D and 3D graphics.	Cognitive	Apply
CO4	***Classify*** various elements of audio.	Cognitive	Analyze
CO5	***Describe*** the procedure for format conversion.	Psychomotor	Perspective

UNIT I **INTRODUCTION** **12+6**

Concept and Objectives of Editing, Software and tools, Continuity and Jerk Enter and Exit in Frame, Title, Credits and Sounds. Sound editing, mixing sound, laying sound tracks, syncing sound and picture. Capturing video. Editing techniques for News, Documentary and Fiction and Ad Film.

Lab

1. Touring in to software
2. Setting up a project
3. Workspace

UNIT II **ELEMENTS OF THE EDITING** **12+6**

Picture transitions and their use, Elements of the editing, motivation, information, shot composition sound, camera angle, continuity. Types of the editings, action edit, and screen position edit, form edit, dynamic edit. Do's and don'ts of editing. Voice over and sound bytes, dubbing and mixing of sound. Computer hardware for editing.

Lab

1. Settings, Preferences and Managing Assets
2. Creating Videos
3. Creating Audios

UNIT III **ON LINE EDITING** **12+6**

On line editing in a multi-camera TV programme production. TV Graphics and Animation: Theory and

Practice Elements of 2D Graphic Elements of 3D Graphics. 3D Modeling. 3D Animation. Special effects creation, Environmental special effects Lighting camera and texturing. Introduction to virtual sets. Film Analysis: The Editor's point of view Extensive sound recording, video editing, graphics and animation practical's. Participation in production exercises.

Lab

1. Adding Transitions
2. Exporting frames, clips and sequences
3. Applying Effects, Color Correction, and Opacity

UNIT IV	INTRODUCTION TO SOUND	12+6

Sound, Digital sound files, different sound formats, midi and digital audio, creating digital audio files, sound producing, sound extracting, Advantages and disadvantages of midi and digital, choosing between midi and Digital audio. Linking files: Sound for the World Wide Web, adding the sound to your multimedia project, production tips, audio recording, keeping track of your sound, testing and evaluation.

Lab

1. Adding audio effects
2. Editing and mixing audio
3. Adding video effects

UNIT V	RECORD CLIPS AND EDITING	12+6

Sound recording, editing digital recording, trimming, splicing and assembly, volume adjustments, format conversion, re sampling or downloading, fade-ins and fade - outs, equalization, time stretching, digital signal processing, reverting sound, making midi audio, audio file formats.

Lab

1. Creating Dynamic titles
2. Applying specialized editing tool
3. Integrating software with other applications

LECTURE	TUTORIAL	PRACTICAL	TOTAL
60	-	30	90

REFERENCES:

1. Editing Today: Smith, Ron F. and O'Connell, L.M, Published 2003, Blackwell Publishing
2. Nonlinear Editing: Media Mannel; Morris, Patrick, Published 1999 Focal Press.
3. Basic Elements of Filmmaking II Handbook, UW-Milwaukee Department of Film, 2004 Rob Danielson.
4. Audio system guide Video and film production by Chris Lyons, A shure Educational Publication
5. Filmmaking Guide by Tom Barrance ref:www.intofilm.org
6. http://www.amazon.in/Digital-Audio-Editing-Correcting-Enhancing/dp/0415829585
7. http://www.apress.com/9781484216477
8. http://www.amazon.com/Editing-Digital-Video-Complete-Technical/dp/0071406352
9. http://www.amazon.com/Audio-Video-Editing-Books/b?ie=UTF8andnode=15375301
10. http://www.amazon.in/The-Technique-Film-Video-Editing/dp/0240813979
11. https://opensource.com/resources/ebook/video-editing

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	2	3	4	5	6	7	1	2

CO1	3	1	2	2	2	1	1	1	1
CO2	2	1	2	1	2	1	1	2	1
CO3	1	1	1	1	1	1	1	3	1
CO4	1	0	1	1	2	1	1	1	1
CO5	1	1	2	1	1	2	3	2	1
AVG	**2**	**1**	**2**	**1**	**2**	**1**	**1**	**2**	**1**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM304			**2D ANIMATION**	**L**	**T**	**P**	**C**
				2	**0**	**2**	**4**
C	**P**	**A**		**L**	**T**	**P**	**H**
2	**2**	**0**		**2**	**0**	**4**	**6**

PREREQUISITE: Nil

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
After the completion of the course, students will be able to			
CO1	***Recognize*** the significance of 2D Animation.	Cognitive	Remember
CO2	***Summarize*** the knowledge on animation software and ***detect*** about the animation software.	Cognitive Psychomotor	Understand Perception
CO3	***Manipulate*** the symbols and text to animate, and ***identify*** and tested the animated symbols and text.	Cognitive Affective	Application Receiving
CO4	***Know*** about the action script used in animation software.	Cognitive	Understand
CO5	***Design*** and test the animation in web.	Cognitive	Create

UNIT I	**INTRODUCTION TO 2D ANIMATION**	**6+12**

Basic Animation – Principles of Animation - Animation Types – 2D Animation – Understanding - Animation workflow - 2D animation software's – Introduction to animation software.

Lab:

1. Tweening
2. Bouncing ball Animation

UNIT II	**GETTING STARTED**	**6+12**

Understanding about the Timeline – Organizing about the Timeline – using of tools panel –preview the animated movie – modify the content and stage – saving your movie– publishing your movie –- understanding strokes and fills - creating with shapes – editing shapes – working with graphics.

Lab:

1. Character Design
2. Walk cycle – Frame by frame

UNIT III	**MANIPULATING SYMBOLS AND ANIMATE**	**6+12**

Create the Symbols – Editing and managing symbols – change the size, position and color effects with instances – applying filter with special effects – Animation – Animating position– changing the pacing and timing – Animating transparency – filter – transformation – changing the path of the motion – nested animation – testing the animation.

Lab:

1. Bone animation
2. Run Cycle

UNIT IV	ACTION SCRIPT	6+12

Introduction to Action script – Language basics – Data types –working with display object –error handling – networking basics and security – programming vector, bitmap graphics –Scripting animation – deploying flash on web.

Lab:

1. Bird Cycle
2. Animal cycle

UNIT V	WORKING WITH AUDIO, VIDEO AND CONTROLLING FLASH CONTENT AND PUBLISH FLASH DOCUMENT	6+12

Import sound files – edit sound files – audio and video encoding options – use cue points – embed video– Load and display external files – Control the movie clip timeline – test document – publish the document – publish project for web –Test project with mobile interactions – other 2d animation tools.

Lab:

1. .Pyrotechniques
2. Environmental animation

LECTURE	TUTORIAL	PRACTICAL	TOTAL
30	-	60	90

REFERENCES:

1. Cartoon Animation (How to Draw and Paint series) by Preston Blair.
2. Adobe Flash Professional CS6 Classroom in a Book, by adobe systems
3. Doug sahlin, Flash MX Action script for designers, Wiley publishing, 2002.
4. Roger braunstein, Action script 3.0 Bible, Second edition, Wiley publishing inc, 2010.
5. www.w3schools.com
6. www.tutorialspoint.com

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	2	1	1	1	1	2	1	1	1
CO2	3	2	2	2	2	2	2	2	1
CO3	2	2	2	2	3	2	2	2	1
CO4	3	2	2	2	2	2	2	3	1
CO5	3	3	3	3	3	3	3	3	1
AVG	3	2	2	2	2	2	2	2	1

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM305			Motion Graphics	L	T	P	C
				2	0	2	4
C	P	A		L	T	P	H
2	2	0		2	0	4	6

PREREQUISITE: Nil

COURSE OUTCOMES	DOMAIN	LEVEL
After the completion of the course, students will be able to		

CO1	***Define*** and ***describe*** the scope of the motion graphics industry.	Cognitive	Remember
CO2	***Demonstrate*** unique characteristics motion graphics as conveyed by design principles such as form, legibility and context.	Cognitive Psychomotor	Understand Perception
CO3	***Manipulate*** the symbols and text to animate, and ***identify*** and tested the animated symbols and text.	Cognitive Affective	Application Receiving
CO4	***Know*** about the action script used in animation software.	Cognitive	Understand
CO5	***Design*** and test the animation in web.	Cognitive	Create

UNIT I	**INTRODUCTION TO MOTION GRAPHICS**	**6+12**

A Brief history of motion graphics, Motion graphics in Film and Television, Motion graphics in Interactive Media, Motion graphics in the environment, difference between static graphics and time-based motion graphics.

Lab:

Create a Kinetic info graphics

UNIT II	**MOTION LITERACY**	**6+12**

The Language of motion, Spatial considerations, temporal considerations, coordinating movement, visual properties, image considerations, Live Action Considerations, Typographic considerations, Integrating Images, Live-Action, and Type.

Lab:

Multiplaning a single image

UNIT III	**DESIGN BOARDS**	**6+12**

A brief history of Style Frames, Background of style frames, Visual patterns, Stylistic guides, The importance of Design Boards, Using Design Boards, Authors Reflection, Unified Visual Aesthetic, Developing concepts- Creative Briefs- Types, need, Concept Development.

Lab:

Create a Infographics with motion/ animation main timeline and buttons

UNIT IV	**PICTORIAL COMPOSITION**	**6+12**

Space and composition: An overview, principles of composition, constructing space, Image making and Design for motion, Composition- Hierarchy of Visual importance, Positive space, negative space, symmetry and asymmetry, value, color, contrast, depth.

Lab:

Supply storyboards and/or initial designs that depict the look and feel, flow, and overall execution of your project.

UNIT V	**CINEMATIC CONVENTIONS, THUMBNAIL SKETCHES, AND HAND DRAWN STORYBOARDS**	**6+12**

Cinematic convention, cinematic elements of design board, Thumbnail sketches, hand-drawn storyboards-working with story boards, story board and continuity, storyboard usage.

Lab:

Communicate with using Special Effects, such as virtual 3D, lighting & camera

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
30	**-**	**60**	**90**

REFERENCES:

1. Jon S. Krasner, "Motion Graphic Design: Applied History and Aesthetics", Focal Press, 2008
2. Austin Shaw, "Design for Motion: Fundamentals and Techniques of Motion Design", Focal Press, 2016
3. Ian Crook, Peter Beare, "Motion Graphics- Principles and Practices from the Ground Up", first edition, 2015

Mapping of Course Outcomes (CO) with Programme Outcomes (PO)

B.Sc. A&M	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	2	1	1	1	1	2	1	1	1
CO2	3	2	2	2	2	2	2	2	1
CO3	2	2	2	2	3	2	2	2	1
CO4	3	2	2	2	2	2	2	3	1
CO5	3	3	3	3	3	3	3	3	1
AVG	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XUM306			DISASTER MANAGEMENT	L	T	P	C
				3	0	0	0
C	P	A		L	T	P	H
2.75	0	0.25		3	0	0	3

PREREQUISTE: Nil

	Course Outcomes	Domain	Level
CO1	***Understand*** and ***Recognize*** the concepts of disaster	Cognitive	Understand Remember
CO2	***Recognize and describe*** the causes and effects of disaster	Cognitive	Understand Remember
CO3	***Describe*** the various approaches of risk reduction	Cognitive	Remember
CO4	***Demonstrate*** the inter-relationship between disaster and development	Cognitive	Understand
CO5	Discuss hazard and vulnerability profile of India and respond to drills related to relief	Cognitive Affective	Remember Response

UNIT - I	INTRODUCTION TO DISASTERS	6

Concepts and definitions- Disaster, Hazard, Vulnerability, Resilience, Risks

UNIT - II	DISASTERS: CLASSIFICATION, CAUSES, IMPACTS	12

Differential impacts- in terms of caste, class, gender, age, location, disability Global trends in disasters, urban disasters, pandemics, complex emergencies, Climate change

UNIT - III	APPROACHES TO DISASTER RISK REDUCTION	10

Disaster cycle - its analysis, Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural- nonstructural measures, roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), states, Centre, and other stake-holders.

UNIT - IV	INTER-RELATIONSHIP BETWEEN DISASTERS AND DEVELOPMENT	6

Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc. Climate Change Adaptation. Relevance of indigenous knowledge, appropriate technology and local resources

UNIT - V	DISASTER RISK MANAGEMENT IN INDIA	11

Hazard and Vulnerability profile of India Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management Institutional arrangements (Mitigation, Response and Preparedness, DM Act and Policy, Other related policies, plans, programmes and legislation).
The project / fieldwork to understand vulnerabilities work on reduction of disaster risk and build a cultural safety.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45			45

TEXT BOOKS:

1. Coppola P Damon, "Introduction to International Disaster Management, Butterworth-Heinemann, 2015
2. K. N. Shastri, "Disaster Management in India", Pinnacle Technology, 2012
3. Gupta Anil K, Sreeja S. Nair, "Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi, 2011
4. Lee Allyn Davis, "Natural Disasters", Infobase Publishing, 2010
5. Andharia J, "Vulnerability in Disaster Discourse", JTCDM, Tata Institute of Social Sciences Working Paper no. 8, 2008

REFERENCES:

1. Alexander David, Introduction in 'Confronting Catastrophe', Oxford University Press, 2000
2. Carter, Nick 1991. Disaster Management: A Disaster Manager's Handbook. Asian

Development Bank, Manila Philippines.

WEB SITES AND WEB RESOURCES:

1. NIDM Publications at http://nidm.gov.in- Official Website of National
2. Institute of Disaster Management (NIDM), Ministry of Home Affairs,
3. http://cwc.gov.in , http://ekdrm.net , http://www.emdat.be ,
4. http://www.nws.noaa.gov , http://pubs.usgs.gov , http://nidm.gov.ini
5. http://www.imd.gov.ini

Table 1: Mapping of CO with GA

Course outcomes	GA1	GA2	GA3	GA4	GA5	GA6	GA7	GA8	GA9	GA10	GA11	GA12
CO1	1					3	2	1				1
CO2	1					3	2	1				1
CO3	1					3	2	1				1
CO4	1					3	2	1				1
CO5	1					3	2	1				1
Total	**5**					**15**	**10**	**5**				**5**
Scaled	**1**					**3**	**2**	**1**				**1**

XAM 401			**IMAGE EDITING SKILLS**	**L**	**T**	**P**	**C**
				0	**0**	**2**	**2**
C	**P**	**A**		**L**	**T**	**P**	**H**
1	**1**	**0**		**0**	**0**	**4**	**4**

PREREQUISITE: Digital Imaging Skills

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
After the completion of the course, students will be able to			
CO1	***Identify*** and ***describe*** the concept & objectives of Editing and software tools available.	Cognitive	Understand Remember
CO2	***Create*** new images using various effective tools using software packages.	Cognitive	Understand Remember Apply
CO3	***Develop*** their Knowledge and skills in image editing.	Cognitive Psychomotor	Apply Respond
CO4	***Renovate*** the damaged images files and export the files in various formats.	Cognitive	Remember Apply
CO5	***Create*** GIF animation, Business card, Advertisement Banner, Poster Presentation Banner.	Cognitive Psychomotor	Create organization
UNIT I	**INTRODUCTION**		**12**

Visual Design: Elements, Forms, Space, Time, Movements, Balance, Symmetry, Rhythm, Unity, Contrast and Scale. Visual Design Principles and its Functionality, Interactive Design: Characteristics of digital media interfaces.

Lab

1. Create a Paper work for a Advertising agency and a Commercial Organization on Logo, Visiting card, Letter head, Envelope and Poster design
2. Create a Paper work on 3 Dimensional Logos

UNIT II	COLORS AND TYPOGRAPHIC	12

About Colors and Typographic concepts for print, interactive and web media.

Lab

1. Create a Home page for a Advertising agency
2. Create a Button, Banner for WebPages

UNIT III	MANAGING COLOURS	12

Fundamentals of media elements and concepts of digital image editing. Getting to Know the Photoshop Interface, Using the Photoshop tools, Vector and Pixel, Bit Depth, Resolution, Image Color Corrections, Image Corrections, Black and white to Color Conversion.

Lab

1. Take a candid Black and white photo and convert that into color photo
2. Create a Logo, Visiting card, Letter head , Envelope and Poster design for Adverting agency and Commercial organization.

UNIT IV	DIGITAL EFFECT	12

Working with text objects, masks and Layer, Brushes, Paths, Graphics creation - brand and corporate identity manual, poster, brochure, label artwork presentation. Creative Logo Making, Filters and Blending Effects, 3D in Photoshop.

Lab

1. Create a Pamphlet
2. Create a CD label and CD cover design

UNIT V	CONVERSION TO WEB	12

Creating web based Layout, Converting files to web and print, Compositing Image Techniques, File Merge, Save, Import and Export techniques, Tips and Tricks in Photoshop.

Lab:

1. Create a Calendar design
2. Create a Dangler design (Front and back) for a new mobile.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
-	-	60	60

REFERENCES:

1. Peter Bauer, 2013,"Photoshop CC for Dummies", John Wiley & Sons, Inc.NJ
2. Adobe Creative Team, 2015, Adobe Photoshop CC in a classroom, Adobe Press published Pearson Education.
3. Martin Evening, 2015, The Adobe Photoshop CC, Adobe Press published Pearson Education.
4. Lesa Snider, 2013, Photoshop CC The Missing Manual, O'Reilly Media
5. Matt Kloskowski, 2012, Photoshop Compositing Secrets, Peachpit Press.
6. Derek Lea, 2009, Creative Photoshop CS4-Digital Illustration and Art Techniques Elsevier Press
7. http://www.freebookcentre.net/graphics-design-books/photoshop-ebooks-download.html
8. http://www.fromdev.com/2014/08/free-photoshop-tutorials-ebooks-learning-resources.html

9. http://psd.tutsplus.com/
10. http://tv.adobe.com/product/photoshop/
11. http://www.freebookcentre.net/graphics-design-books/photoshop-ebooks-download.html
12. http://it-ebooks.info/tag/photoshop/

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	2	2	2	2	2	1	1	2	2
CO2	2	3	3	3	3	1	1	3	2
CO3	2	3	3	3	3	1	1	3	2
CO4	2	3	3	3	3	1	1	3	2
CO5	2	3	3	3	3	1	1	3	2
AVG	**2**	**3**	**3**	**3**	**3**	**1**	**1**	**3**	**2**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM402			**COMPOSITING TECHNIQUES**	**L**	**T**	**P**	**C**
				3	**0**	**2**	**5**
C	**P**	**A**		**L**	**T**	**P**	**H**
3	**2**	**0**		**3**	**0**	**4**	**7**

PREREQUISITE: Audio and Video Editing

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
After the completion of the course, students will be able to			
CO1	***Recognize*** the basic concepts of logical effects.	Cognitive	Remember
CO2	***Select*** the various techniques to create an effective scene.	Cognitive	Apply
CO3	***Examine*** various color correction and image optimization.	Cognitive	Apply
CO4	***Classify*** the various unreal effects.	Cognitive	Understand
CO5	***Analyze***a right motion tracking tools to produce an effective scene.	Cognitive	Analyze

UNIT I **INTRODUCTION** **9+12**

Composite in After Effects-A Basic Composite-Get Settings Right-The User Interface: Use It like a Pro-Effects in After Effects: Plug-ins and Animation Presets-Output: Render Queue and Alternatives-Assemble Any Shot Logically- The Timeline-Dreaming of a Clutter-Free Workflow-Timing: Key frames and the Graph Editor-Shortcuts Are a Professional Necessity-Animation: It's All About Relationships-Accurate Motion Blur-Timing and Retiming

Lab:

1. Exercise using plug-in and animation
2. Exercise using the timeline
3. Exercise using motion blur

UNIT II	COLOR CORRECTION	9+12

Color Correction-Color Correction and Image Optimization-Levels: Histograms and Channels-Curves: Gamma and Contrast-Hue/Saturation: Color and Intensity-Compositors Match Colors-Beyond the Ordinary, Even Beyond After Effects- Rotoscoping and Paint-Roto Brush and Refine Edge-Articulated Mattes-Refined Mattes: Feathered, Tracked-Paint and Cloning-Avoid Roto and Paint

Lab:

1. Exercise using color correction
2. Exercise using Rotoscoping
3. Exercise using cloning

UNIT III	CAMERA AND OPTICS	9+12

The Camera and Optics-The Unreal After Effects Camera-3D and CINEMA 4D-The Camera Tells the Story-Don't Forget Grain-Real Cameras Distort Reality-Train Your Eye- Climate and the Environment-Particulate Matter-Sky Replacement-Fog, Smoke, and Mist-Billowing Smoke-Wind and Ambience-Precipitation

Lab:

1. Exercise using Camera 3D
2. Exercise using Sky Replacement
3. Creating fog, Smoke and Mist effects

UNIT IV	PYROTECHNICS	9+12

Pyrotechnics: Heat, Fire, Explosions-Firearms-Energy Effects-Heat Distortion-Fire-Explosions-Advanced Color Options and HDR-What Is High Dynamic Range, and Does Film Even Still Exist?-Linear HDR Compositing: Life like-Linear LDR Compositing, Color Management and LUTs-Beyond Theory into Practice

Lab:

1. Creating Heat, Fire, Explosions effects
2. Creating Heat Distortion-Fire-Explosions
3. Exercise using Linear HDR Compositing

UNIT V	EFFECTIVE MOTION TRACKING	9+12

Effective Motion Tracking-Track a Scene with the 3D Camera Tracker-Warp Stabilizer VFX: Smooth Move-The Point Tracker: Still Useful-Mocha AE Planar Tracker: Also Still Quite Useful-Camera Integration- Selections: The Key to Compositing-Beyond A Over B: How to Combine Layers-Edges on Camera -Transparency and How to Work with It-Mask Options and Variable Mask Feather-Mask Modes and Combinations-Animated Masks-Composite With or Without Selections: Blending Modes-Share a Selection with Track Mattes-Right Tool for the Job.

Lab:

1. Exercise to track a scene with 3D Camera tracker
2. Exercise using masks and animated masks
3. Exercise Blended Modes

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	-	60	105

REFERENCES:

1. Mark Christiansen Visual Effects and Compositing STUDIO TECHNIQUES Adobe® After Effects® CC
2. www.slideshare.net.
3. www.proko.com

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	1	0	2	1	2	1	2	3	2
CO2	1	1	2	1	1	1	2	1	1
CO3	1	0	1	1	1	1	1	1	1
CO4	1	1	2	1	2	1	1	1	1
CO5	1	1	2	1	2	2	2	1	3
AVG	**2**	**1**	**3**	**2**	**3**	**2**	**3**	**2**	**3**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM403			**BASICS OF CLAY MODELING**	**L**	**T**	**P**	**C**
				3	**0**	**2**	**5**
C	**P**	**A**		**L**	**T**	**P**	**H**
3	**2**	**0**		**3**	**0**	**4**	**7**

PREREQUISITE: Nil

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
After the completion of the course, students will be able to			
CO1	***Recognize*** how the study of clay relates to animation disciplines.	Cognitive	Remember
CO2	***Relate*** knowledge of the character design in clay materials and process.	Cognitive	Analyze
CO3	***Interpret*** design principles in their individual projects.	Cognitive	Understand
CO4	***Establish*** using clay modeling to build basic shapes.	Cognitive	Create
CO5	***Apply*** techniques for working in stop motion animation.	Cognitive	Apply

UNIT I	**INTRODUCTION**	**9+12**

Clay animation: concepts and types – clay tools – Armature – clay modeling process.

Lab

1. Geometrical drawing

UNIT II	**BASIC SHAPES IN CLAY**	**9+12**

Geometrical shapes in clay – Background in clay- Vehicles in clay – Buildings in clay.

Lab

1.shapes creation

2.Creative Making

UNIT III	**CHARACTER DESIGNING IN CLAY**	**9+12**

Model sheet of character-Humana body parts in clay – Animal models in clay – Fruits and vegetables – complete human figure in clay model.

Lab

1.Human models shapes creation.

2.Animal and fruits models creation.

UNIT IV	**CLAY ANIMATION**	**9+12**

Cartoon designing in clay – Hair style in clay – Face mask in clay – case study making a indoor/outdoor with environment & characters in clay.

Lab

1. Own Character creation.
2. Set Design creation.

UNIT V	STOP MOTION ANIMATION	9+12

Making of film using stop motion technique - Adding visual & Sound Effects - Digital Editing

Lab

1. Stop Motion creation.
2. . Stop Motion or Clay Animation Short film Creation.

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	-	60	105

REFERENCES:

1. The Advanced art of stop motion animation by Ken.A.Priebe by cengage learning
2. A sculptor's Guide to Tools and Materials Second edition by Bruner F. Barrie
3. http://thevirtualinstructor.com/blog/sculpting-materials-for-beginners
4. http://www.chalkstreet.com/clay-modeling-and-pottery-for-beginners/
5. ebook - Clay Modelling for Beginners: An Essential Guide to Getting Started in the Art of Sculpting Clay

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	3	2	3	2	2	2	1	2	2
CO2	3	2	3	2	2	1	1	2	2
CO3	3	2	2	2	1	1	1	2	2
CO4	3	2	2	3	1	1	1	2	3
CO5	3	2	2	2	1	1	1	2	3
AVG	**3**	**2**	**2**	**2**	**1**	**1**	**1**	**2**	**2**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM404			FUNDAMENTALS OF CINEMATOGRAPHY	L	T	P	C
				3	0	2	5
C	P	A		L	T	P	H
3	2	0		3	0	4	7

PREREQUISITE: Audio and Video Editing

COURSE OUTCOMES		DOMAIN	LEVEL
After the completion of the course, students will be able to			
CO1	***Describe and Express*** basic concepts in photography.	Cognitive	Remember Understand
CO2	***Identify and Interpret***fundamentals of cinematography.	Cognitive	Remember Understand
CO3	***Compose and Formulate*** various photographs and videos	Psychomotor Affective	Origination Organization
CO4	***Identify and Explain*** the responsibilities of crew members in a camera department.	Cognitive	Knowledge Evaluation
CO5	***Initiate and Organize a*** screen play and shoot a short film.	Psychomotor Affective	Origination Organization

UNIT I	FUNDAMENTALS OF CINEMATOGRAPHY	9+12

What is cinematography - Persistence of vision – Frame rate – Intermittent mechanism – reflex viewfinder – Viewing screens – Film magazine – Film and digital camera layout. What is film – history – Photographic process – colour negative film – grain and graininess.

Lab
Shooting at various frame rates.

UNIT II	LENSES AND DIGITAL CAMERA	9+12

Lenses : Aperture and f – numbers – depth of field – how depth of field works – Depth of focus – lens care - **Cameras using film** – Essential components – Camera types –How view camera works –How direct viewfinder camera works –How reflex camera works - **Digital Camera** –overview how images are captured – film verses digital imaging routes – CCD limits to your final print size -Storing exposed shots on memory cards disk – point and shoot low end camera – high end camera shoots.

Lab
Shooting with various lens and focal lengths

UNIT III	LIGHTING PRINCIPLES AND FILM PROCESSING	9+12

Lighting principles and equipments- Basic characteristics of lighting – lighting equipment – Practical lighting problems -**Film Processing** – Equipments and general preparation – Processing black and white negatives –Processing chromomeric – **Digital image manipulation** Hardware -software programs – learning the ropes –working on pictures.

Lab
Shooting indoor and outdoor with various lighting techniques

UNIT IV	COLOUR TEMPERATURE AND CAMERA FILTERS	9+12

What is colour temperature – filters and mired shift values – the colour temperature meter – colour film – correction lamp – white balance - **Filters –** Colour compensation filters – colour correction filters – skin tone warmer –colour effects – various kinds of filters.

Lab
Shooting with various white balances in camera and using filters.

UNIT V	PRINCIPLES AND OPERATIONS	9+12

Director of photography- Camera Operator – First Assistant Camera man – Second Assistant Camera man – Loader – SD or HD video production- **Second Assistant Camera man** - Clapper loader- focus puller – crew protocol - Choosing and ordering expendable – Preparation of camera equipment - Preparation of camera truck – Preparation of dark room – Production – Magazine – slate – Post production – wrapping equipments. **Lab** Using various shots, angles and camera movements and create an advertisement.		

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	-	60	105

REFERENCES:

1. Michale Langford "Basic Photography",FocalPressOxford Auckland Boston Johannesburg Melbourne New Delhi (UNIT : I, II and III)
2. David E Elkins , "The Camera Assistant's Manual "Focal PressOxford Auckland Boston Johannesburg Melbourne New Delhi (UNIT : IV and V)
3. David Samuelson,2009 , "Motion Picture Camera Techniques"
4. Verne Carlson,2003 ,"The Professional Lighting Handbook"
5. Blain Brown,2003,"The Filmmakers Pocket Reference"

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	2	2	3	2	2	1	1	1	2
CO2	2	2	3	2	2	1	1	1	2
CO3	2	1	2	1	1	1	1	1	2
CO4	1	1	1	2	1	2	2	1	2
CO5	3	2	2	3	3	1	1	1	2
AVG	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**2**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM 501			WEB DESIGN	L	T	P	C
				3	0	1	4
C	P	A		L	T	P	H
3	1	0		3	0	2	5

PREREQUISITE: Nil

COURSE OUTCOMES		DOMAIN	LEVEL
After the completion of the course, students will be able to			
CO1	***Recognize*** the significance of Web Technology.	Cognitive Psychomotor	Remember Perception
CO2	***Express*** the knowledge on HTML, CSS and JavaScript in Web Design.	Cognitive	Understand

CO3	***Employ*** the understanding of the Client side scripts and actively ***participate*** in teams for the creation of web pages.	Cognitive Affective	Apply Respond
CO4	***Utilize*** the web designing tools effectively in the real world applications.	Cognitive	Apply
CO5	***Design***and***Establish*** the Website.	Cognitive Psychomotor	Create Set

UNIT I	**INTRODUCTION TO WEB TECHNOLOGY**	**9+6**

Basics of Internet – World Wide Web – Web Server – Proxy Server – Web Browsers – IP Address – Domain Name – HTTP – Uniform Resource Locator – Concept of Tier – Web Pages – Static Web Pages – Dynamic Web Pages – Search Engine – Search Tools.

Lab:1. Usage of Microsoft Interdev.

2. Downloading Templates.

UNIT II	**HTML**	**9+6**

HTML Basics – HTML Editor – HTML CSS – Links – Images – Tables – Lists - Frames - HTML forms and Input tags.

Lab:1. Formatting tags, ordered list and unordered list.

2.Tables, frame, image map and hyperlink.

UNIT III	**CSS**	**9+6**

CSS Basics – Texts and Fonts – Links, Lists and Tables – Background, Border and Outline – Position – Dimension and Display.

Lab:1.Font, color and style

2. Background and Links

UNIT IV	**JAVASCRIPT**	**9+6**

Java Script Basics – Functions – Objects – Events – Scope – Strings – Numbers – Date – Arrays – Conditional and Looping Statements – Forms.

Lab:1.Form Validation

2. Looping and Conditional Statements

UNIT V	**WEB APPLICATIONS**	**9+6**

Free Website Creation – Getting Server Space - Case Studies: College Website – Blog Creation – Online Education – Career Guidance.

Lab: Website Creation

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
45	**-**	**30**	**75**

REFERENCES:

1. AchyutS.Godbole, AtulKahate, “Web Technologies TCP/IP To Internet Application Architectures”, First Edition, Tata McGraw-Hill Publishing Company Limited, 2003.
2. N.P. Gopalan, J.Akilandeswari, “Web Technology: A Developer’s Perspective”, Second Edition, PHI Learning Private Limited, 2014.
3. Thomas A. Powell, “HTML & CSS: The Complete Reference”, Fifth Edition, Tata McGraw Hill Education Private Limited, New Delhi, 2010.
4. Thomas A. Powell, Fritz Schneider, “JavaScript: The Complete Reference”, Second Edition, Tata McGraw Hill Education Private Limited, New Delhi, 2008.
5. www.w3schools.com
6. www.tutorialspoint.com

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	**PO**						**PSO**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	2	0	1	0	1	0	1	0	0

CO2	2	2	1	1	0	1	1	0	0
CO3	1	2	1	2	1	1	2	0	0
CO4	0	1	2	2	1	0	1	0	0
CO5	1	2	2	3	2	1	1	0	0
AVG	**1**	**1**	**1**	**2**	**1**	**1**	**1**	**0**	**0**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM 502A			**3D MODELLING**	**L**	**T**	**P**	**C**
				3	**0**	**1**	**4**
C	**P**	**A**		**L**	**T**	**P**	**H**
3	**1**	**0**		**3**	**0**	**2**	**5**

PREREQUISITE: 3D Animation

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
After the completion of the course, students will be able to			
CO1	***Understand***the definition ofComputer Based Animation and Modeling. Experiment with the geometrical 2D and 3D shapes.	Cognitive Psychomotor	Understand Remember
CO2	***Understand and Apply*** 2Dmodeling in simple objects with lines and connect with compound objects.	Cognitive	Understand Remember Apply
CO3	***Design***3D modeling with 3d objects.	Cognitive Psychomotor	Apply Respond
CO4	***Identify*** different types of lighting and cameras and Apply in real world application.	Cognitive	Remember Apply
CO5	***Creating and Applying*** standard materials, adding material details with maps, creating compound materials.	Cognitive Psychomotor	Create organization

UNIT I	**COMPUTER-BASED ANIMATION**	**9+6**

Definition of Computer-based Animation, Basic Types of Animation: Real Time ,Non-real-time, Definition of Modeling, Creation of 3D objects. Exploring the Max Interface, Controlling & Configuring the Viewports, Customizing the Max Interface & Setting Preferences, Working with Files, Importing & Exporting, Selecting Objects & Setting Object Properties, Duplicating Objects, Creating & Editing Standard Primitive & extended Primitives objects, Transforming objects, Pivoting, aligning etc.

Lab:

1. Introduction to 3D Studio Max.
2. Exploring the Max Interface
3. Creating & Editing Standard Primitive Objects

UNIT II	**2D SPLINES & SHAPES& COMPOUND OBJECT**	**9+6**

Understanding 2D Splines& shape, Extrude & Bevel 2D object to 3D, Understanding Loft & terrain, Modeling simple objects with splines, Understanding morph, scatter, conform, connect compound objects, blobmesh, Boolean , Pro-boolean& pro-cutter compound object.

Lab:

1. 2D Splines, Shapes & Compound Objects.
2. Understanding 2D Splines & Shape
3. Convert 2D to 3D object using extrude, bevel, loft, terrain etc.

UNIT III	**3D MODELLING**	**9+6**

Modeling with Polygons, using the graphite, working with XRefs, Building simple scenes, Building complex scenes with XRefs, using assets tracking, deforming surfaces & using the mesh modifiers, modeling with patches & NURBS

Lab:

1. 3D Modeling
2. Modeling with polygon objects
3. Building Simple & Complex Scene

UNIT IV	LIGHTING & CAMERA	9+6

Configuring & Aiming Cameras, camera motion blur, camera depth of field, camera tracking, using basic lights & lighting Techniques, working with advanced lighting, Light Tracing, Radiosity, video post, mental ray lighting etc.

Lab:

1. Lighting & Camera
2. Configuring & Aiming Cameras
3. Using Camera Motion Blur & Depth of Field

UNIT V	TEXTURING	9+6

Using the material editor & the material explorer, creating & applying standard materials, adding material details with maps, creating compound materials & material modifiers, unwrapping UVs & mapping texture, using atmospheric & render effects etc.

Lab:

1. Texturing with Max
2. Using Material Editor
3. Create & Apply standard material
4. Material Modifier

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	-	30	60

REFERENCES:

1. TedBoardman, 3d'sMax5Fundamentals, Techmedia"2004,
2. Michele Busquet, Modeling, Animate with 3d'smax6, "Many world, 2006.
3. Michael E. Mortenson, 3D Modeling, Animation, and Rendering, Create space,2010.
4. Boris Kulagin, "3ds Max 8 from Modeling to Animation, BPB,2006.
5. Michael G., 3D Modeling and Animation, IRM Publishing,2005
6. Lance Flavell, Beginning Blender: Open Source 3D Modeling, Animation, and Game Design, Apress, 2010.

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	2	2	2	2	2	1	1	2	2
CO2	2	3	3	3	3	1	1	3	2
CO3	2	3	3	3	3	1	1	3	2
CO4	2	3	3	3	3	1	1	3	2
CO5	2	3	3	3	3	1	1	3	2

AVG	2	3	3	3	3	1	1	3	2

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM503A			SCRIPT WRITING AND STORY BOARD DESIGNING	L	T	P	C
				3	0	1	4
C	P	A		L	T	P	H
3	1	0		3	0	2	5

PREREQUISITE:Nil

COURSE OUTCOMES		DOMAIN	LEVEL
After the completion of the course, students will be able to			
CO1	***Recognize*** the significance of Script writing.	Cognitive	Remember
CO2	***Express*** the different ways of Story preparation in Script.	Cognitive	Understand
CO3	***Employ*** the understanding of the Writing skills in Story board designing.	Cognitive	Apply
CO4	***Utilize*** the various advertising methods effectively in making the realistic shooting spot.	Cognitive	Apply
CO5	***Design***and ***Draw*** the story board writing using different types of subjects.	Cognitive Psychomotor	Create Set

UNIT I **SCRIPT** **9+6**

Script: concept, forms and utility, Basic principles of writing a script -Importance of script writing.

Lab:

Script for a short film

UNIT II **STORY** **9+6**

Writer and Producer- Researching the script -Story Development ,Plots in script.

Lab:

Story Board for a comic story

UNIT III **WRITING** **9+6**

Descriptive writing ,Analytical writing -Writing fiction - Writing script for video programmes, Concept of Shooting Script.

Lab:

Script - film review

UNIT IV **ADVERTISING** **9+6**

Script writing for theatre, Script writing for Advertising -Script writing for planetarium.

Lab:

Script and story board for a given situation

UNIT V **STORY BOARD** **9+6**

Introduction to Storyboard- Parts of storyboard --Advantages of storyboarding Interactive Storyboarding -Designing of Storyboard exercise.

Lab:

Screen play

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	-	30	75

REFERENCES:

1. Chawdhary, Nirmalkumar, How to write film screenplay, Kanishka publishers, distributers, New Delhi- 110002,– 2009,ISBN 978-81-8457-112-7.
2. Rubenstein, Paul Max, Martin Jo Maloney, Writing For the Media, Film Television, Video And Radio, Prentive Hall,– Englewood Clifts, New Jersey 07632, 1988, ISBN: 0-13-971508-7-01
3. Whitaker, Harold, John Halas, Updated by Tom Sito, Timing for Animation, Focal Press Elsevier, New York & Singapore, 2009 ISBN: 978-0-240-52160-2.

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO								PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**1**	**2**
CO1	3	2	3	2	2	1	2	1	1	2
CO2	2	3	2	2	1	2	0	0	1	1
CO3	2	2	3	1	2	1	1	2	2	3
CO4	3	2	1	3	1	2	2	1	1	1
CO5	2	1	3	2	0	1	1	2	2	3
AVG	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**2**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM504B			**MEDIA TECHNOLOGIES**	**L**	**T**	**P**	**C**
				3	**1**	**0**	**4**
C	**P**	**A**		**L**	**T**	**P**	**H**
4	**0**	**0**		**3**	**1**	**0**	**4**

PREREQUISITE: Nil

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
After the completion of the course, students will be able to			
CO1	***Recognize*** the concept of media production and the process and technically know-how.	Cognitive	Remember
CO2	***Illustrate*** and communicate ideas in the form of production in various media.	Cognitive	Analysis
CO3	***Create*** and communicate ideas visually in the form of media.	Cognitive	Create
CO4	***Understand*** the basic of production in print, radio, television and internet media.	Cognitive	Understand
CO5	***Examine*** the basic knowledge about media production.	Cognitive	Apply

UNIT I	**INTRODUCTION**	**12**
Various types of media - Paper, Television, Radio and Internet – History of media.		

UNIT II	**PRINT MEDIA**	**12**
Print media professional designing tools for News paper, magazine, brochures, advertisements, booklets, business cards, book covers- Image and text effects.		

UNIT III	RADIO MEDIA	12
How radio broadcasting works, radio studio, radio programme formats, radio play documentary, news, interviews, discussions, writing for radio, editing for radio.		
UNIT IV	**TELEVISION MEDIA**	**12**
Television production process, Electronic news gathering, basic steps of production, script writing and editing principles.		
UNIT V	**INTERNET MEDIA**	**12**
Internet – e-books, e-magazines, portals, web advertisements.		

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	15	-	60

REFERENCES:

1. Charles convonor, Designing for Print, Second Edition,John Wiley & Sons
2. Gorham Kindem and Robert B.Musburger, Introduction to Media Production: The path to digital production, Elsevier publication 2009
3. Lynnee Schafer Gross, Electronic Media Introduction, McGraw Hill, 2009
4. https://en.wikipedia.org/wiki/Media_(communication)
5. https://www.studyblue.com/notes/b/media-and-culture-an-introduction-to-mass-communication

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	3	2	3	2	1	1	2	1	2
CO2	2	2	2	1	1	1	2	1	2
CO3	2	1	2	1	1	1	2	1	1
CO4	3	2	3	2	1	1	2	1	2
CO5	2	2	2	1	1	1	2	1	2

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM 601			DIGITAL TELEVISION PRODUCTION	L	T	P	C
				0	0	2	2
C	P	A		L	T	P	H
1	1	0		0	0	4	4

PREREQUISITE: Compositing

COURSE OUTCOMES:

Course Outcomes	Domain	Level

After the completion of the course, students will be able to			
CO1:	***Recognize*** about the digital media.	Cognitive	Remember
CO2:	***Summarize*** the shooting progress	Cognitive	Understand
CO3:	**Identify** the editing and sharing in movies.	Cognitive	Understand
CO4:	***Implementing*** the advanced in movies.	Cognitive	Understand
CO5:	***Experimenting*** the movie maker tools to create the quality in movies.	Cognitive	Create

UNIT I	**INTRODUCTION**	**12**

Digital media – Idea of Movie creation – Preproduction – Planning - story script - Production – Shooting progress – Post production – introduction to Movie maker.

Lab

1. Installing movie maker

UNIT II	**SHOOTING PROGRESS**	**12**

Director – Assistant Producer – Production Manager – basic camera work - three way shooting – lighting – trailer preparation. – organize your clips

Lab

1. Capture video from device.
2. Organize the videos from the movie maker

UNIT III	**EDITING AND SHARING**	**12**

Adding – arranging – splitting – trimming – combining – Edit audio tracks – Narration recording – Adjust – Save your movie – sharing

Lab

1. Splitting videos
2. Adding audio
3. Finish your movie

UNIT IV	**ADVANCED IN MOVIE**	**12**

Working with still images – Adding sound effect – video transition – Video Effects

Lab

1. Video transition
2. Video effects

UNIT V	**PLAYING MOVIES**	**12**

Playing with movies – audacity – creating movie with quality sound effects – creating skins for videos.

Lab:

1. Create skin for videos.
2. Audacity for narration for quality sound.

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
-	**-**	**60**	**60**

REFERENCES:

1. Digital Television Production, Jeremy orleber, 2002, Arnold publishing.
2. Television production Handbook, Herbert zettl, 11 edition, Wordsworth, cengage learning 2006.
3. Microsoft windows movie maker handbook, John M'Chalak, Seth McEvoy.

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	**PO**							**PSO**	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**

CO1	2	1	1	1	1	2	1	1	1
CO2	3	2	2	2	2	2	2	2	1
CO3	2	2	2	2	3	2	2	2	1
CO4	3	2	2	2	2	2	2	3	1
CO5	3	3	3	3	3	3	3	3	1
AVG	**3**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM 602			**3D ANIMATION**	**L**	**T**	**P**	**C**
				3	**0**	**1**	**4**
C	**P**	**A**		**L**	**T**	**P**	**H**
3	**1**	**0**		**3**	**0**	**2**	**5**

PREREQUISITE: 2D Animation

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
After the completion of the course, students will be able to			
CO1	***Recognize*** the significance of 3D animation basics.	Cognitive Psychomotor	Remember Perception
CO2	***Observe*** and ***Express*** the knowledge on using different modeling techniques in designing 3D animation.	Cognitive Psychomotor	Understand Perception
CO3	***Listen*** and ***Employ*** the animated objects and manipulate rigging the objects.	Cognitive Psychomotor Affective	Apply Perception Response
CO4	***Utilize*** texturing methods to ***improve*** the designing character for the realistic applications.	Cognitive Psychomotor Affective	Apply Mechanism Respond
CO5	***Design*** and ***Establish*** the lighting, shadow and camera for shading the surface and improve the performance by using dynamics.	Cognitive Psychomotor	Create Originate

UNIT I	**INTRODUCTION**	**9+6**

User Interface – Creating, Manipulating and viewing objects- viewing 3D scene –Components and attributes

Lab:

1.Making a logo using Objects

2. Design an Ice-cream Cone

UNIT II	**MODELING**	**9+6**

Polygonal Modeling – Modeling a polygonal mesh – NURBS Modeling – revolving a curve to create a surface – Lofting screen to create surface – Subdivision surfaces – Modeling a subdivision surface

Lab:

1. Use modeling methods for designing

UNIT III	**RIGGING AND ANIMATION**	**9+6**

Key frames and graph editor - set driven key – path animation – Non linear animation – Inverse kinematics

Lab:

1. Create simple animation

2. Rigging Simple Character

UNIT IV	**CHARACTER SET UP AND TEXTURING**	**9+6**

Skeleton and kinematics – smooth skinning – cluster and blend shape deformers - UV texture mapping

Lab:
1. Applying texturing to the Objects
2. Using fluid dynamics

UNIT V	RENDERING AND DYNAMICS	9+6

Rendering a scene – shading surfaces – lights shadows and cameras – Global Illumination – caustics- Particles emitter and fields - Rigid bodies and dynamics.

Lab:
1. Designing simple animation using particles and dynamics

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	-	30	75

REFERENCES:

1. Getting started with Maya, Autodesk Maya 2011
2. The Animator's Survival Kit: A Manual of Methods, Principles, and Formulas for Classical, Computer, Games, Stop Motion, and Internet Animators by Richard Williams
3. Oliver Villa, "Learning Blender: A Hands-On Guide to Creating 3D Animated Characters", Second Edition, Addition Wesley Learning, 2014.
4. www.creativebloq.com/3d-tips/maya-tutorials-1232745
5. www.cdschools.org/cdhs/site/default.asp.
6. www.animationmentor.com/tutorials/free-maya-basic-animation-tutorials.html
7. www.blenderartists.org.

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc. A&M	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	2	2	2	1	2	1	1	2	1
CO2	1	1	1	2	2	2	1	1	1
CO3	1	2	2	2	1	1	2	1	1
CO4	1	2	1	2	2	1	1	2	1
CO5	2	1	3	2	2	1	1	2	1
AVG	1	2	2	2	2	1	1	2	1

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XAM603A			FILM MAKING	L	T	P	C
				3	0	1	4
C	P	A		L	T	P	H
3	1	0		3	0	2	5

PREREQUISITE: 2D Animation, 3D Animation

COURSE OUTCOMES		DOMAIN	LEVEL
After the completion of the course, students will be able to			
CO1	***Observe*** the basics of Animation and ***Perceive*** the process of Film	Cognitive	Remember

	Making.	Psychomotor	Perception
CO2	***Interpret*** the knowledge on Pre Production activity.	Cognitive	Understand
CO3	***Employ*** the understanding of Production activity	Cognitive	Apply
CO4	***Utilize*** the awareness of Post Production activity and ***Achieve*** the good quality in the Pre Production, Production and Post Production of Film Making.	Cognitive Psychomotor	Apply Set
CO5	***Contribute*** more actions in ***Design***ingthe Animated Movie.	Cognitive Affective	Create Respond

UNIT I	**ANIMATION BASICS – I**	**9+6**

The Bouncing Ball – Generic Walks – Personality Walks – Generic Runs –Key Generic Run Stages – Additional Pointers for Runs – Head-on Runs – Quadruped Walks – Weight – Standard Rubber Ball – Ping-Pong Ball – Bowling Ball – Comparing the three versions.

Lab:
1.Making a Motion tween and shape tween using Simple Objects
2. Create a Bouncing ball.

UNIT II	**ANIMATION BASICS – II**	**9+6**

Anticipation – The Benefits of Anticipation – Anticipations are for everything - Dialog – Body Language – Facial Animation - Lip Synching – Two-Character Dialog – Final Project – Staggers – Successive Breakouts of Joints – Eye Blinks – Eyebrows.

Lab:
1.Anticipation method using Simple Character.
2. Create a Character design and dialog.

UNIT III	**ANIMATED FILM PRODUCTION – I**	**9+6**

Production Challenge – Exploring Ideas, Storytelling and Scriptwriting – Concept Art, Viz Dev and Camera Maps – Character Design – Thumbnails – Storyboards.

Lab:
1. Storyboard drawings.
2. Create a Concept art.

UNIT IV	**ANIMATED FILM PRODUCTION – II**	**9+6**

Filmmaking Techniques – Audio Record – Animatic and Bacher Boards – Backgrounds and Environment Layouts – Color Script – Audio Breakdown – Block in Key Poses - Placement and Timing.

Lab:
1.Create a background layout and designing .
2. Create a Animatics Drawing.

UNIT V	**ANIMATED FILM PRODUCTION – III**	**9+6**

Two-Dimensional In-Betweening – Rolling, Flipping and Pencil Testing – Clean-up – Scanning – Background and Environments – Coloring – Compositing – Rendering – Final Edit.

Lab:
1.Walk Cycle in Simple Character.
2. Advertisement or Story in 2d animation. (30 seconds duration)

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**

45	-	30	75

REFERENCES:

1. Tony White, How to make animated films, Focal Press, Elesvier, 2009.
2. Kit Laybourne, The Animation Book: A complete guide to animated film making – from flip-books to sound cartoons to 3D animation, Crown Publishing Group, 1998.
3. Mark Simon, Producing Independent 2D Character Animation: Making and Selling a Short Film, Focal Press, Elesvier, 2003.
4. https://en.wikibooks.org/wiki/Movie_Making_Manual

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc.	PO							PSO	
A&M	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	1	0	3	0	1	1	2	3	0
CO2	1	2	0	1	1	0	1	0	2
CO3	1	2	0	2	1	0	1	0	2
CO4	1	2	0	1	3	1	1	0	2
CO5	2	3	2	2	3	2	1	1	0
AVG	**1**	**2**	**1**	**1**	**2**	**1**	**1**	**1**	**1**

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XGL101			COMMUNICATION SKILLS IN ENGLISH	L	T	P	SS	C
				2	0	0	2	2
C	P	A		L	T	P	SS	H
				2	0	0	2	4
2	0	0						

COURSE OUTCOMES:		Domain	Level
CO1	***Recall*** the basic grammar and using it in proper context	Cognitive	Remembering
CO2	***Explain*** the process of listening and speaking	Cognitive	Understanding
CO3	***Adapt*** important methods of reading	Cognitive	Creating
CO4	***Demonstrate*** the basic writing skills	Cognitive	Understanding

SYLLABUS		HOURS
UNIT I	**Grammar**	
i. Major basic grammatical categories ii. Notion of correctness and attitude to error correction		9
UNIT II	**Listening and Speaking**	
iii. Importance of listening skills iv. Problems of listening to unfamiliar dialects v. Aspects of pronunciation and fluency in speaking vi. Intelligibility in speaking		9
UNIT III	**Basics of Reading**	
vii. Introduction to reading skills viii. Introducing different types of texts – narrative, descriptive, extrapolative		9
UNIT IV	**Basics of Writing**	
ix. Introduction to writing skills x. Aspects of cohesion and coherence xi. Expanding a given sentence without affecting the structure xii. Reorganizing jumbled sentences into a coherent paragraph xiii. Drafting different types of letters (personal notes, notices, complaints, appreciation, conveying sympathies etc.)		9

LECTURE	TUTORIAL	PRACTICAL	SELF STUDY	TOTAL
30	0	0	30	60

Text books

1. Acevedo and Gower M (1999) Reading and Writing Skills. London, Longman 2. Deuter, M et.al. (2015). Oxford Advanced Learner's Dictionary of English (Ninth Edition). New Delhi, OUP
3. Eastwood, John (2008). Oxford Practice Grammar. Oxford, OUP
4. Hadefield, Chris and J Hadefield (2008). Reading Games. London, Longman 5. Hedge, T (2005). Writing. Oxford, OUP
6. Jolly, David (1984). Writing Tasks: Stuidents' Book. Cambridge, CUP
7. Klippel and Swan (1984). Keep Talking. Oxford, OUP
8. Saraswati, V (2005). Organized Writing 1. Hyderabad, Orient Blackswan
9. Swan, Michael. (1980). Practical English Usage. Oxford, OUP
10. Walter and Swan (1997). How English Works. Oxford, OUP

XGL102 A			mwptpay;jkpo	L	T	P	SS	C
				2	0	0	0	2
C	P	A		L	T	P	SS	H
2	0	0		2	0	0	0	2

PREREQUISITE: Nil

COURSE OUTCOMES		DOMAIN	LEVEL
After the completion of the course, students will be able to			
CO1	***Recognize(milahsk; fhZjy;)***gy;NtWmwptpay; Jiwrhu;e;jEl;gq;fs;>fiyr; nrhy;yhf;fcj;jpfs; Nghd;wtw;iwj; jkpo;nkhop %yk; mwpe;Jnfhs;sy;.	Cognitive	Remember
CO2	***Choose (njupTnra;jy;)***tlnkhopNtu;r;nrhw;fs;>Gtpapay;>epytpay; gw;wpg; goe;jkpo; ,yf;fpaq;fs; %yk; mwpe;Jnfhs;sy;.	Cognitive	Remember
CO3	***Describe(tpsf;Fjy;)***njhy;fhg;gpak; %yk; mwptpay; nra;jpfisczu;jy;.	Cognitive Psychomotor	Understand Set
CO4	***Apply (gad;gLj;Jjy;)***gy;NtWfy;tpj;Jiwrhu;e;jgpupTfs;>gy;NtWfy;tpj;Jiwrhu;e;jgpupTfs; Fwpj;JnjspTngwy;.	Cognitive	Apply
CO5	***Analyze(gFj;jy;)***mwptpay; rpWfijfspd; Njhw;wk; kw;Wk; tsu;r;rpepiyehlfq;fspd; gq;FFwpj;JnjspTngWjy;.	Cognitive	Analyze

myF– 1	**mwptpay;jkpo; mwpKfk;**	**6**

mwptpay;jkpo; - nghwpapay;>njhopy;El;gk;>kUj;Jtk;>cotpay;. jkpopy; mwptpay; - jkpopy; El;gk;.gilg;Gg; gzp–nrhy;yhf;fcj;jpfs; - El;gkhdNtWghLfisczu;e;Jnrhy;yhf;fk; nra;jy; - fiyr;nrhw;fs; - ,e;jpankhopfSf;Fg; nghJthdfiyr; nrhw;fiscUthf;Fjy; - tlnkhopNtu;r;nrhw;fiskpFjpahff; nfhz;bUj;jiyg; gad;gLj;Jjy;.

myF– 2	**gpwmwptpay; Jiwfs;**	**6**

Gtpapay;>epytpay; gw;wpgoe;jkpo; ,yf;fpak; Fwpg;gpLk; jfty;fs; - njhy;fhg;gpak; Fwpg;gpLk; capupay;>kz;zpay; gw;wpambg;gilr; nra;jpfs; - jkpo; kUj;Jtf; fy;tp - mwptpay; jkpOf;F ,jopay; cj;jpfs; - tsu; jkpo;.

myF– 3	**gy;NtWfiyfspy; mwptpay;**	**6**

nkhopapay; fy;tp–fl;llf; fiyf;fy;tp–rKjhaf;fy;tp–Nra;ikf;fy;tp–kz;zpay;>Gtpapay;>fzf;fpay; Mfpait ,ize;jfy;tp- ,f;fhyf; fy;tpg; nghJepiy–fiy>mwptpay; - vd;gtw;wpd; tpsf;fq;fs;.

myF– 4	**mwptpay; jkpopy; rpWfijfspd; gq;F**	**6**

rpWfij -,yf;fzk; cUthf;Fk; cj;jpfs; - rpwe;jrpWfijfs; - rpWfij tiffs; - ey;yrpWfijcUthf;fk; - tuyhW–r%fk; - nkhopngau;g;Gkw;Wk; mwptpay; rpWfijfs;.

myF–5	**mwptpay; jkpopy; ehlfq;fspd; gq;F**	**6**

ehlfk; - ehlf ,yf;fzk;> ,Utifehlfq;fs; - gbg;gjw;Fupaehlfk; - ebg;gjw;Fupaehlfk; - rupj;jpuehlfk;>r%fehlfk; - eifr;Ritehlfq;fs; - mnkr;#u; ehlfq;fs; - njhopy;Kiwehlfq;fs;.

LECTURE	TUTORIAL	PRACTICAL	SELF STUDY	TOTAL
30	0	0	0	30

Nkw;ghu;itEhy;fs;:

1. mwptpay; jkpo; - lhf;lu; th.nr. Foe;ijr;rhkp
2. tsu; jkpo; - ,jo;fs;
3. ,yf;fpatuyhW–rpWfijgw;wpaJ
4. ,yf;fpatuyhW–Gjpdk;gw;wpaJ

Table 1: CO Versus PO mapping.

B.Sc. A & M	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1		1							
CO2		1							
CO3		1					1		
CO4	1	2	2	1		1	2		
CO5	2	2	2	2		1	2		
Total	3	7	4	3		2	5		
Scaled Value	1	1	1	1			1		

1 – 5 -> 1 6 – 10 ->2 11 – 15 -> 3

3–Strong Correlation, 2–Medium Correlation, 1–Low Correlation, 0–No Correlation

XBC103			**PROGRAMMING METHODOLOGIES**	**L**	**T**	**P**	**SS**	**C**
				3	**1**	**1**	**1**	**6**
C	**P**	**A**		**L**	**T**	**P**	**SS**	**H**
2.5	**1**	**0.5**		**3**	**1**	**3**	**1**	**8**

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
CO1	***Recognize*** the importance of developing simple algorithms and flow charts to solve a problem.	Cognitive Psychomotor	Remember Perception
CO2	***Identify*** the needs problem solving skills coupled with top down design principles.	Cognitive Psychomotor	Understand Perception
CO3	***Demonstrate*** the strategies of array processing algorithms coupled with iterative methods.	Cognitive Psychomotor Affective	Apply Perception Receive
CO4	***Illustrate*** the concept of Structures application development.	Cognitive Psychomotor Affective	Apply Mechanism Respond
CO5	***Develop*** and ***Establish***searching techniques and use of pointers. recursive techniques in programming	Cognitive Psychomotor	Create Origination

UNIT I	**INTRODUCTION TO PROGRAMMING**	**9+3+9**

Introduction to Programming, Program Concept, Characteristics of Programming, Stages in Program Development, Algorithms, Notations, Design, Flowcharts, Types of Programming Methodologies, Introduction to C++ Programming - Basic Program Structure In C++, Variables and Assignments, Input and Output, Selection and Repetition Statements.

Lab:

Given the problem statement, students are required to formulate problem, develop flowchart/algorithm, write code, execute and test it. Students should be given assignments on

following:

a. To learn elementary techniques involving arithmetic operators and mathematical expressions, appropriate use of selection (if, switch, conditional operators) and control structures.

UNIT II	FUNCTIONS	9+3+9

Top-Down Design, Predefined Functions, Programmer -defined Function, Local Variable, Function Overloading, Functions with Default Arguments, Call -By-Value and Call-By-Reference Parameters, Recursion.

Lab:

Given the problem statement, students are required to formulate problem, develop flowchart/algorithm, write code, execute and test it. Students should be given assignments on following :

b. Learn how to use functions and parameter passing in functions, writing recursive programs.

UNIT III	ARRAYS	9+3+9

Introduction to Arrays, Declaration and Referring Arrays, Arrays in Memory, Initializing Arrays. Arrays in Functions, Multi-Dimensional Arrays.

Lab:

Write Programs to learn the use of strings and string handling operations.

1. Problems which can effectively demonstrate use of Arrays. Structures and Union.

UNIT IV	STRUCTURES	9+3+9

Structures - Member Accessing, Pointers to Structures, Structures and Functions, Arrays of Structures, Unions

Lab :

1. Write programs using pointers

UNIT V	FILES AND SEARCHING ALGORITHMS	9+3+9

Declaration and Initialization, Reading and Writing Strings, Arrays of Strings, String and Function, Strings and Structure, Standard String Library Functions. Searching Algorithms - Linear Search, Binary Search. Use of files for data input and output. merging and copy files.

Lab:

1.Write programs to use files for data input and output.

2.Write programs to implement search algorithms.

LECTURE	TUTORIAL	PRACTICAL	SELF STUDY	TOTAL
45	15	45	15	105+15

TEXT BOOKS

1. Problem Solving and Program Design in C, J. R. Hanly and E. B. Koffman, Pearson, 2015.
2. Programming and problem solving with C++: brief edition, N. Dale and C. Weems, Jones & Bartlett Learning, 2010.

REFERENCES

1. Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", Pearson Education Inc. (2005).
2. Aho A.V. J.E. Hopcroft and J.D. Ullman., 2001. “The Design and Analysis of Computer Algorithms”, Pearson Education Delhi. Second Edition.

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http://www.comptechdoc.org/basic/basictut/index.html
http://cse02-iiith.vlabs.ac.in/
http://textofvideo.nptel.iitm.ac.in/video.php?courseId=106104128
http://www.nptel.ac.in
http://www.vlab.co.in

Table 1: Mapping of Cos with POs.

B.Sc CS	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	2	2	2	2				2	1
CO2	1			2				2	
CO3	1		2	1					
CO4	2	1	2	3				2	1
CO5	2		1	3				2	
Total	8	3	7	11				8	2
Scaled Value	2	1	2	3				2	1

1 -- 5 →1, 6 -- 10 → 2, 11--15 →3
0–No relation 1–Low relation 2–Medium relation 3–Strong relation

XBC104			**ALGEBRA, CALCULUS AND ANALYTICAL GEOMETRY**	L	T	P	SS	C
				4	1	0	1	6
C	**P**	**A**		L	T	P	SS	H
4	0	0		4	1	0	1	6
PREREQUISITES			Basics of Mathematics					

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
CO1	Evaluate the derivatives of given functions	Cognitive	Understand
CO2	Calculate the definite and indefinite integrals using various techniques.	Cognitive	Understand, Remember
CO3	Apply basic operations on matrices to find the inverse of a matrix	Cognitive	Understand, Apply
CO4	Solve problems using Binomial, exponential and logarithmic series expansions.	Cognitive	Understand
CO5	Calculate the distance between two points and explain section formulae, slope form and intercept form.	Cognitive	Understand

UNIT I – DIFFERENTIAL CALCULUS	**12+3**
Derivative of a function – Various formulae – Product and quotient rule of differentiation – Differentiation of function of function (chain rule) – Trigonometric functions – Inverse trigonometric functions – Exponential function – Logarithmic functions – Logarithmic differentiation - Higher derivatives – Successive differentiation – Leibnitz theorem.	
UNIT II – INTEGRAL CALCULUS	**12+3**
Constant of integration – Indefinite integral – Elementary integral formulae – Methods of integration – Integration by substitution - Integration by parts – Integration through partial fractions – Concept of definite integral – Properties of definite integral.	
UNIT III – MATRICES AND DETERMINANTS	**12+3**
Definition and types of matrices – Matrix Operation – Determinants – Solution of system of linear	

equations by Matrix method.	
UNIT IV – SERIES	**12+3**
Binomial theorem for a rational index – Exponential and Logarithmic series – Summation of the above series.	
UNIT V – TWO-DIMENSIONAL ANALYTICAL GEOMETRY	**12+3**
Cartesian coordinate system – Introduction to polar coordinates – Distance between two points – Section formulae – Area of triangle – Locus and its equations – Straight line: Equation of a straight line parallel to an axis – slope form –normal form – Intercept form through two point – condition of concurrency of three lines.	

LECTURE	TUTORIAL	SELF STUDY	PRACTICAL	TOTAL
60	15	15	0	75+15

TEXT BOOKS

1. T. K. ManicavachagomPillay, T. Natarajan, K. S. Ganapathy, Algebra, Volume I , S.Vishvanathan Printers and Publishers Pvt., Ltd, Chennai 2004.
2. S.Naravanan, T.K.ManicavachagamPillay, S.Vishvanathan, Calculus volume I &IIPrinters and Publishers Pvt., Ltd, Chennai 1991.

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1. P.Kandasamy&K.Thilagavathi, B.Sc Mathematics for branch I – Vol I &Vol II, S.Chand& Co, 2004.

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www.nptel.ac.in

Advanced Engineering Mathematics, Prof. PratimaPanigrahi, Department of Mathematics, Indian Institute of Technology, Kharagpur.

Mapping of COs with POs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO1	**3**						**2**		
CO2	**3**						**2**		
CO3	**3**						**2**		
CO4	**3**						**2**		
CO5	**3**						**2**		
Total	**15**						**10**		
Scaled Value	**3**						**2**		

1-5→1, 6-10→2, 11-15→3

0 – No Relation, 1 – Low Relation, 2- Medium Relation, 3- High Relation

COURSE CODE	**XBC105**	**L**	**T**	**P**	**SS**	**C**
COURSE NAME	**COMPUTER FUNDAMENTALS**	**3**	**1**	**1**	**1**	**6**
PREREQUISITES	**Nil**	**L**	**T**	**P**	**SS**	**H**
C:P:A	**3:1:0**	**3**	**1**	**3**	**1**	**8**

COURSE OUTCOME		**Domain**	**Level**
CO1	***Recognize*** the importance of computer system, application and practice in Libre Office (FOSS) Writer.	Cognitive Psychomotor	Understand Origination
CO2	***Identify*** and ***define*** basic terms and concepts in computer hardware and peripheral devices and Libre Office (FOSS)	Cognitive Psychomotor	Understand Origination

	Impress.		
CO3	***Establish*** the relationship between hardware and software. ***Arrange*** data and Apply formula in Libre Office (FOSS) Calc.	Cognitive Psychomotor	Apply Origination
CO4	***Identify*** the IO devices. ***Design*** database using Libre Office (FOSS) Base.	Cognitive Psychomotor	Remembrance Origination
CO5	***Identify*** flowchart component and ***apply*** in program and design a project using Libre Office (FOSS).	Cognitive Psychomotor	Understand Apply Origination

UNIT I - INTRODUCTION **9+3+9**

Introduction – Characteristics of computer – Evolution of computer- Generationof computer – classification of computer- The Computer system –Applications of computers

Lab:
Libre Office Writer
Text Processing
Table Creation
Resume Creation
Mail Merge

UNIT II - COMPUTER ARCHITECTURE **9+3+9**

The Central processing unit (CPU) – Main Memory Unit – Interconnection Unit – Cache – Communication between various units of a computer system.

Lab :
Libre Office Calc
Worksheet Creation
Employee Pay Details
Student Result Sheet
Simple Charts

UNIT III - PRIMARY AND SECONDARY MEMORY **9+3+9**

Primary memory : Memory representation – memory hierarchy - Random access memory – Types of Memory – Read only memory – types of ROM – **Secondary Memory** – Classification of secondary storage devices –Magnetic tape – Magnetic disk - Optical disk – Memory stick - Universal serial bus – Mass storage devices

Lab :
Libre Office Impress
Power Point Preparation
Create Text And Images With Effects
Create Animation And Sound Effects

UNIT IV - INPUT AND OUT PUT DEVICES **9+3+9**

Input devices Types of input devices - Optical character recognition – Optical Mark recognition - Magnetic ink character recognition – Bar code reader – **Output devices** : Types of output - Classification of output devices - Terminals

Lab :
LibreOffice Access
Importing Data From Data Base
Creating Macro
Result Processing

UNIT V	COMPUTER PROGRAM AND LANGUAGES	9+3+9

Computer Program : Developing a program - Algorithm – flow chart - decision table – program testing and debugging- Program documentation – Programming paradigms - Characteristics of good program – **Computer languages** : Evolution of programming language – Classification of programming Language – Generation of a programming language – features of a good programming language

Lab :
LibreOffice Project
Creating A Greeting Card
Creating A Cover Page Of A Project

LECTURE	TUTORIAL	PRACTICAL	Self-Study	TOTAL
45	15	45	15	105+15

Text books

Dorling Kindersley, 2009. Introduction to Computer Science ITL Education Solutions Limited fourth Edition.

References:

1. Roger Hunt and John Shelly, penguin Edition,2007. Computers and common sense, (PHI)
2. Internet for everyone, Lenon&Lenon (Lenon Tech World), 2009.

E-References:

3. http://www.nptel.ac.in
4. http://www.vlab.co.in

Mapping of COs with POs

Course Outcomes	Program Outcomes								
	1	2	3	4	5	6	7	PSO1	PSO2
CO1	2	1	1	1					
CO2			1	1					
CO3	1	2	1	1	1				
CO4	1	2	1	1	1				
CO5	1	1	1	1	2	2		1	
Total	5	6	5	5	4	3		1	
Scaled Value	1	2	1	1	1	1		1	

1-5 → 1, 6-10 → 2, 11-15 → 3

0 – No relation, 1 – Low relation, 2 – Medium relation, 3 – High relation

COURSE CODE	XUM106	L	T	P	SS	C
COURSE NAME	HUMAN ETHICS, VALUES, RIGHTS AND GENDER EQUALITY	2	0	0	1	0
PREREQUISITES	-	L	T	P	SS	H
C:P:A	1.5:0:0.5	2	0	0	1	3

COURSE OUTCOMES		Domain	Level
CO1	***Relate*** and ***Interpret*** the human ethics and human relationships	Cognitive	Remember
CO2	***Explain*** and ***Apply*** gender issues, equality and violence against women	Cognitive	Understanding, Applying
CO3	***Classify*** and ***Develop*** the identify of human rights and	Cognitive	Analyzing

	their violations	Affective	Receiving
CO4	***Classify*** and ***Dissect*** necessity of human rights and report on violations.	Cognitive	Understanding, Analyze
CO5	***List*** and **respond** to family values, universal brotherhood, fight against corruption by common man and good governance.	Cognitive Affective	Remember, Respond

UNIT I HUMAN ETHICS AND VALUES	**6+3**
Human Ethics and values - Understanding of oneself and others- motives and needs- Social service, Social Justice, Dignity and worth, Harmony in human relationship: Family and Society, Integrity and Competence, Caring and Sharing, Honesty and Courage, WHO's holistic development - Valuing Time, Co-operation, Commitment, Sympathy and Empathy, Self-respect, Self-Confidence, character building and Personality.	
UNIT IIGENDER EQUALITY	**6+3**
Gender Equality - Gender Vs Sex, Concepts, definition, Gender equity, equality, and empowerment. Status of Women in India Social, Economic, Education, Health, Employment, HDI, GDI, GEM. Contributions of Dr.B.R. Ambetkar, ThanthaiPeriyar and Phule to Women Empowerment.	
UNIT IIIWOMEN ISSUES AND CHALLENGES	**6+3**
Women Issues and Challenges- Female Infanticide, Female feticide, Violence against women, Domestic violence, Sexual Harassment, Trafficking, Access to education, Marriage. Remedial Measures – Acts related to women: Political Right, Property Rights, and Rights to Education, Medical Termination of Pregnancy Act, and Dowry Prohibition Act.	
UNIT IV HUMAN RIGHTS	**6+3**
Human Rights Movement in India – The preamble to the Constitution of India, Human Rights and Duties, Universal Declaration of Human Rights (UDHR), Civil, Political, Economic, Social and Cultural Rights, Rights against torture, Discrimination and forced Labor, Rights and protection of children and elderly. National Human Rights Commission and other statutory Commissions, Creation of Human Rights Literacy and Awareness. - Intellectual Property Rights (IPR). National Policy on occupational safety, occupational health and working environment.	
UNIT V GOOD GOVERNANCE AND ADDRESSING SOCIAL ISSUES	**6+3**
Good Governance - Democracy, People's Participation, Transparency in governance and audit, Corruption, Impact of corruption on society, whom to make corruption complaints, fight against corruption and related issues, Fairness in criminal justice administration, Government system of Redressal. Creation of People friendly environment and universal brotherhood.	

LECTURE	**TUTORIAL**	**SELF STUDY**	**PRACTICAL**	**TOTAL**
30	**0**	**15**	**0**	**45**

Textbook

1. Aftab A, (Ed.), Human Rights in India: Issues and Challenges, (New Delhi: Raj Publications, 2012).
2. Mani. V. S., Human Rights in India: An Overview (New Delhi: Institute for the World Congress on Human Rights, 1998).
3. Singh, B. P. Sehgal, (ed) Human Rights in India: Problems and Perspectives (New Delhi: Deep and Deep, 1999).
4. Veeramani, K. (ed) Periyar on Women Right, (Chennai: Emerald Publishers, 1996)
5. Veeramani, K. (ed) Periyar Feminism, (PeriyarManiammai University, Vallam, Thanjavur: 2010).

Reference Books

1. Bajwa, G.S. and Bajwa, D.K. Human Rights in India: Implementation and Violations (New Delhi: D.K. Publications, 1996).
2. Chatrath, K. J. S., (ed.), Education for Human Rights and Democracy (Shimala: Indian Institute of

Advanced Studies, 1998). 3. Jagadeesan. P. Marriage and Social legislations in Tamil Nadu, Chennai: Elachiapen Publications, 1990). 4. Kaushal, Rachna, Women and Human Rights in India (New Delhi: Kaveri Books, 2000)
E-Reference
http://planningcommission.nic.in/aboutus/committee/wrkgrp12/wg_occup_safety.p 2. http://cvc.nic.in/welcome.html. 3. https://www.transparency.org/ 4. https://www.hrw.org/world-report/2015/country-chapters/india

Mapping of COs with Pos

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO1					2	2	1			
CO2					2	2				
CO3						2				
CO4						2	1			
CO5						3				
Total					4	11	2			
Scaled Value					1	2	1			

1 – 5 → 1, 6-10 → 2, 11 – 15→ 3

0 – No relation, 1 – Low relation, 2 – Medium relation, 3 – High relation

XGL201			**ADVANCED ENGLISH COMMUNICATION SKILLS**	**L**	**T**	**P**	**SS**	**C**
				2	**0**	**0**	**0**	**2**
C	**P**	**A**		**L**	**T**	**P**	**SS**	**H**
1.5	**0**	**0.5**		**2**	**0**	**0**	**2**	**4**

PREREQUISITE: Nil

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
On the successful completion of this course students would be able to			
CO1	***Recall*** the basic grammar and using it in proper context	Cognitive	Remembering
CO2	***Explain*** the process of listening and speaking	Cognitive	Understanding
CO3	***Adapt*** important methods of reading	Cognitive	Creating
CO4	***Demonstrate*** the basic writing skills	Cognitive	Understanding

UNIT I	**Advanced Reading**	**6**
i. Reading texts of different genres and of varying length ii. Different strategies of comprehension iii. Reading and interpreting non-linguistic texts iv. Reading and understanding incomplete texts (Cloze of varying lengths and gaps; distorted texts.)		
UNIT II	**Advanced Writing**	**6**
v. Analysing a topic for an essay or a report vi. Editing the drafts arrived at and preparing the final draft vii. Re-draft a piece of text with a different perspective (Manipulation exercise) viii. Summarise a piece of prose or poetry ix. Using phrases, idioms and punctuation appropriately		
UNIT III	**Principles of communication and communicative competence**	**6**
x. Introduction to communication – principles and process xi. Types of communication – verbal		

and non-verbal xii. Identifying and overcoming problems of communication xiii. Communicative competence				
UNIT IV	**Cross Cultural Communication**			**6**
xiv. Cross-cultural communication				
LECTURE	**TUTORIAL**	**SELF STUDY**	**PRACTICAL**	**TOTAL**
30	**0**	**30**	**0**	**60**

REFERENCES:

1) Bailey, Stephen (2003). Academic Writing. London and New York, Routledge.
2) Department of English, Delhi University (2006). Fluency in English Part II. New Delhi, OUP
3) Grellet, F (1981). Developing Reading Skills: A Practical Guide to Reading Skills. New York, CUP
4) Hedge, T. (2005). Writing. London, OUP
5) Kumar, S and PushpLata (2015). Communication Skills. New Delhi, OUP
6) Lazar, G. (2010). Literature and Language Teaching. Cambridge, CUP
7) Nuttall, C (1996). Teaching Reading Skills in a Foreign Language. London, Macmillan
8) Raman, Meenakshi and Sangeeta Sharma (2011). Technical Communication: Principles and Practice. New Delhi, OUP

XES202			**ENVIRONMENTAL STUDIES**	L	T	P	SS	C
				0	0	0	0	0
C	P	A		L	T	P	SS	H
1.5	0	0.5		2	0	0	1	3

PREREQUISITE : Nil

Course Outcomes		Domain	Level
After the completion of the course, students will be able to			
CO1	***Describe*** the significance of natural resources and ***explain*** anthropogenic impacts.	Cognitive	Remember Understand
CO2	***Illustrate*** the significance of ecosystem, biodiversity and natural geo bio chemical cycles for maintaining ecological balance.	Cognitive	Understand
CO3	***Identify*** the facts, consequences, preventive measures of major pollutions and ***recognize*** the disaster phenomenon	Cognitive Affective	Remember Receiving
CO4	***Explain*** the socio-economic, policy dynamics and***practice*** the control measures of global issues for sustainable development.	Cognitive	Understand
CO5	the impact of population and the concept of various welfare programs, and ***apply*** themodern technology towards environmental protection.	Cognitive	Understand Apply

UNIT I	**INTRODUCTION TO ENVIRONMENTAL STUDIES AND ENERGY**	**6**

Definition, scope and importance – Need for public awareness – Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over-utilization of surface and ground water, flood, drought, conflicts over water, dams-benefits and problems – Mineral resources:

Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – Role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles.

UNIT II	**ECOSYSTEMS AND BIODIVERSITY**	**6**

Concept of an ecosystem – Structure and function of an ecosystem – Producers, consumers and decomposers – Energy flow in the ecosystem – Ecological succession – Food chains, food webs and ecological pyramids – Introduction, types, characteristic features, structure and function of the (a) Forest ecosystem (b) Grassland ecosystem (c) Desert ecosystem (d) Aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to Biodiversity – Definition: genetic, species and ecosystem diversity - Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

UNIT III	**ENVIRONMENTAL POLLUTION**	**6**

Definition – Causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – Solid waste management: Causes, effects and control measures of urban and industrial wastes – Role of an individual in prevention of pollution – Pollution case studies – Disaster management: flood, earthquake, cyclone and landslide.

UNIT IV	**SOCIAL ISSUES AND THE ENVIRONMENT**	**6**

Urban problems related to energy – Water conservation, rain water harvesting, watershed management – Resettlement and rehabilitation of people; its problems and concerns, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, Wasteland reclamation – Consumerism and waste products – Environment Protection Act – Air (Prevention and Control of Pollution) Act – Water (Prevention and control of Pollution) Act – Wildlife Protection Act – Forest Conservation Act – Issues involved in enforcement of environmental legislation – Public awareness.

UNIT V	**HUMAN POPULATION AND THE ENVIRONMENT**	**6**

Population growth, variation among nations – Population explosion – Family welfare programme – Environment and human health – Human rights – Value education - HIV / AIDS – Women and Child welfare programme– Role of Information Technology in Environment and human health – Case studies.

Lecture	**Tutorial**	**Self-Study**	**Practical**	**Total**
30	**0**	**15**	**0**	**45**

Text book

1. Miller T.G. Jr., Environmental Science, Wadsworth Publishing Co, USA, 2000.
2. Townsend C., Harper J and Michael Begon, Essentials of Ecology, Blackwell Science, UK, 2003

Reference Books

1. Trivedi R.K and P.K.Goel, Introduction to Air pollution, Techno Science Publications, India, 2003.
2. Disaster mitigation, Preparedness, Recovery and Response, SBS Publishers &

Distributors Pvt.Ltd, New Delhi, 2006.
3. Introduction to International disaster management, Butterworth Heinemann, 2006.
4. Gilbert M.Masters, Introduction to Environmental Engineering and Science, Pearson Education Pvt., Ltd., Second Edition, New Delhi, 2004.
5. Trivedi R.K., Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II, Enviro Media, India, 2009.
6. Cunningham, W.P.Cooper, T.H.Gorhani, Environmental Encyclopedia, Jaico Publ., House, Mumbai, 2001.
7. S.K.Dhameja, Environmental Engineering and Management, S.K.Kataria and Sons, New Delhi, 2012.
8. Sahni, Disaster Risk Reduction in South Asia, PHI Learning, New Delhi, 2003.
9. Sundar, Disaster Management, Sarup& Sons, New Delhi, 2007.
10. G.K.Ghosh, Disaster Management, A.P.H.Publishers, New Delhi, 2006.

E-references

1. http://www.e-booksdirectory.com/details.php?ebook=10526
2. https://www.free-ebooks.net/ebook/Introduction-to-Environmental-Science
3. https://www.free-ebooks.net/ebook/What-is-Biodiversity
4. https://www.learner.org/courses/envsci/unit/unit_vis.php?unit=4
5. http://bookboon.com/en/pollution-prevention-and-control-ebook
6. http://www.e-booksdirectory.com/details.php?ebook=8557
7. http://www.e-booksdirectory.com/details.php?ebook=6804

	GA1	GA2	GA3	GA4	GA5	GA6	GA7	GA8	GA9	GA10
CO1	2						2		2	2
CO2	1						2			2
CO3	2	1	2				3		2	3
CO4	2	2	2				2			3
CO5	2				3	3				2
	9	**3**	**4**		**3**	**3**	**9**		**4**	**12**
Scaled value	**2**	**1**	**1**		**1**	**1**	**2**		**1**	**3**

XBC203			**DATA STRUCTURES**	**L**	**T**	**P**	**SS**	**C**
				3	**1**	**1**	**1**	**6**
C	**P**	**A**		**L**	**T**	**P**	**SS**	**H**
3	**1**	**0**		**3**	**1**	**3**	**1**	**7**

PREREQUISITE: Computer Programming

Course Outcomes		**Domain**	**Level**
After the completion of the course, students will be able to			
CO1	***Explains*** the concept of data structures and with the manner in which these data structures can best be implemented; become accustomed to the description of	Cognitive Psychomotor	Understand Apply

	algorithms in both functional and procedural styles		
CO2	***Choose*** To have a knowledge of complexity of basic operations like insert, delete, search on these data structures	Cognitive	Remember
CO3	Ability to choose a data structure to suitably model any data used in computer applications	Cognitive Psychomotor	Apply Set
CO4	Design programs using various data structures including hash tables, Binary and general search trees, heaps, graphs etc.	Cognitive	Analyze
CO5	Ability to assess efficiency tradeoffs among different data structure implementations. Implement and know the applications of algorithms for sorting, pattern matching etc.	Cognitive	Create

UNIT I	**INTRODUCTION**	**9+3+ 9**

Basic concepts- Algorithm Specification-Introduction, Recursive algorithms, Data Abstraction Performance analysis, Linear and Non-Linear data structures, Singly Linked Lists-Operations, Concatenating, circularly linked lists-Operations for Circularly linked lists, Doubly Linked Lists-Operations. Representation of single, two dimensional arrays, sparse matrices-array and linked representations.

Lab

Write program that uses functions to perform the following:

a) Creation of list of elements where the size of the list, elements to be inserted and deleted are dynamically given as input.

b) Implement the operations, insertion, deletion at a given position in the list and search for an element in the list

c) To display the elements in forward / reverse order

UNIT II	**LINEAR DATA STRUCTURES**	**9+3+ 9**

Stack- Operations, Array and Linked Implementations, Applications- Infix to Postfix Conversion, Postfix Expression Evaluation, Recursion Implementation, Queue- Definition and Operations, Array and Linked Implementations, Circular Queues - Insertion and Deletion Operations, Dequeue (Double Ended Queue).

Lab

1. Write a program that demonstrates the application of stack operations (Eg: infix expression to postfix conversion)
2. Write a program to implement queue data structure and basic operations on it (Insertion, deletion, find length) and code at least one application using queues

UNIT III	**TREES**	**9+3+ 9**

Trees, Representation of Trees, Binary tree, Properties of Binary Trees, Binary Tree Representations- Array and Linked Representations, Binary Tree Traversals, Threaded Binary Trees, Priority Queue- Implementation, Heap- Definition, Insertion, Deletion.

Lab

1. Write a program that uses well defined functions to Create a binary tree of elements and Traverse a Binary tree in preorder, inorder and postorder.

UNIT IV	**GRAPHS**	**9+3+ 9**

Graphs, Graph ADT, Graph Representations, Graph Traversals, Searching, Static Hashing- Introduction, Hash tables, Hash functions, Overflow Handling. Sorting Methods, Comparison of Sorting Methods.

Lab

1. Write program that implements linear and binary search methods of searching for an

element in a list.

2. Write and trace programs to understand the various phases of sorting elements using the methods.

a) Insertion Sort
b) Quicksort
c) Bubble sort

UNIT V	ALGORITHM DESIGN TECHNIQUES	9+3+ 9

Search Trees- Binary Search Trees, AVL Trees- Definition and Examples.Red-Black and Splay Trees, Comparison of Search Trees, Pattern Matching,Algorithm- The Knuth-Morris-Pratt Algorithm, Tries (examples).

Lab

1. Write and trace programs to Create a Binary search tree and insert and delete from the tree.
2. Represent suitably a graph data structure and demonstrate operations of traversals on it.

LECTURE	TUTORIAL	PRACTICAL	SELF-STUDY	TOTAL
45	15	45	15	105+15

REFERENCES:

1. Fundamentals of Data structures in C, 2nd Edition, E. Horowitz, S. Sahni and Susan Anderson-Freed, Universities Press.
2. Data structures and Algorithm Analysis in C, 2nd edition, M. A. Weiss, Pearson
3. Lipschutz: Schaum's outline series Data structures Tata McGraw-Hill
   1. www.tutorialspoint.com
   2. www.nptel.com
   3. www.virtuallab.ac.in
   4. Lecture Slides, Multiple Choice Questions, Animations Link: http://highered.mheducation.com/sites/0072967757/student_view0/index.html
   5. Lecture Slides : http://www.mhhe.com/engcs/compsci/forouzan/

COURSE CODE	XBC204	L	T	P	SS	C
COURSE NAME	DISCRETE MATHEMATICS	3	1	0	2	6
PREREQUISTE	NIL	L	T	P	SS	H
C:P:A	3:0:0	3	1	0	2	6

Course Outcome		Domain	Level
CO1	***Define*** the properties and laws of sets, relations and functions and***Apply*** the operation of the sets using venDiagram.	Cognitive	R, Ap
CO2	***Apply***the concepts of logic and to find the normal forms. ***Explain*** the tautologies and Contradiction.	Cognitive	U, Ap
CO3	***Apply*** the counting principle permutation and combination and to ***solve*** the problem. ***Explain*** the pigeonhole principle.	Cognitive	U, Ap
CO4	***Explain*** the types of lattices and to***show*** lattices as partially ordered sets.	Cognitive	U, Ap
CO5	***Apply*** **the** properties of semi groups and groups and Explain any set with binary operation as a semigroup and group with examples.	Cognitive	U, Ap

UNIT I	12

Set notations – Basic definitions and set operations – Venn diagram – Algebraic laws of set theory – D Morgan's law. Relations: Properties of relations – Types of relations – Equivalence classes. Functions: Definition – Domain – Range and types of function- Classification of function.

UNIT II	**12**

Statements - Normal forms – CNF – DNF – PCNF - PDN – Tautologies - Contradictions.

UNIT III	**12**

Counting principles – The Pigeonhole principle – Counting – Permutations and Combinations – Combinatorial arguments – Countable and uncountable sets.

UNIT IV	**12**

Lattices as partially ordered set – Types of lattices – Lattices as algebraic system.

UNIT V	**12**

Binary operations – Semi groups - Groups – Examples and elementary properties.

LECTURE	**TUTORIAL**	**PRACTICAL**	**SELF STUDY**	**TOTAL**
45	**15**	**0**	**30**	**60 + 30**

TEXT BOOK

1. Ralph. P. Grimaldi, "Discrete and Combinatorial Mathematics: An Applied Introduction", Fourth Edition, Pearson Education Asia, Delhi, 2002.
2. Kenneth Levasseur and Alan Doerr, "Applied Discrete Structures, Department of Mathematical Sciences, University of Massachusetts Lowell, Version 2.0, 2013.

REFERENCES

1. Kenneth H.Rosen, "Discrete Mathematics and its Application", Fifth edition, Tata McGraw-Hill Publishing company pvt.Ltd., New Delhi, 2003.
2. Dr.M.K.Venkataraman, Dr.N.SridharanN.Chandrasekaran, "Discrete Mathematics", the National Publishing Company, 2003.
3. Veerajan T., Discrete Mathematics with Graph Theory and Combinatorics", 10th edition,Tata McGraw Hill Companies,2010.

E REFERENCES

1. www.nptel.ac.in
2. Graph Theory A NPTEL Course S.A. Choudum.
3. Graph Theory by Prof. L. Sunil Chandran Computer Science and Automation Indian Institute of Science, Bangalore.

Mapping of CO's with PO's:

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	**3**	**1**				**1**		**1**
CO2	**3**	**1**	**1**			**1**		**1**
CO3	**3**		**1**			**1**		**1**
CO4	**3**					**1**	**1**	**1**
CO5	**3**					**1**	**1**	**1**

3–Strong Correlation, 2–Medium Correlation, 1–Low Correlation, 0–No Correlation

XBC205	**DIGITAL ELECTRONICS**	**L**	**T**	**P**	**SS**	**C**
		3	1	1	1	6

C	P	A		L	T	P	SS	H
2.5	0.5	0.5		3	1	3	1	8

PREREQUISITE: NIL

Course Outcomes		Domain	Level
After the completion of the course, students will be able to			
CO1	***Know*** the numerical values in various number systems and perform number conversions between different number systems.	Cognitive	Understand
CO2	***Demonstrate*** the operation of logic gates, Boolean algebra including algebraic manipulation/simplification, application of DeMorgan's theorems and Karnaugh map reduction method.	Cognitive Psychomotor	Understand Apply
CO3	***Identify, Analyze*** and ***Design*** combinational circuits	Cognitive Psychomotor	Understand Apply
CO4	***Analyze*** and ***Design*** sequential digital circuits like flip-flops, registers, counters	Cognitive Psychomotor	Understand Apply
CO5	***Explain*** the architecture of the Intel 8085microprocessor for its various applications and ***Understand*** 8085 instruction set and develop simple programmes and practice.	Cognitive	Understand

UNIT I	NUMBER SYSTEMS AND MINIMIZATION TECHNIQUES	9+3+9

Binary, Octal, Decimal, Hexadecimal-Number base conversions – complements – signed Binary numbers. Binary Arithmetic- Binary codes: Weighted –BCD – 2421 - Gray code-Excess 3 code-ASCII –Error detecting code – conversion from one code to another- Logic Gates : AND, OR, NOT, NAND, NOR, Exclusive – OR and Exclusive – NOR- Implementations of Logic Functions using gates, NAND –NOR implementations.

Lab : Logic gates – verification

UNIT II	BOOLEAN ALGEBRA & SIMPLIFICATION	9+3+9

Boolean Algebra – Basic Theorems and properties – Boolean Functions – Canonical and Standard Forms – Karnaugh Map Simplification – Two, ThreeVariables – NAND and NOR Implementation – Don't Care Conditions.

Lab : Application of Boolean functions

UNIT III	COMBINATIONAL CIRCUITS	9+3+9

Combinational Circuits – Adder - Subtractor – Design and Analysis procedures – Binary Parallel Adder – Decimal Adder – Encoder – Decoder – Multiplexer – Demultiplexer – Magnitude comparators – Read Only Memory (ROM) – Programmable Logic Array(PLA).

Lab : Applications of combinational circuits.

UNIT IV	SEQUENTIAL CIRCUIT	9+3+9

Sequential circuits – Latches – Flip-flops – Triggering of Flip-Flops – Analysis of clocked sequential circuits – State reduction and state assignment – Design procedure of clocked sequential circuits – Design of counters – Registers – Shift registers – Ripple counter and Synchronous

counter.

Lab: Design and verify the circuits of Flip Flops, Registers and counters.

UNIT V	MEMORIES	9+3+9

Classification of memories –RAM organization – Write operation –Read operation – Memory cycle - Timing wave forms – Memory decoding – memory expansion – Static RAM Cell-Bipolar RAM cell – MOSFET RAM cell –Dynamic RAM cell –ROM organization - PROM –EPROM – EEPROM –EAPROM –Programmable Logic Devices.

Lab : Verification of timing waveforms.

LECTURE	TUTORIAL	PRACTICAL	SELF- STUDY	TOTAL
45	15	45	15	105+15

TEXT BOOK

1. M. Morris Mano, "Digital Design", 3rd Edition, Prentice Hall of India Pvt. Ltd., New Delhi, 2003/Pearson Education (Singapore) Pvt. Ltd., New Delhi, 2003.
2. John .M Yarbrough, "Digital Logic Applications and Design", Thomson- Vikas publishing house, New Delhi, 2002.
3. Microprocessor Architecture Programming and Application, Ganonker, Ramesh, PHI Learning, New Delhi.

REFERENCES:

1. Salivahanan and S. Arivazhagan, "Digital Circuits and Design", 2nd Edition, Vikas Publishing House Pvt. Ltd New Delhi, 2004
2. Charles H.Roth. "Fundamentals of Logic Design", Thomson Publication Company, 2003.
3. Donald P.Leach and Albert Paul Malvino, "Digital Principles and applications", 5th Edition., Tata McGraw Hill Publishing Company Limited, New Delhi, 2003.

E-References:

1. www.tutorialspoint.com/computer_logical_organization/pdf/quick_guide.pdf
2. www.vlab.co.in/ba_labs_all.php?id=1
3. www.nptel.ac.in/video.php?subjectId=117105080
4. https://www.youtube.com/watch?v=CeD2L6KbtV

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc.	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	3	2	1	1	0	1	0	1	1
CO2	0	1	3	2	0	2	0	2	2
CO3	1	2	3	0	0	2	0	2	2
CO4	1	2	3	1	0	2	0	1	2
CO5	0	3	0	1	0	2	0	1	2
Average	1	2	2	1	0	2	0	1	2

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XUM206			DISASTER MANAGEMENT	L	T	P	SS	C
				0	0	0	0	0
C	P	A		L	T	P	SS	H
2.75	0	0.25		3	0	0	0	3

PREREQUISTE: XES202

Course Outcomes		Domain	Level
CO1	***Understand*** and ***Recognize*** the concepts of disaster	Cognitive	Understand Remember
CO2	***Recognize and describe*** the causes and effects of disaster	Cognitive	Understand Remember
CO3	***Describe*** the various approaches of risk reduction	Cognitive	Remember
CO4	***Demonstrate*** the inter-relationship between disaster and development	Cognitive	Understand
CO5	Discuss hazard and vulnerability profile of India and respond to drills related to relief	Cognitive Affective	Remember Response

UNIT - I	**INTRODUCTION TO DISASTERS**	**6**

Concepts and definitions- Disaster, Hazard, Vulnerability, Resilience, Risks

UNIT - II	**DISASTERS: CLASSIFICATION, CAUSES, IMPACTS**	**12**

Differential impacts- in terms of caste, class, gender, age, location, disability Global trends in disasters, urban disasters, pandemics, complex emergencies, Climate change

UNIT - III	**APPROACHES TO DISASTER RISK REDUCTION**	**10**

Disaster cycle - its analysis, Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural- nonstructural measures, roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), states, Centre, and other stake-holders.

UNIT - IV	**INTER-RELATIONSHIP BETWEEN DISASTERS AND DEVELOPMENT**	**6**

Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc. Climate Change Adaptation. Relevance of indigenous knowledge, appropriate technology and local resources

UNIT - V	**DISASTER RISK MANAGEMENT IN INDIA**	**11**

Hazard and Vulnerability profile of India Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management Institutional arrangements (Mitigation, Response and Preparedness, DM Act and Policy, Other related policies, plans, programmes and legislation).
The project / fieldwork to understand vulnerabilities work on reduction of disaster risk and build a cultural safety.

LECTURE	TUTORIAL	PRACTICAL	SELF-STUDY	TOTAL
45	0	0	0	45

TEXT BOOKS:

1. Coppola P Damon, "Introduction to International Disaster Management, Butterworth-Heinemann, 2015
2. K. N. Shastri, "Disaster Management in India", Pinnacle Technology, 2012
3. Gupta Anil K, Sreeja S. Nair, "Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi, 2011
4. Lee Allyn Davis, "Natural Disasters", Infobase Publishing, 2010
5. Andharia J, "Vulnerability in Disaster Discourse", JTCDM, Tata Institute of Social Sciences Working Paper no. 8, 2008

REFERENCES:

1. Alexander David, Introduction in 'Confronting Catastrophe', Oxford University Press, 2000
2. Carter, Nick 1991. Disaster Management: A Disaster Manager's Handbook. Asian Development Bank, Manila Philippines.

E- RESOURCES:

1. NIDM Publications at http://nidm.gov.in- Official Website of National Institute of Disaster Management (NIDM), Ministry of Home Affairs,
2. http://cwc.gov.in , http://ekdrm.net , http://www.emdat.be ,
3. http://www.nws.noaa.gov , http://pubs.usgs.gov , http://nidm.gov.ini
4. http://www.imd.gov.in

Mapping of CO with GA

COs	GA1	GA2	GA3	GA4	GA5	GA6	GA7	GA8	GA9	GA1	GA11	GA12
CO1	1					3	2	1				1
CO2	1					3	2	1				1
CO3	1					3	2	1				1
CO4	1					3	2	1				1
CO5	1					3	2	1				1
Total	**5**					**15**	**10**	**5**				**5**
Scaled value	**1**					**3**	**2**	**1**				**1**

XBC301			**MULTIMEDIA SYSTEMS**	**L**	**T**	**P**	**C**
				3	**0**	**2**	**5**
C	**P**	**A**		**L**	**T**	**P**	**H**
2	**1**	**0**		**3**	**0**	**2**	**5**

PREREQUISITE: XBC103

Course Outcomes		**Domain**	**Level**
After the completion of the course, students will be able to			
CO1	***Identify*** and ***describe*** the Multimedia components, various html tags, Image editing open source software tools	Cognitive	Understand
CO2	***Create*** webpage with necessary image document (text) and animation and practice in HTML.	Cognitive Psychomotor	Understand Application Set
CO3	Gain a working knowledge and ***develop*** their skills in editing and altering photographs.	Cognitive	Understand Application
CO4	Students can ***renovate*** the damaged photos. And export the files with various formats and printing devices.	Cognitive Psychomotor	Understand Analyze

			Set
CO5	Students can ***draw*** and ***develop*** short clips and banners with animation using flash and create Audio files. Using html image editing and 2D animation software, can ***develop*** and ***deploy*** a complete web site in internet.	Cognitive Psychomotor	Understand Create Set

UNIT I	**MULTIMEDIA SYSTEMS DESIGN**	**6+6**

Introduction – Multimedia applications and its impact – Multimedia System Architecture – Network architecture for multimedia. Evolving technologies for Multimedia–HDTV-UDTV-3D technologies and digital signal processing. Defining objects for Multimedia systems-Text-image – Audio and Video, Audio-recording

Lab Experiments Using Image Editing Tools

UNIT II	**Image Editing –Basics**	**6+6**

Introduction about Image Editor- Navigating - Menus and panels-**Working with Images**-Zooming &Panning an Image-Working with Multiple Images, Rulers, Guides & Grids- Undoing Steps with History- Adjusting Color with the New Adjustments Panel-The New Masks Panel - The New Note Tool & the Save for Web & Devices Interface- The New Auto-Blend & Auto-Align Layers Commands- The New 3D Commands-**Resizing & Cropping Images**- Understanding Pixels & Resolution-The Image Size Command-Interpolation Options-Resizing for Print & Web-Cropping & Straightening an Image- Adjusting Canvas Size & Canvas Rotation.

Lab Experiments Using Image Editing Tools

UNIT III	**Image and Text Editing- Layers**	**6+6**

Layers -Background Layer- Creating, Selecting, Linking & Deleting Layers- Locking &Merging Layers-Copying Layers, Using Perspective & Layer Styles- Filling & Grouping Layers-Introduction to Blending Modes-Blending Modes, Opacity & Fill Creating & Modifying Text

Lab Experiments Using Image Editing Tools

UNIT IV	**Image and Text Editing- Effects**	**6+6**

Photo Retouching -The Red Eye Tool-The Clone Stamp Tool- The Patch Tool & the Healing Brush Tool-**ColorCorrection**:-Adjusting Levels-Adjust Curves-**Creating Special Effects**-Getting Started with Filters-Creating Text Effects- Applying Gradients to Text-**Exporting-** Saving with Different File Formats-Saving for Web & Devices-Printing Options

Lab Experiments Using Image Editing Tools

UNIT V	**2D Animation**	**6+6**

Exploring the 2D environment – working with images - basic drawing and selection – shapes – color – text – layers – scene and frame label – symbol and instance – animation

Lab Experiments Using 2D Animation Tools

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
30	**-**	**30**	**60**

TEXT BOOK

1.Prabat K Andleigh and KiranThakrar, "Multimedia Systems and Design", PHI Resent, 2003.
2.R.Lavanya, HTML 5, Ane Books Pvt. Ltd, 2011"
3.JudithJeffcoate, "Multimedia in practice technology and Applications", PHI,1998.

REFERNCES

1.Adobe Photoshop CS 2 - One on One (2005 edition) by Deke McClelland
Macromedia Flash MX 2004: The Complete Reference by Brian Underdahl

2.Foley, Vandam, Feiner, Huges, 2003. “Computer Graphics: Principles & Practice”, Pearson Education, second edition . 3. PhotoShopCS for digital photographers by Colin Smith Publisher: Charles River Media. 1st edition . 4. ActionScript for Flash MX: The Definitive Guide, 2nd Edition By Colin Moock.
E-REFERENCES:
1. https://www.youtube.com/watch?v=ZGXS5HoBYAQ 2. https://www.youtube.com/watch?v=spoJ7Z8LzW8 3. www.**tutorials**point.com/list**tutorials/multimedia/**1 4. http://www.vlab.co.in

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc CS	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	2	2	2	2	2	1	1	2	2
CO2	2	3	2	1	1	1	1	2	2
CO3	2	2	3	1	2	1	1	3	2
CO4	2	3	1	1	1	1	1	2	2
CO5	2	1	1	2	2	1	1	2	2
Average	2	2	2	1	2	1	1	2	2

3–Strong Correlation, 2–Medium Correlation, 1–Low Correlation, 0–No Correlation

Course Code	XBC 302	L	T	P	C
Course Name	Operating Systems	3	1	0	4
Prerequisite	XBC103	L	T	P	H
C:P:A	3:0:0	3	1	0	4

Course Outcomes		Domain	Level
After the completion of the course, students will be able to			
CO1	***Identifying*** the functional architecture of an operating system.	Cognitive	Remember
CO2	Ability to explain the best CPU scheduling algorithms and Calculate scheduling problems	Cognitive	Understand Apply
CO3	Ability to ***express various*** memory management techniques and calculate paging problems.	Cognitive	Understand Apply
CO4	Indicate the importance of file system various Operating Systems.	Cognitive	Understand
CO5	***Classify*** functionality I/O system of an operating system	Cognitive	Understand

UNIT I	OVERVIEW OF AN OPERATING SYSTEM	9+3
Introduction to operating systems – review of computer organization – operating system structures – system calls – system programs – system structure – virtual machines. Processes: Process concept – Process scheduling – Operations on processes –Cooperating processes – Interposes communication – communication in client-server systems.		
UNIT II	**PROCESS SCHEDULING AND SYNCHRONIZATION**	**9+3**
CPU Scheduling: Scheduling criteria – Scheduling algorithms – Multiple-processor scheduling – Real time scheduling –. Process Synchronization: The critical-section problem –Synchronization hardware – Semaphores – Classic problems of synchronization –critical regions –Deadlock: System model – Deadlock characterization –Methods for handling deadlocks – Deadlock prevention – Deadlock avoidance –Deadlock detection – Recovery from deadlock.		
UNIT III	**STORAGE MANAGEMENT**	**9+3**

Memory Management: Background – Swapping – Contiguous memory allocation – Paging – Segmentation – Segmentation with paging. Virtual Memory: Background –Demand paging – Process creation – Page replacement – Allocation of frames –Thrashing..		
UNIT IV	**FILE SYSTEMS**	**9+3**
File-System Interface: File concept – Access methods – Directory structure – File system mounting – Protection. File-System Implementation: Directory implementation – Allocation methods – Free-space management – efficiency and performance – recovery – log-structured file systems.		
UNIT V	**I/O SYSTEMS**	**9+3**
I/O Systems – I/O Hardware – Application I/O interface – kernel I/O subsystem –streams – performance. Mass-Storage Structure: Disk scheduling – Disk management –Swap-space management – RAID – disk attachment – stable storage – tertiary storage.		

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	15	-	60

Text book

1.Harvey M. Deital.2004. Operating Systems. Third Edition.US. Pearson Education.
2.W. Stallings.2011.Operating Systems. Seventh Edition. US: Prentice Hall..

E-References

NPTEL Evidence, 2009. *IISc Bangalore*. [Online] Available at:
http://nptel.ac.in/courses/Webcoursecontents/IIScBANG/Operating%20Systems/New_index1.html
http://nptel.iitg.ernet.in/Comp_Sci_Engg/IISc%20Bangalore/Operating%20Systems.htm

CO Versus PO mapping.

B.Sc CS	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	3	2	1						2
CO2	2	1	2	2			2		2
CO3	2	2	1				2		3
CO4	2	2	1						
CO5	2	1				1			1
Total	11	8	5	2		1	2		8
Scaled Value	3	2	1	1		1	1		2

0-No relation 1– Low relation 2- Medium relation 3- Highly relation

XBC303			PROGRAMMING IN JAVA	L	T	P	C
				3	0	2	5
C	P	A		L	T	P	H
2	2.8	0.2		3	0	4	7

PREREQUISITE: XBC105

COURSE OUTCOMES		DOMAIN	LEVEL
After the completion of the course, students will be able to			
CO1	***Recognize*** the importance of the Object Oriented Programming.	Cognitive Psychomotor	Remember Perception
CO2	***Identify*** and ***Achieve*** the Java Programming concepts and the relationships among them.	Cognitive Psychomotor	Understand Set
CO3	***Illustrate*** and ***practice*** the usage of Arrays, Interface and Packages and also ***Be Aware*** of the utilization of the concepts in the real time application.	Cognitive Psychomotor Affective	Apply Guided Response Receive

CO4	***Demonstrate*** the concept of Multithreaded Programming and Exception Handling and ***Contribute*** more in the team work towards application development.	Cognitive Psychomotor Affective	Apply Mechanism Respond
CO5	***Develop*** and ***Maintain*** the Java application software.	Cognitive Psychomotor	Create Complete Overt Response

UNIT I	**INTRODUCTION**	**9+12**

Fundamentals of Object Oriented Programming – Java Evolution – Overview of Java Language – Constants, Variables and Data Types – Operators and Expressions – Decision Making and Branching – Decision Making and Looping

Lab

1. Simple Java Programs
2. Decision Making, Branching and Looping

UNIT II	**CLASSES, OBJECTS AND METHODS**	**9+12**

Introduction – Defining a Class – Adding Variables – Adding Methods – Creating Objects – Accessing Class Members – Constructors – Method Overloading – Static Members – Nesting of Methods – Inheritance – Overriding Methods – Final Variables and Methods – Final Classes – Finalizer Methods – Abstract Methods and Classes – Visibility Control

Lab

3. Constructors and Method Overloading
4. Inheritance and Method Overriding

UNIT III	**ARRAYS, INTERFACE AND PACKAGES**	**9+12**

Arrays - One-Dimensional Array – Creating an array – Two-Dimensional Array – Strings – Vectors – Wrapper Classes – Interfaces: Multiple Inheritance – Packages

Lab

Arrays and Strings
Interfaces and Packages

UNIT IV	**MULTITHREADED PROGRAMMING**	**9+12**

Creating Threads – Extending the Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread Methods – Thread Exceptions – Thread Priority – Synchronization – Implementing the 'Runnable' Interface – Managing Errors and Exceptions – Types of Errors – Exceptions – Multiple Catch Statements – Using Finally Statement – Throwing our own Exceptions

Lab

Multi Threading
Exception Handling

UNIT V	**APPLET PROGRAMMING**	**9+12**

Introduction – Applet Life Cycle – Creating an Executable Applet – Designing a Web Page – Applet Tag – Adding Applet to HTML File – Running the Applet – Passing Parameters to Applets – Getting Input from the User - Abstract Windowing Toolkit

Lab

9. Applet Programming
10. Event Handling

LECTURE	**TUTORIAL**	**PRACTICAL**	**TAL HOURS**
45	**-**	**60**	**105**

TEXT BOOKS:

Herbert Schildt,"Java 2 – The Complete Reference", Seventh Edition, Tata McGraw Hill,

2015.
REFERENCES:
Rajiv Chopra, "Java Programming", First Edition, New Age International, 2015. C.Muthu,"Programming With Java", 2nd Edition, Tata Mcgraw Hill Education Private Ltd., 2009.
E-REFERENCES:
https://www.cse.iitb.ac.in/~nlp-ai/javalect_august2004.html http://www.tutorialspoint.com/java/ http://www.w3schools.in/java/ http://beginnersbook.com/java-tutorial-for-beginners-with-examples/

Mapping of COs with POs

B.Sc CS	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	3				1				
CO2	2	3							
CO3	1	3	3	2	2				
CO4	1	3	3	2	2	3	2		
CO5		3	3	3	2	3	2	2	3
Total	7	12	9	7	7	6	4	2	3
Scaled Value	2	3	2	2	2	2	1	1	1

1-5 → 1, 6 -10 → 2, 11 -15 → 3

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XBC304			ALLIED PHYSICS	L	T	P	C
				3	1	0	4
C	P	A		L	T	P	H
2.5	0.5	0		3	1	0	4

PREREQUISITE: Students with fundamental physics knowledge in HSC or SSLC level.

On the successful completion of the course, students will be able to

Course Outcome		Domain	Level
CO1	***State***the basics of laser and ***distinguish*** the various laser systems and ***identify*** various optical fiber and source and detector.	Cognitive	Knowledge, Analyze
CO2	***Recall the s***emiconductor fundamentals and ***Explain***characterization and applications.	Cognitive	Knowledge, Comprehension
CO3	***Know*** the basics of operational amplifier and ***Construct***various oscillators ***Explain*** various applications	Cognitive, Psychomotor	Knowledge, Analysis, Set
CO4	***Understand*** the digital and gate principles ***distinguish*** Boolean algebra from algebra.	Cognitive	Knowledge
CO5	***Know*** the basics of IC's***understand***the fabrication methods of IC's	Cognitive	Perception, Knowledge

UNIT - I :	Laser Physics	12+3

Principles of laser– population inversion – meta stable state – conditions for laser actions - Types –Nd-Yag – CO2 laser – Helium – neon laser – applications of lasers.

UNIT - II :	**Fibre Optics Physics**	**12+3**
Principle and propagation of light in optical fibres – Numerical Aperture and acceptance angle – Types of optical fibres – Source & detector – LED sensor – Block diagram fibre optics communication system – Applications.		
UNIT - III :	**Semiconductor Physics**	**12+3**
Semiconductor fundamentals – Properties – Types of semiconductor– Volt – Ampere Characteristics of P-N junction Diode – Zener diode – applications of Zener diodes - Volt – Ampere Characteristics of common emitter NPN transistor, FET, UJT and SCR – Principles of LED and LCD.		
UNIT - IV :	**OPERATIONAL AMPLIFIER**	**12+3**
Operational amplifier characteristics – inverting and non-inverting amplifier– adder, subtractor, integrator and differentiator circuits – Wien bridge oscillator – Phase shift oscillators and Twin-T oscillators		
UNIT - V :	**Integrated Electronics**	**12+3**
Basic monolithic ICs – Steps in fabrication of Monolithic IC's – epitaxial growth – masking –etching impurity diffusion fabricating monolithic resistors, diodes, transistors and capacitors – circuit layout – contacts and inter connections– General applications of IC's		

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	15	0	60

TEXT BOOKS:

1.	V.K. Mehta, Principles of Electronics, S.Chand and CompanyLtd., 2009.
2.	Laser Physics – Thiagarajan, Springer
3.	Digital principles and Applications – Malvino& Leech, McGraw Hill Publication 7th edition, 2011.

REFERENCE BOOKS :

1.	Basic Electronics – B.L. Theraja, S Chand & company Ltd, New Delhi.
2.	Fundamentals of digital computers – Bartee, McGraw-Hill.
3.	A. Mottershed, Semiconductor Devices and Applications, New Age Int Pub,

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc.	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	3	2	1	1	0	1	**0**	1	1
CO2	0	1	3	2	0	2	**0**	2	2
CO3	1	2	3	0	0	2	**0**	2	2
CO4	1	2	3	1	0	2	**0**	1	2
CO5	0	3	0	1	0	2	**0**	1	2
Average	1	2	2	1	0	2	**0**	1	2

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XUM306			DISASTER MANAGEMENT	L	T	P	C
				3	0	0	0
C	P	A		L	T	P	H
2.75	0	0.25		3	0	0	3

PREREQUISTE: XES202

Course Outcomes		Domain	Level
CO1	***Understand*** and ***Recognize*** the concepts of disaster	Cognitive	Understand Remember
CO2	***Recognize and describe*** the causes and effects of disaster	Cognitive	Understand Remember
CO3	***Describe*** the various approaches of risk reduction	Cognitive	Remember
CO4	***Demonstrate*** the inter-relationship between disaster and development	Cognitive	Understand
CO5	Discuss hazard and vulnerability profile of India and respond to drills related to relief	Cognitive Affective	Remember Response

UNIT - I	**INTRODUCTION TO DISASTERS**	**6**

Concepts and definitions- Disaster, Hazard, Vulnerability, Resilience, Risks

UNIT - II	**DISASTERS: CLASSIFICATION, CAUSES, IMPACTS**	**12**

Differential impacts- in terms of caste, class, gender, age, location, disability Global trends in disasters, urban disasters, pandemics, complex emergencies, Climate change

UNIT - III	**APPROACHES TO DISASTER RISK REDUCTION**	**10**

Disaster cycle - its analysis, Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural- nonstructural measures, roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), states, Centre, and other stake-holders.

UNIT - IV	**INTER-RELATIONSHIP BETWEEN DISASTERS AND DEVELOPMENT**	**6**

Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc. Climate Change Adaptation. Relevance of indigenous knowledge, appropriate technology and local resources

UNIT - V	**DISASTER RISK MANAGEMENT IN INDIA**	**11**

Hazard and Vulnerability profile of India Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management Institutional arrangements (Mitigation, Response and Preparedness, DM Act and Policy, Other related policies, plans, programmes and legislation).
The project / fieldwork to understand vulnerabilities work on reduction of disaster risk and build a cultural safety.

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
45	**-**	**-**	**45**

TEXT BOOKS:

Coppola P Damon, "Introduction to International Disaster Management, Butterworth-Heinemann, 2015
K. N. Shastri, "Disaster Management in India", Pinnacle Technology, 2012
Gupta Anil K, Sreeja S. Nair, "Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi, 2011
Lee Allyn Davis, "Natural Disasters", Infobase Publishing, 2010
Andharia J, "Vulnerability in Disaster Discourse", JTCDM, Tata Institute of Social Sciences Working Paper no. 8, 2008

REFERENCES:

Alexander David, Introduction in 'Confronting Catastrophe', Oxford University Press, 2000

Carter, Nick 1991. Disaster Management: A Disaster Manager's Handbook. Asian Development Bank, Manila Philippines.

E- RESOURCES:

NIDM Publications at http://nidm.gov.in- Official Website of National Institute of Disaster Management (NIDM), Ministry of Home Affairs, http://cwc.gov.in , http://ekdrm.net , http://www.emdat.be , http://www.nws.noaa.gov , http://pubs.usgs.gov , http://nidm.gov.ini http://www.imd.gov.ini

Mapping of CO with GA

Course outcomes	GA 1	GA 2	GA 3	GA 4	GA 5	GA 6	GA 7	GA 8	GA 9	GA 10	GA 11	GA 12
CO1	1					3	2	1				1
CO2	1					3	2	1				1
CO3	1					3	2	1				1
CO4	1					3	2	1				1
CO5	1					3	2	1				1
Total	**5**					**15**	**10**	**5**				**5**
Scaled	**1**					**3**	**2**	**1**				**1**

XBC307			**R PROGRAMMING**	**L**	**T**	**P**	**C**
				0	**0**	**1**	**1**
C	**P**	**A**		**L**	**T**	**P**	**H**
0.5	**0.4**	**0.1**		**1**	**0**	**1**	**2**

PREREQUISITE: Nil

COURSE OUTCOMES:

COURSE OUTCOMES		**DOMAIN**	**LEVEL**
After the completion of the course, students will be able to			
CO1	***Recognize*** the significance of R	Cognitive Psychomotor	Remember Perception
CO2	***Express*** the knowledge on events and functions of R	Cognitive	Understand
CO3	***Employ*** the understanding of the R and ***Establish***a application programme on their own and actively ***participate*** in the teams for designing various projects	Cognitive Psychomotor Affective	Apply Set Respond

Introduction - History - Features - Setting up path - Working with R - Basic Syntax - Variable and Data Types - Operator - Conditional Statements - Looping - Control Statements - Object -

Functions –Strings- Vector-Lists-arrays-Packages–Dataframes– Database-Visualization Lab: Obtaining user data Using conditionals Using Random numbers Using Iteration Using Vector-Lists-arrays Using Functions

LECTURE	TUTORIAL	PRACTICAL	TOTAL
15	-	15	30

TEXT BOOKS:

Hands-On Programming with R, Garrett Grolemund, O'Reilly Media, Inc, 2014

REFERENCES:

Mastering Predictive Analytics with R, Rui Miguel Forte, 2015 Packt Publishing

E-REFERENCES:

https://www.tutorialspoint.com/r/index.htm
https://www.statmethods.net/r-tutorial/index.htm
https://www.guru99.com/r-tutorial.html
https://www.edureka.co/blog/r-tutorial/

XBC401			OPEN SOURCE SOFTWARE	L	T	P	C
				3	1	0	4
C	P	A		L	T	P	H
2.8	0	0.2		3	1	0	4

PREREQUISITE: Operating Systems, Programming in C

OBJECTIVE:

- Realize the importance of learning Open Source Software
- Understand the concepts in OSS
- Apply the knowledge in real time applications

COURSE OUTCOMES		DOMAIN	LEVEL
After the completion of the course, students will be able to			
CO1	***Recognize*** the terminologies and licensing factors of Open Source Software	Cognitive	Remember
CO2	***Express*** the significance of Open Source Software	Cognitive	Understand
CO3	***Employ*** the understanding of Open Source Software and actively ***participate*** in teams for the development of open source software projects	Cognitive Affective	Apply Respond
CO4	***Utilize*** the open source tools effectively in the real world applications.	Cognitive	Apply
CO5	***Design*** the Open Source Web applications	Cognitive	Create

UNIT I	INTRODUCTION TO OPEN SOURCE LICENSING	9+3

Basic Principles of Copyright Law – Contract and Copyright – Open Source Software Licensing – Issues with Copyrights and Patents – Open Source Definition – Warranties – MIT License – BSD License – Apache License – Academic Free License – GNU General Public License – GNU Lesser General Public License – Mozilla Public License – Application and Philosophy

UNIT II	NON-OPEN SOURCE LICENSES , LEGAL IMPACT AND SOFTWARE DEVELOPMENT	9+3
Classic Proprietary License – Sun Community License – Microsoft shared source initiative. Legal Impacts of Open Source and Free Software Licensing - Software Development using Open Source and Free Software Licenses.		
UNIT III	**GAWK – PROGRAMMING LANGUAGE**	**9+3**
Conceptual Overview – Command Line Syntax – Patterns and Procedures – Built in Variables – operators – Variable and Array Assignments – User Defined Functions – gawk specific features – implementation limits		
UNIT IV	**SOURCE CODE MANAGEMENT**	**9+3**
Introduction and Terminology – Usage Models – Source code management systems – Other Source Code Management Systems – Subversion Command Line client – Repository Administration – Examining the Repository – Providing Remote Access – Git Version Control System		
UNIT V	**VIRTUALIZATION**	**9+3**
Conceptual Overview – Basic Virtualization Operations – Xen – KVM – Libvirt and Red Hat Virtual Machine Manager – Libvirt and Virtual Machine Manager Command - VMware ESX 3.5 – Vmware Networking		

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	15	-	60

TEXT BOOKS:

1. **Unit I** – Chapter 1,2 & 3 – "Understanding Open Source and Free Software Licensing" By Andrew M. St. Laurent - O'Reilly Media Publications
2. **Unit II** – Chapter 5,6 & 7 - "Understanding Open Source and Free Software Licensing" By Andrew M. St. Laurent - O'Reilly Media Publications
3. **Unit III –**Chapter 11 – "Linux in a Nutshell" By Ellen Siever, Stephen Figgins, Robert Love, and Arnold Robbins - O'Reilly Media Publications
4. **Unit IV –** Chapter 12,13 &14 – "Linux in a Nutshell" By Ellen Siever, Stephen Figgins, Robert Love, and Arnold Robbins - O'Reilly Media Publications
5. **Unit V –** Chapter 15 – "Linux in a Nutshell" By Ellen Siever, Stephen Figgins, Robert Love, and Arnold Robbins - O'Reilly Media Publications

REFERENCES:

8. "Open Source Licensing" By Lawrence Rosen, Prentice Hall Publications
9. "Linux System Programming" By Robert Love, O'Reilly Media Publications

E-REFERENCES:

1. http://git-scm.com/
2. http://www.tldp.org/LDP/lame/LAME/linux-admin-made-easy/
3. http://www.gnu.org/philosophy/
4. https://www.gnu.org/software/gawk/manual/

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc.	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	3	2	1	1	0	1	**0**	1	1
CO2	0	1	3	2	0	2	**0**	2	2
CO3	1	2	3	0	0	2	**0**	2	2

CO4	1	2	3	1	0	2	**0**	1	2
CO5	0	3	0	1	0	2	**0**	1	2
Average	1	2	2	1	0	2	**0**	1	2

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XBC402			**DATA STRUCTURES AND ALGORITHMS**	**L**	**T**	**P**	**C**
				3	**0**	**1**	**4**
C	**P**	**A**		**L**	**T**	**P**	**H**
2.5	**0.5**	**0**		**3**	**0**	**2**	**5**

PREREQUISITE: Computer Programming

Course Outcomes		**Domain**	**Level**
After the completion of the course, students will be able to			
CO1	***Explains*** the concept of data structures and analysis of algorithms	Cognitive Psychomotor	Understand Apply
CO2	***Choose*** the linear and non linear data structures	Cognitive	Remember
CO3	***Apply*** advance C programming techniques such as pointers, dynamic memory allocation, structures to developing solutions for particular problems	Cognitive Psychomotor	Apply Set
CO4	***Analyse***, ***evaluate*** appropriate abstract data types and algorithm techniques to solve particular problems	Cognitive	Analyze
CO5	***Build*** an application using algorithm design techniques	Cognitive	Create

UNIT I	**INTRODUCTION**	**12 + 9**

Introduction to data structures - Abstract Data Type - Algorithms basic concepts - Efficiency of an algorithm - Asymptotic Notation and Analysis of algorithms

Lab

Analysing sorting algorithms

Analysing searching algorithms

UNIT II	**LINEAR DATA STRUCTURES**	**12 + 9**

List – Application of List – Stacks, Implementation and Application – Queue, Implementation and Application

Lab

Application of list, stack and queue

UNIT III	**TREES**	**12 + 9**

Basic Tree concept - Binary trees – Tree traversals – Binary search tree, Implementation – AVL tree – Application

Lab

Tree Traversal

Binary search tree application

UNIT IV	**GRAPHS**	**12 + 9**

Basic terminology – Graph traversal – Application – Networks Shortest path algorithms

Lab

Graph Traversal

Applications using shortest path algorithms

UNIT V	ALGORITHM DESIGN TECHNIQUES	12 + 9

COURSE CODE	XBC403	L	T	P	C

Divide and Conquer algorithms, Dynamic Programming, Greedy algorithms, Backtracking and Branch &bound.

Lab

Applications using algorithm design techniques

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	15	45	105

REFERENCES:

1. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", Second Edition, Pearson Education, 2007.
2. Ellis Horowitz, SartajSahni and SanguthevarRajasekaran, "Computer Algorithms", Galgotia Publications Pvt. Ltd., 2002
3. A.V. Aho, J.E. Hopcroft and J.D. Ullman "Data Structures and Algorithms" Pearson Education Delhi, 2002
4. www.tutorialspoint.com
5. www.nptel.com
6. www.virtuallab.ac.inLecture Slides, Multiple Choice Questions, Animations Link: http://highered.mheducation.com/sites/0072967757/student_view0/index.html
7. Lecture Slides : http://www.mhhe.com/engcs/compsci/forouzan/

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc CS	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	3	1	1	2	1	1	1	1	3
CO2	3	1	3	2	1	1	1	1	3
CO3	3	2	2	2	1	1	1	1	2
CO4	3	2	2	2	1	1	1	2	2
CO5	3	2	2	2	1	1	1	2	3
Average	3	2	2	2	1	1	1	1	3

3–Strong Correlation, 2–Medium Correlation, 1–Low Correlation, 0–No Correlation

COURSE NAME	COMPUTER NETWORKS	3	1	0	4
PREREQUISITES	XBC202	L	T	P	H
C:P:A	2.8 : 0.2 :0	3	1	0	4

COURSE OUTCOMES		DOMAIN	LEVEL
CO1	***Recognize*** the importance of computer networks and ***explain*** the network models, media, layering.	Cognitive Psychomotor	Remember Guided
CO2	***Describe*** the functionalities of layer and ***indicate*** the various network connecting devices.	Cognitive	Understand
CO3	***Demonstrate*** the unicast and multicast routing.	Cognitive Psychomotor	Understand Response
CO4	***Match*** and ***Show*** theprotocol for real time applications.	Cognitive Psychomotor	Remember Set
CO5	***Analyze*** the protocols of application layer and ***Design*** a simple networks.	Cognitive Psychomotor	Analyze Origination

UNIT I	NETWORK FUNDAMENTALS AND PHYSICAL LAYER	9+3

Introduction – Data Communications – Networks – Network Types – Internet History – Standards and Administration - Network Models – Protocol Layering – TCP/IP Protocol Suite – The OSI Model – Transmission Media – Switching

UNIT II	DATA LINK LAYER	9+3

Introduction to Data Link Layer – Link Layer Addressing - Error Detection and Error Correction - Data Link Control - MAC – Wired LANs: Ethernet - Wireless LANs – Other Wireless Networks - Connecting Devices and Virtual LANs

UNIT III	NETWORK LAYER	9+3

Introduction to Network Layer – Network Layer Protocols – Unicast Routing – Multicast Routing

UNIT IV	TRANSPORT LAYER	9+3

Introduction to Transport Layer – Transport Layer Protocols – User Datagram Protocol – Transmission Control Protocol – SCTP

UNIT V	APPLICATION LAYER AND SECURITY	9+3

Introduction to Application Layer – Standard Client Server Protocols – Multimedia – WWW and HTTP – FTP – Electronic Mail – TELNET - DNS

LECTURE	TUTORIAL	PRACTICAL	TOTAL HOURS
45	15	-	60

TEXT BOOKS

BehrouzA.Forouzan, “Data Communications and Networking”, Fifth Edition, McGraw Hill Education, 2013.

REFERENCES

Achyut S Godbole,AtulHahate, “ Data Communications and Networks”, Second Edition, New Delhi : Tata McGraw-Hill Education, 2011.

2. Andrew S. Tanenbaum, David J. Wetherall “Computer Networks”, Fifth Edition, Pearson Education Inc., 2013.

William Stallings, “Data and Computer Communications”, Tenth Edition, Pearson Education, 2014.

E-REFERENCES
Video Lecture Link: http://media.pearsoncmg.com/ph/streaming/esm/tanenbaum5e_videonotes/tanenbaum_videoNotes.html Lecture Slides, Multiple Choice Questions, Animations Link: http://highered.mheducation.com/sites/0072967757/student_view0/index.html Lecture Slides : http://www.mhhe.com/engcs/compsci/forouzan/

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc CS	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	2	1	0	1	0	1	0	0	0
CO2	1	2	2	1	0	1	0	1	0
CO3	1	1	3	3	2	2	1	0	0
CO4	1	1	3	3	2	2	1	2	0
CO5	0	1	3	2	1	1	1	0	0
Average	1	1	2	2	1	1	1	1	0

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation

XBC404			.NET TECHNOLOGIES	L	T	P	C
				3	0	1	4
C	P	A		L	T	P	H
2.8	1	0.2		3	0	2	5

PREREQUISITE: XBC303

Course Outcomes		Domain	Level
After the completion of the course, students will be able to			
CO1	***Recognize*** the basics of .net frame work	Cognitive Psychomotor	Remember Perception
CO2	***Express*** and ***relate*** decision and iteration control structures to implement programs	Cognitive Psychomotor	Understand Perception
CO3	***Predict*** and ***Create*** database connection and ***manipulate*** the data source	Cognitive Psychomotor	Understand Create Guided Response
CO4	***Choose*** and ***Apply*** controls and ***reproduce*** well-structured .NET applications	Cognitive Psychomotor	Remember Apply Guided Response
CO5	***Construct*** and ***demonstrate*** various real-world applications in ASP.NET with C#	Cognitive Psychomotor Affective	Create Mechanism Valuing

UNIT I	INTRODUCTION TO .NET FRAMEWORK	7+6
Managed Code and the CLR- Intermediate Language, Metadata and JIT Compilation - Automatic Memory Management.- Visual Studio .NET - Using the .NET Framework.- The Framework Class Library- .NET objects - ASP .NET - .NET web services – Windows Forms **Lab:** 1.Familiarizing with .NET Environment		
UNIT II	**INTRODUCTION TO C#.NET**	**11+6**
Variables and constants – data types – declaration. Operators – types – precedence. Expressions.		

Program flow – Decision statements – Loop statements – Value data types – Structures, Enumerations. Reference data types- Single dimensional – Multi-dimensional arrays – jagged arrays – dynamic arrays Windows programming– creating windows Forms – windows controls –Events. Menus and Dialog Boxes– Creating menus – menu items – context menu – Using dialog boxes – showDialog() method.

Lab: 1. Work with Console
2. Looping and Conditional Statements
3. Working with various Controls such as timer, calendar, etc.,
4. Create basic text editor

UNIT III	APPLICATION DEVELOPMENT USING ADO .NET	9+6

Architecture of ADO.NET – ADO.NET providers – Connection – Command – Data Adapter – Dataset. Accessing Data with ADO.NET **-** Connecting to Data Source, Accessing Data with Data set and Data Reader - Create an ADO.NET application - Using Stored Procedures.

Lab: 1. Insert, Delete, Update and Modify Operations
2. Store and retrieve data using Data Grids

UNIT IV	INTRODUCTION TO ASP.NET	9+6

ASP.NET Features**:** Change the Home Directory in IIS - Add a Virtual Directory in IIS Set a Default Document for IIS - Change Log File Properties for IIS - Stop, Start, or Pause a Web Site. Web Controls - HTML Controls, Using Intrinsic Controls, Using Input Validation Controls, Selecting Controls for Applications - Adding web controls to a Page.Server Controls - Types of Server Controls - Adding ASP.NET Code to a Page.

Lab: 1. Working with various Controls
2. Using stored Procedures
3. Form Creation with HTML

UNIT V	APPLICATIONS OF ASP.NET WITH C#	9+6

Windows Application: Creation of Media Player. Web Applications: Job Portal, E-mail and SMS Server, Online food ordering System.

Lab:
Real Time Projects

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	-	30	75

TEXT BOOKS:

David Chappell, "Understanding .NET", 2nd Edition, Addison-Wesley Professional, 2006.
Andrew Troelsen, PhilJapikse , "Pro C# 7 With .NET and .NET Core", Apress, 2017.
Matthew Macdonald, "ASP.NET: The Complete Reference", McGraw Hill Education, 2017.

REFERENCES:

Herbert Schildt, "C# 4.0 The Complete Reference", McGraw-Hill Education, 2010.
Marino Posadas, "Mastering C# and .NET Framework", Packt Publishing, 2016.
Paul Deitel and Harvey Deitel, "Visual C# How to Program", Prentice Hall; Pearson Education Limited; 6th edition (2017).

E-REFERENCES

www.tutorialspoint.com
www.microsoft.com/net
www.w3schools.com/aspnet

COs versus POs mapping

B.Sc CS	PO							PSO	
	1	2	3	4	5	6	7	1	2
CO1	3				1		1		

CO2	2	2	1	2	3	0	2	1	
CO3	2	3	2	2	3	1	2	2	
CO4	2	3	2	2	3	0	2	2	3
CO5	1	3	3	2	3	1	2	3	2
Total	10	11	8	10	13	2	9	8	5
Scaled Value	2	3	2	2	3	1	2	2	1

XBC405C			**E-COMMERCE**	**L**	**T**	**P**	**C**
				3	**0**	**0**	**3**
C	**P**	**A**		**L**	**T**	**P**	**H**
2.75	**0**	**.25**		**3**	**0**	**0**	**3**

PREREQUISITE: Computer Network

Course Outcomes		**Domain**	**Level**
After the completion of the course, students will be able to			
CO1	***Recognize*** and ***Discuss*** the scope of e-commerce	Cognitive	Remember Understand
CO2	***Sketch*** *and* ***Develop*** various Business strategies	Cognitive	Apply Analyze
CO3	***Survey*** and ***Identify*** the importance and future of e market and EDI	Cognitive	Analyze
CO4	***Justify*** *and* ***Explain*** the usage of Internet in e- commerce and various types of e-commerce	Cognitive	Evaluate Valuing
CO5	***Practice*** and ***Perform*** Various on line transactions	Affective	Responding to a phenomena

UNIT I	**Introduction to E-Commerce**	**9**
Introduction - the scope of e-commerce – definition - electronic markets -electronic data interchange – internet commerce – the value chain – supply chain		
UNIT II	**Business Strategy in an Electronic Age**	**9**
Business Strategy – introduction to business strategy – strategic implications of IT – Technology – Business environment – business capability – existing business strategy – strategy formulation and implementation planning		
UNIT III	**Business to Business Electronic Commerce**	**9**
Electronic markets – Markets – usage of electronic markets – advantages and disadvantages – future of electronic markets – electronic data interchange – introduction – EDI definition – the benefits of EDI – EDI technology – EDI standards – EDI communications		
UNIT IV	**Business to Consumer Electronic Commerce**	**9**
Consumer trade transaction – the e-shop – advantages and disadvantages of consumer e-commerce – the internet – the development of internet – TCP/IP – internet components – uses of internet		
UNIT V	**Elements of e-commerce and e-business**	**9**
Elements – e-Visibility – the e-shop – online payments – delivering the goods – after sales service – internet e-commerce security – e-business – internet bookshops – grocery supplies – software supplies and support – electronic news paper – internet banking		

LECTURE	**TUTORIAL**	**PRACTICAL**	**TOTAL**
45	**0**	**0**	**45**

REFERENCES:

1. David Whiteley "E-commerce: Strategy, Technologies and Applications" Tata McGraw-Hill Publications, 2011.
2. EfraimTurvanJ.Lee, David kug and chung, "Electronic commerce" Pearson

Education Asia 2001.

3. Manlyn Greenstein and Miklos "Electronic commerce" McGraw-Hill, 2002

Mapping of Course Outcomes (CO) with Programme Outcomes (PO):

B.Sc CS	PO							PSO	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**1**	**2**
CO1	0	0	1	1	0	0	0	2	2
CO2	0	1	0	1	0	1	1	2	2
CO3	0	2	2	1	1	2	2	2	1
CO4	0	1	1	1	0	1	1	2	2
CO5	0	1	1	1	0	1	1	3	3
Average	0	1	1	1	1	1	1	2	2

3–High Relation, 2–Medium Relation, 1–Low Relation, 0–No Relation