MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL
(FORMERLY KNOWN AS WEST BENGAL UNIVERSITY OF TECHNOLOGY)
Main Campus : Haringhata, Nadia, Pin-741249
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Ref.No. COE/Notice/CBCS Syllabus/62/2020-21 Date: 25th November, 2020

To
The Principal/Director/Head of the Departments
All Affiliated Colleges/Institutes/In-House Departments of MAKAUT, WB

Sub: CBCS Syllabus for Non AICTE UG courses effective from AY 2020-21

Dear Sir / Madam,

This is to inform you that UGC has already introduced CBCS mode of curriculum structure for Under Graduate courses. The guideline for the same is available online (https://ugc.ac.in/pdfnews/8023719_Guidelines-for-CBCS.pdf). MAKAUT, WB has also taken initiative to offer UGC courses in CBCS mode. The synopsis of the proposed structure is as per UGC guideline is given hereunder.

CBCS course structure & Credit Distribution

Subject type	Abbreviation	Number of courses	Credit Point	Total Credit	Credit Distribution
Core Course	CC	14	6	84	(Theory 4+Practical2) or (Theory 5+Tutorial1)
Discipline Specific elective	DSE	4	6	24	(Theory 4+Practical2) or (Theory 5+Tutorial1)
Generic elective or Interdisciplinary	GE	4	6	24	(Theory 4+Practical2) or (Theory 5+Tutorial1)
Ability Enhancement course	AECC	2	2	4	Theory 2 No Practical or Tutorial
Skill Enhancement course	SEC	2	2	4	Theory 2 No Practical or Tutorial
		26		140	

Semester-wise distribution of courses

Subject type	Semester I	Semester II	Semester III	Semester IV	Semester V	Semester VI
CC	C1, C2	C3, C4	C5, C6, C7	C8, C9, C10	C11, C12	C13, C14
DSE					DSE1, DSE2	DSE3, DSE4
GE	GE1	GE2	GE3	GE4		
AECC	AECC1	AECC2				
SEC			SEC1	SEC2		
	4 (20)	4 (20)	5 (26)	5 (26)	4 (24)	4 (24)

Core Course (CC): A course, which should compulsorily be studied by a candidate as a core requirement is termed as a Core course.

Elective Course: Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline/ subject of study or which provides an extended scope or which enables an exposure to some other discipline/subject/domain or nurtures the candidate's proficiency/skill is called an Elective Course.

Discipline Specific Elective (DSE) Course: Elective courses may be offered as a part of the main discipline/subject of study is referred to as Discipline Specific Elective. The University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered as per main discipline/subject of study).

Dissertation/Project: An elective course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a candidate studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project.

Generic Elective (GE) Course: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure is called a Generic Elective. P.S.: A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice versa and such electives may also be referred to as Generic Elective.

Ability Enhancement Compulsory Courses (AECC): Environmental Science, English Communication/MIL Communication.

Skill Enhancement Courses (SEC): These courses may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge.

Basket for Generic Elective (GE) Course for MAKAUT, WB: In order to offer GE courses in different interdisciplinary area and allow students to choose course from there, the following baskets in different interdisciplinary area are introduced.

A. **Basket 1: Humanities and Human Skill**
B. **Basket 2: General Science**
C. **Basket 3: Creative and Performing Arts**
D. **Basket 4: Emerging Technologies, Innovation & Entrepreneurship**
E. **Basket 5: Other proposed courses**

Students would be allowed to choose one course from the one of the baskets in the first four semesters against GE courses.

University had already introduced provision of credit transfer through MOOCs courses. Therefore, different GE courses could be taken from MOOCs platform and credits could be transferred, if offered through online. However, to offer GE courses through MOOCs platform like NETEL/SWAYAM/Cursera/edx/Simplilearn etc, offering institute must get the course mapping (Mapping between the University course and that offered from the online platform) approved from the University for appropriate Credit Transfer Scheme. This would allow a wide range of alternatives available to the students when they choose the GE courses.

But, when adequate online courses are not mapped at this stage, in many program, specific GE courses are mentioned which would be offered in 2020-21. For the programs, GE courses are marks as Basket1/2/3/4/5, students/institute need to choose GE courses from the below mentioned basket for which offline syllabi are also available. Considering the number of courses available in the GE basket presently, it is advisable to choose Basket 1 for the odd semester 2020-21. All institutes are encouraged to add number of courses in different baskets by

submitting detail syllabus to significantly increase option for the students. This should be finalized during enrollment process of the students in the 1st Semester 2020-21.

Basket No	GE Basket	Course Code	Course Name
Basket 1	HUMANITIES & HUMAN SKILLS	GEB101	Mind and Measurement
		GEB102	Introduction to Hospitality Industry and major Departments
		GEB103	Health Education & Communication
		GEB104	Sustainability & Fashion
		GEB105	The Yoga Professional
Basket 2	CREATIVE & PERFORMING ARTS	GEB201	Cinema and Other Arts
		GEB202	Surface & Soft Furnishings Design Development Techniques
Basket 3	GENERAL SCIENCE	GEB301	Study of Textiles
		GEB302	IT Literacy
Basket 4	EMERGING TECH, INNOVATION & ENTREPRENEURSHIP	GEB401	Operating Systems with Linux
Basket 5	OTHER COURSES	GEB501	

The detail offline syllabi of the above GE courses are available in annexure II.

In many programs, single course/list of electives against SEC and DSE has been proposed. The programs where the choices are not available, BoS concerned would take initiative to include alternatives in the electives under SEC and DSE wherever possible.

It is also to be noted that credit points of core course (CC), GE and DSE are with 6 credit points. Therefore, content, delivery and assessment planning should be made accordingly.

University has also emphasized to deliver courses in blended mode with adequate blend of online resources.

Introduction of Outcome Based Education: In addition to follow CBCS structure, the syllabi are prepared outcome based, where Program Educational Objective (PEO), Program Outcome (PO) of the program and Course Outcome (CO) etc are clearly defined. PO and CO are properly mapped in the syllabus. Delivery and Assessment criterion planning based on Bloom's Level (BL) is also indicated in some cases. In many courses, module wise mapping with COs are also mentioned. Finally, evaluation scheme based on each module mapped with hours of delivery, %age of question, PO & CO covered with applicable BL is also indicated in the syllabus. BBA (Accountancy, Auditing & Taxation) may please be referred as model syllabus prepared by BoS of MAKAUT (http://makautexam.net/aicte_details/Syllabus/BBATA/AllSem.pdf).
This would finally help of calculate attainment of the OBE.

At the end of the each course, instead of mentioning suggested reading, efforts are given to include audio, video, text resources available online along with text books to facilitate the students. All course coordinators are also encouraged to enrich the list by providing additional resources to the students and may propose through the BoS concerned to include them in the published syllabus.

Concept of Learning Outcome Based Curriculum Framework (LOCF): Now, UGC has come up with the model of Learning Outcome Based Curriculum Framework (LOCF) with graduate and post graduate attributes etc in Undergraduate (UG) and Post Graduate (PG) programs and syllabus for different subjects based on LOCF in CBCS model has been published in the website of the UGC. Link of syllabus of UG (https://www.ugc.ac.in/pdfnews/9205908_Computer-Science-new.pdf, https://www.ugc.ac.in/pdfnews/9185113_Physics-report.pdf) and PG (https://www.ugc.ac.in/pdfnews/9477182_Human-Right-Report.pdf) are mentioned for ready reference.

All affiliated colleges and encouraged to participate and contribute in the updating process of the syllabus of this University to compete with the national/international standard.

The programs for which syllabus are developed in CBCS pattern are listed here in Annexure I which would be applicable from academic year 2020-21. All departments and affiliated colleges are advised to contact with this office for any queries and contribution in this regard.

The affiliated colleges who are offering UGC/Non-AICTE courses in non CBCS/LOCF mode are advised to submit draft syllabus on CBCS/LOCF mode, so that it could be finalized through appropriate BoS & Academic Council at earliest.

We solicit your kind cooperation in this regard.

Thanking you,

(S Datta)
Controller of Examinations

Annexure I

CBCS syllabus to be effective from 2020-21

Sl	Name of Program	Curriculum Status	Applicable to
1	BBA (Accountancy, Taxation & Auditing)	New from 2020-21	Affiliated Colleges
2	BBA (Business Analytics)	New from 2020-21	Affiliated Colleges
3	B. Sc. in IT	New from 2020-21	Affiliated Colleges
4	B.SC. (Physiotherapy Management & Healthcare Science)	New from 2020-21	Affiliated Colleges
5	BBA (Heritage Tourism)	New from 2020-21	Affiliated Colleges
6	B.Sc in Fashion Design & Management	Revised in 2020-21	Affiliated Colleges
7	B.Sc in Behavioral Sc & Applied Psychology	Revised in 2020-21	Affiliated Colleges
8	B.Sc in Gaming & Mobile Application Development	Revised in 2020-21	Affiliated Colleges
9	B.Sc in Yoga	Revised in 2020-21	Affiliated Colleges
10	B.Sc Medical Lab Technology	Revised in 2020-21	Affiliated Colleges
11	B.Sc In Multimedia Animation & Graphics	Revised in 2020-21	Affiliated Colleges
12	B.Sc Film & Television	Revised in 2020-21	Affiliated Colleges
13	B.Sc Cyber Security	Revised in 2020-21	Affiliated Colleges
14	B.Sc Culinary Science	Revised in 2020-21	Affiliated Colleges
15	BBA (Sports Management)	Revised in 2020-21	Affiliated Colleges
16	BBA (Global Business)	Revised in 2020-21	Affiliated Colleges
17	BBA	Revised in 2020-21	In House & Colleges
18	BBA (Business Analytics)	New from 2020-21	In House & Colleges
19	BBA (Travel and Tourism)	New from 2020-21	In House & Colleges
20	BBA (Hospital Management)	New from 2020-21	In House & Colleges
21	BBA (Digital Marketing)	New from 2020-21	In House
22	BBA (Banking & Financial Services)	New from 2020-21	BSE Institute Ltd
23	B.Sc In IT (Artificial Intelligence)	New from 2020-21	In House
24	B.SC In IT (Big Data Analytics)	New from 2020-21	In House
25	B.SC In IT (Internet Of Things)	New from 2020-21	In House
26	B.SC In IT (Blockchain Technology)	New from 2020-21	In House
27	B.SC In IT (Cryptography & Network Security)	New from 2020-21	In House
28	B.Sc. in IT (Data Science)	New from 2020-21	In House
29	B.Sc. in IT (Cyber Security)	New from 2020-21	In House
30	BCA	New from 2020-21	In House & Colleges
31	B.Sc. in Biotechnology	New from 2020-21	In House
32	B.Sc. In Bioinformatics	New from 2020-21	In House
33	B.Sc in Materials Science	New from 2020-21	In House
34	B.Sc In Economics	New from 2020-21	In House
35	B.Sc In Statistics	New from 2020-21	In House
36	B.Sc In Psychology	New from 2020-21	In House
37	B. Sc in Statistics	New from 2020-21	In House
38	B.Sc with Mathematics and Computer Applications	New from 2020-21	In House
39	B.Sc In Forensic Science	New from 2020-21	In House
40	B.Sc In Food Science & Technology	New from 2020-21	In House
41	B. Sc in Robotics & 3D Printing	New from 2020-21	In House
42	B.Sc. In Animation, Film Making, Gb.Sc. In Animation , Film Making, Graphics & VFX	New from 2020-21	In House
43	B.Sc in Media Science	New from 2020-21	In House
44	B.Sc in Multimedia Science, Augmented & Virtual Reality	New from 2020-21	In House
45	B.Sc in Gaming & Mobile Application	New from 2020-21	In House

Annexure II

Detail Syllabus of GE Courses available in Offline/Blended mode:

Course Name: Mind and Measurement
Course Code: GEB101

Mode- Offline/ Blended **Credits: 6**

Course Objectives: The course has been designed to explore the emotional and motivational states of mind along with knowledge and application of higher cognitive functions. The learner will be able to apply the knowledge of cognition, conation and effect on the human psyche in the context of personal and professional domains and make a relation between brain and body through the understanding of Human Physiology, various psychological processes and changes throughout the lifespan of humans.

Sl	Course Outcome	Mapped modules
CO1	Explaining the concept and the physiological correlates of emotion.	(M1) BL2
CO2	Understanding the different theoretical aspects of emotion.	(M2) BL2
CO3	Explaining the concept and the physiological correlates of motivation.	(M3) BL2
CO4	Understanding the different theoretical aspects of motivation.	(M4) BL2
CO5	Labelling different span of attention.	(M5) BL2
CO6	Assessment of memorization capacity	(M6) BL1, BL2

Module	Content	Total Hours	%ageof questions	Blooms Level (if applicable)	Remarks (If any)
Module 1	Define Emotion and Physiological correlates of emotion: Electrical, Circulatory changes, Respiration and Peripheral measures. The role of Cortex in Emotions. Concept of Homeostasis.	5	15	2	
Module 2	Theories of Emotion : James-Lange; Cannon-Bard, Lindsay, Schachter-Singer, and Lazarus	8	20	2	
Module 3	Understanding the concept of Motivation in connection to its role in education and physiological basis of hunger, thirst.	8	20	2	
Module 4	Theories of Motivation – Maslow, McClelland, Murray. Application, Nature of thinking; Inductive and Deductive reasoning; Problem	10	15	2	

	solving approaches				
Module 5	Assessment of the different span of attention- sustained attention (digit vigilance test) test of divided attention (triad) test of focused attention (trail making)	12	15	2	
Module 6	Interpretation and practical application of memory, learning and forgetting using - whole vs part learning, spaced vs un-spaced learning, retroactive inhibition, pro-active inhibition. Learning curve,	15	15	1,2	
		58	100		

Detailed Syllabus

Module 1- Define Emotion, Nature, Impact & Expression. Physiological correlates of emotion: Electrical, Circulatory changes, Respiration and Peripheral measures.
The role of Cortex, Hypothalamus & Limbic System in Emotions. Concept of Homeostasis. Kluver-Bucy Syndrome.

Total Hours: 5

Module 2- Theories of Emotion: James-Lange Theory of Emotion; Cannon-Bard Thalamic Theory of Emotion, Activation Theory of Emotion by Lindsley, Two Factor Theory by Schachter-Singer, and Cognitive Appraisal Theory of Lazarus: Concept, Research Evidence, Implication, Critical Appraisal for each theory

Total Hours: 8

Module 3- Understanding the concept of Motivation, Drive, Need, Impulse in connection to its role in education, physiological basis of hunger, thirst: mechanisms within the system with neurobiological underpinning & special emphasis on research evidence.

Total Hours: 8

Module 4- Theories of Motivation – Need Hierarchical Theory by Maslow, Achievement Motivation Theory by McClelland, Theory of Psychogenic Needs by Murray: Concept, Research Evidence, Implication, Critical Appraisal for each theory, Application,
Nature of thinking; Inductive and Deductive reasoning; Problem solving approaches

Total Hours: 10

Module 5- Practicum
Assessment of the different span of attention- sustained attention (digit vigilance test)
Test of divided attention (triad)
Test of focused attention (trail making)

Total Hours: 12

Module 6-Practicum
Interpretation and practical application of memory, learning and forgetting using - whole vs part learning, spaced vs un-spaced learning, retroactive inhibition, pro-active inhibition. Learning curve

Total Hours: 15

Suggested Readings

- Morgan, C. T., King, R. A., Weisz, J. R., &Schopler, J. (2006). Introduction to Psychology, 7th eds.
- Fredrickson, B., Loftus, G. R., Lutz, C., & Nolen-Hoeksema, S. (2014). *Atkinson and Hilgard's introduction to psychology*. Cengage Learning EMEA.
- Schultz, D. P., & Schultz, S. E. (2020). *Psychology and work today*. Routledge.
- Woodsworth, R. S., & Schlosberg, H. (1954). Experimental psychology (Rev. ed.). *New York: Holt*

Course Name: Introduction to Hospitality Industry and Major departments
Course Code: GEB102

Mode- Blended

Course Objective: The course is designed to provide overall concept of a hotel operation, the major operating departments, hierarchy, job profiling, functions and relation amongst the departments

Sl	Course Outcome	Mapped modules
1	Understand hospitality industry and relationship with tourism.	M1, M2
2	Understand basic front office operation.	M2, M1
3	Understand basic Housekeeping operation	M2, M3
4	Understand the importance of safety and hygiene.	M2.M3.M4
5	Understand the basic F &B service operation.	M1 ,M5
6	Understand & demonstrate menu and types of service	M5 ,M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M 1	Introduction to hospitality	6	10	1,2	
M 2	Basic Front office operation	12	15	2,3	
M 3	Basic Housekeeping operation	12	15	2,3	
M 4	Safety and hygiene	06	20	2,3	
M 5	Basic F&B service operations	12	20	3,4	
M 6	Menu and types of service	12	20	3,4	
		60	100		

Detailed Syllabus:

Module 1 – Introduction to Hospitality Industry: Characteristics of Hospitality Industry and relation with Tourism, Types and Classification of Hotels, Departments in Hotels like Front Office, House Keeping, F&B Service and non-revenue earning departments and their co-ordination. (06 hours)

Module 2 – Basic Front Office Operations: Organizational chart of Front Office department with duties and responsibilities of staff, Types of guest room, basis of charging tariff, meal plans, type of guests, responsibility of Front Office department, Procedures in Front Office, Pre-registration, registration procedures, Bell-desk, Concierge, Cahier, Night Audit. Registration procedure, Role-play for check-in checkout procedures. Sanitization procedures. (12 Hours)

Module 3 –Basic Housekeeping Operations: Organizational chart of House Keeping department with duties and responsibilities of staff, responsibility of House Keeping department, Layout of Guest room, Guest supplies and amenities, Floor and Pantry, Room cleaning procedures, key control, lost and found procedures, forms formats and registers in Housekeeping, functions of House Keeping control desk. Role-play for complain handling and various services. (12 Hours)

Module 4 – Safety and Hygiene: Importance of Safety and Hygiene, Sanitization techniques for guest, hotel personnel, offices, Guest rooms and Public areas, Liaison with Public health department, Accidents, Fire, and security. Concept of First aid and artificial respiration (06 Hours)

Module 5 – Basic F&B Service Operations: Organizational chart of F&B Service department with duties and responsibilities of staff, responsibility of F&B Service department, Attributes of personnel, Equipment and Service ware uses care and maintenance, Types and Layout of F&B Service areas, basic menu knowledge and types of service. (12 Hours)

Module 6 –Menu and types of Service: Basic concept of Menu, restaurant and Coffee Shop Layout, the concept of stations, numbering the tables and covers at a table, reservation systems in restaurants, records & registers maintained by a Restaurant, rules to be observed while laying and waiting at the table, Dos & don'ts of waiting staff in F&B service operations, organizing the staff for service. (12 Hours)

Suggested Readings:

- Hotel Housekeeping, Sudhir Andrews, Tata McGraw Hill
- The Professional Housekeeper, Tucker Schneider, VNR
- Professional Management of Housekeeping Operations, Martin Jones, Wiley
- House Keeping Management for Hotels, Rosemary Hurst, Heinemann
- Front office operations by Colin Dix &Chirs Baird
- Hotel Front office management by James Bardi
- Managing front office operations by Kasavana& Brooks
- Food & Beverage Service -Lillicrap& Cousins
- Modern Restaurant Service -John Fuller
- Food & Beverage Service Management-Brian Varghese
- Introduction F& B Service-Brown, Heppner & Deegan
- Professional Food & Beverage Service Management -Brian Varghese

Course: Health Education and Communication
Course Code: GEB103
Mode- Offline/ Blended

Course Objective The course is designed to provide basic knowledge about the health and health communication. The students will be able to use information, communication and education across media for the public towards ensuring equitable access to health for both prevention and cure.

Sl	Course Outcome	Mapped modules
1	Explain the concept of health and the knowledge of health education in society.	M1
2	Apply the modern technology in health care sectors.	M2
3	Describe the different model of communication.	M3
4	Develop the communications to the different field of society.	M4
5	Able to use the computer as a tool in health care.	M5
6	Understand how to aware the people about the health.	M6

Module Number	Content	Total Hours	%age of questions	Blooms Level(if applicable)	Remarks (If any)
M 1	Concept Of Health And Health Education	16	20	L1, L2	
M 2	Health Education & Artificial Intelligence	8	10	L1, L2	
M 3	Heath Communication	10	10	L1, L2	
M 4	Mass communication and role of media	8	10	L1, L2	
M 5	Tools used for communication	8	30	L1, L2	LAB
M 6	Presentation on concept of health and health education	10	20	L1, L2	LAB
		60	100		

Detailed Syllabus:

Module 1- Concept of Health and Health Education: 16h

Definition of physical health, mental health, social health, spiritual health determinants of health, indicatory of health, concept of disease, natural history of diseases, the disease agents, concept of prevention of diseases.

Health Education: Principles & Objectives, Levels of Health Education, Educational Methods, Evaluation & practice of Health Education in India.

Family planning: Demography and family planning: Demography cycle, fertility, family planning, contraceptive methods, behavioral methods, natural family planning methods, chemical methods, mechanical methods, hormonal contraceptives, population problem of India.

Module 2-Health Education & Artificial Intelligence: 8h

Changes in the workforce, Robots, assisting the human experts or completely robotic diagnosis, Medical training: to train paramedical students, AI can play a big role, Virtual health assistants, advanced health research, Clinical and administrative task handling.

Module 3-Heath Communication: 10h

Basic Concept & Principles of Communication, Definition, Purpose, Types of Communication, Communication Process, Directions of Communication: Upward, Downward, Lateral, Factors influencing Communication, Barriers of Effective communication, How to overcome the Barriers Models of communication: Aristotle Model, Shannon and Weaver model, Schramm Model, Laegans Model, Fano Model, Literer's Model, Westly Maclean's Model.

Module 4- Mass Communication and Role of Media: 8h

Mass communication & Role of Media in health education, Information Communication Technologies (ICT) in health care and awareness. (Telemedicine & e-health, community radio) Future trends in information and communications systems:

Module 5: Tools Used for Communication 8h

Introduction to PC Operating System and MS office package - Windows 10/Ubuntu, MS Office 2016 / Office360 (MS Word, MS Excel, MS PowerPoint, MS Outlook, Internet and Email)

Module 6: Presentation on Concept of Health and Health Education 10h

Reference Books:

1.Health Education – A new approach – L. Ramachandran & T. Dharmalingan

2.Health Communication in the 21st Century, By Kevin B. Wright, Lisa Sparks, H. Dan O'Hair, Blackwell publishing limited, 2013,

3.Health Communication: From Theory to Practice, By Renata Schiavo, Published by Jossey Bash.

4.Health Communication, R.D. Karma Published by Mohit Publications 2008.

5.Counseling Skills for Health Care Professionals, 1st Edition, Rajinikanth AM, Jaypee Brothers, 20

Course Name-Sustainability & Fashion

Course Code-GEB104

Mode- Offline/ Blended

Course Objectives:

The course is designed to provide working knowledge of Environmental, Sustainable, and Ethical issues prevailing in the world. Students will be able to understand the relation between sustainable development goals and fashion industry.

Course Outcomes (CO):

Sl	Course Outcome	Mapped modules
1	Remember & Understand Environmental, Sustainable & Ethical issues being faced today and their causes	M1
2	Remember & Understand the Role of sustainable, ethical and environmental organizations	M2
3	Remember & Understand the innovation in sustainable thinking for the future	M3
4	Remember & Understand the roles and impact designers have on the natural resources and the environment	M4
5	Remember & Understand the renewable & non-renewable energy	M5
6	Remember & Understand the possibilities in sustainable and ethical fashion	M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
M1	Environmental & Sustainability Issues	10	20	1,2	
M2	Sustainable & Ethical focused Organizations	8	14	1,2	
M3	Innovations in sustainable thinking for the future	8	14	1,2	
M4	Resource consumption and depletion	8	16	1,2	
M5	Renewable Energy Vs. Non-Renewable Energy	10	16	1,2	
M6	Fashion Design & Sustainability	10	20	1,2	
		60	**100**		

Detailed Syllabus:

ModuleI (10 Hours)

Environmental & Sustainability Issues: Climate Change & Global Warming, Pollution, Resource depletion, Consumerism and the throw-away society,

ModuleII (8 Hours)

Sustainable & Ethical focused Organizations, bodies and Agencies: Greenpeace, Earth day Network, Ethical Fashion Forum, United Nations, Fair Trade, World Wildlife Fund (WWF)

ModuleIII (8 Hours)
Innovations in sustainable thinking for the future: UN Sustainable Development Goals, The Paris Climate Agreement, Ocean Clean-Up

Module IV (8 Hours)
Resource consumption and depletion: Deforestation, Fossil Fuels, Sand, Minerals, Precious Stones & Metals

ModuleV (10 Hours)
Renewable Energy Vs. Non-Renewable Energy: Impact of non-renewable i.e. traditional fossil fuel based energies, Renewable energy systems and technology innovations, Sustainable energy schemes and initiatives in India

ModuleVI (10 Hours)
Fashion Design & Sustainability: Sustainable Fashion design concepts, Sustainable materials for fashion and an understanding of the impacts of our materials choices, Future trends within sustainable fashion, an overview of the key issues the fashion and textiles industry faces, Discussion on the impact of new emerging technologies

Suggested readings:
1. Introduction to Sustainability Paperback – 2016 by Robert Brinkmann
2. Sustainability in Interior Design Book by Sian Moxon
3. References:
1. Centre for Sustainable Fashion- www.sustainable-2. MISTRA Future Fashion- www.mistrafuturefashiofans.choiomn .com
3. Sustainable Clothing Action Plan: Clothing Knowledge Hub- www.wrap.org.uk/node/19930
4. Textiles Environment Design- www.tedresearch.net
5. Textile Futures Research Centre -www.tfrc.org.uk
6. Sandy Black | The Sustainable Fashion Handbook 2012
Tamsin Blanchard | Green is the New Black: How to Change The World with Style 2008
7. Michael Braungart and William McDonough | Cradle to Cradle: Remaking the Way We Make Things 2009
8. Sass Brown | ReFashioned: Cutting Edge clothing from Recycled Materials 2013
9. Elisabeth Cline | Overdressed: The Shockingly High Cost of Cheap Fashion 2012
10. Kate Fletcher and Lynda Grose | Fashion and Sustainability: Design for Change 2012

COURSE: THE YOGA PROFESSIONAL

COURSE CODE:GEB105

MODE: OFFLINE/ BLENDED

COURSE OBJECTIVE:

The course is designed to provide understanding about the textual and grammatical aspects of sanskrit language to enable the students to better imbibe the essence of the yogic concepts. The students will be able to interpret the new dimensions of yoga and education and be able to apply principles of yoga for personality development through objectivity.

Sl	Course Outcome	Mapped modules
1	Read and understand the colloquial words of Sanskrit.	M1, M2
2	Write in Sanskrit and have some idea about grammar.	M1, M2
3	Communicate and comprehend Sanskrit to the best of their ability.	M1, M2, M3
4	Understand the Interface between Culture & Psychology.	M4
5	Apply the principles of Culture & Basic Psychological Processes	M5
6	Assess the importance of Culture & Gender interrelation	M6

Module Number	Content	Total Hours	%age of questions	Covered CO	Blooms Level	Remarks (If any)
Module 1	Introduction to reading, writing & speaking of Sanskrit language	10	15	1,2,3	2,3	
Module 2	Grammatical aspects of Sanskrit language	10	15	1,2,3	2,3	
Module 3	Transliteration according to authentic dictionary method	10	10	3	2,3	
Module 4	Interface between Culture & Psychology	10	10	4	2,3	
Module 5	Culture & Basic Psychological Processes	10	30	5	2,3,4,5	
Module 6	Culture & Gender	10	20	6	2,3,5	
		60	100			

Detailed Syllabus:

MODULE 01 **8L + 2T**

Vowels and Consonants, pronunciation, articulation of each letter and the technical names of the letters according to their articulation, similar and dissimilar letters and how to write them.
Consonants combined with vowels, pronunciation and writing, special letters which do not follow the general method.

MODULE 02 **8L + 2T**

Conjunct letters, rules to combine consonants, special consonants, how Sanskrit articulation can be applied to languages like English, special attention to Anusvara, when it can be written in the form of a nasal, two consonant combinations and three consonant combinations, their writing practice, special conjunct letters and their writing.

MODULE 03 **8L + 2T**

Transliteration according to authentic dictionary method.

MODULE 04 **8L + 2T**

Interface between Culture & Psychology Methods of Understanding Culture, Scope of Cultural Psychology, Mechanisms of Cultural Transmission

MODULE 05 **8L + 2T**

Culture & Basic Psychological Processes Interrelation between Culture, Perception, Cognition Emotional expressions and Culture

MODULE 06 **8L + 2T**

Culture & Gender, Culture and Gender stereotype

REFERENCE BOOKS:

1. Dr. Sarasvati Mohan, Sanskrit Level-1 Sharadh Enterprises, Bangalore, 2007.
2. Dr. Sarasvati Mohan, DVD and CD.(Publication of Akshram and Hindu SevaPrathisthana)

Course Name: Cinema and Other Arts

Course Code: GEB201

Mode: Offline/ Blended

Course Objective: The course is designed to provide a general understanding and appreciation of the history of world cinema, acclaimed international films, artists, and movements. The students will be able to gain a multiple cultural perspective based on the underlying theories and principles of cinema and media.

Sl	Course Outcome	Mapped modules
1	Understand the fundamental components of a Cinema and other arts	M1, M2, M3, M4, M5, M6
2	Remember the readings and understand the perspective	M1, M2
3	Understand the nuances of modern painting	M2, M3
4	Understand the nuances of Indian painting	M2, M3, M4
5	Understand and examine the Indian and Western music	M1, M2, M5
6	Analyze the music of parallel and commercial Indian cinema	M1, M2, M5, M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
Module 1	Pre-Renaissance	10	15	L1, L2	
Module 2	Renaissance and Perspective	10	15	LI, L2	
Module 3	Modern Painting	08	15	L1, L2	Workshop
Module 4	Indian Painting	08	15	L1, L2	Workshop
Module 5	Fundamentals of music	12	15	L2, L3	Workshop
Module 6	Music and cinema	12	25	L2, L3	Workshop
		60	100		

Detailed Syllabus:

M1	**Pre-Renaissance**: Visual representations in cave paintings, in folk cultures and early civilizations like Egypt Visual representations in Greece: A breakaway from earlier practices Visual representations in ancient and medieval India: Ajanta cave paintings,Mughal miniature, Kangra, Ragmalaetc
M2	**Renaissance and Perspective** The Renaissance at a Glancefrom The Enquiring Eye – European Renaissance Art, Development of the idea of perspective; Use of camera obscura and camera lucida Selected Readings from John Berger's Ways of Seeing, Dutch painting; Baroque, Rococo and Mannerism.
M3	**Modern Painting:** Impressionism, Expressionism, Surrealism, Cubism
M4	**Indian Painting** Raja Ravi Verma, Bengal School Contemporary Masters

M5	**Fundamentals of music:** Tone, note, key, octave, musical scales – diatonic and tempered scales, chords, melody, harmony, swar and shruti Folk music, forms and structures of Indian classical music, forms and structures of western classical music; Evolution of musical forms; Music industry and popular music; Urban folk music, Blues, Jazz, Rock
M6	**Music and cinema;** Music for Cinema Comparison of the two art forms – music and cinema; Ray and Ghatak's ideas on structural similarities of music and cinema Analysis of structures of films to compare with musical forms Musical accompaniment of films – from live musical accompaniment of silent era to present day. Diagetic and extra-diagetic music Analysis of music tracks of selected films Electronic Vs acoustic musical accompaniment (Has to be done as a workshop by a music composer) Item numbers of Bollywood films

Suggested Readings:

1. Andrei Tarkovsky, Sculpting in Time

2. Satyajit Ray, Our Films Their Films

3. RitwikGhatak, Rows and Rows of Fences

4. Penguin Dictionary of Music

5. S.C Deva, Music of India

6. E.H Gombirch, The Story of Art, Phaidon Publications

7. Hendrik Willen Van Loon, The Arts of Mankind

8. Hugh Honour and John F. Fleming, The Visual Arts: A History. Prentice Hall, 2005. Sylvan Barnet, A Short Guide to Writing About Art. Prentice Hall, 2007.

9. The Enquiring Eye – European Renaissance Art (National Gallery of Art, Washington)

10. Herbert Read The Meaning of Art 11. Walter Pater The Renaissance

12. John Berger, Ways of Seeing

13. Art Through the Ages by Helen Gardner

14. Nothing If Not Critical: Selected Essays on Art and Artists

15. The Story of Painting by Wendy Beckett

16. Minor: Art Historys History _p2 by Vernon Hyde Minor

17. Isms: Understanding Art by Stephen Little

18. The Visual Arts: A History by Hugh Honour

19. What Are You Looking At: 150 Years of Modern Art in a Nutshell by Will Gompertz

20. Art and Illusion: A Study in the Psychology of Pictorial Representation by E.H. Gombrich

Course Name: Surface & Soft Furnishings Design Development Techniques Course Code-GEB202

Mode-Offline/ Blended

Course Objective:**The course is designed to provide a conceptual understanding of interior design of spaces with surface and soft furnishings. The students will be able to visually express with colour, texture, pattern and material effects for surface design appropriate to project specifications.**

Sl	Course Outcome	Mapped modules
1	Understand the fundamental interior design aspects of surface and soft furnishings	M1, M2, M6
2	Understand the fundamentals of textiles and types	M1, M2
3	Understand and demonstrate printing techniques	M2, M3
4	Understand the apply embroideries	M2, M3, M4
5	Understand and examine materials, techniques, and technology	M1, M2, M5
6	Apply the surface designs	M5, M6

Module Number	Content	Total Hours	%age of questions	Blooms Level (if applicable)	Remarks (If any)
Module 1	Textiles and Its Types	08	15	L1, L2	
Module 2	Research soft furnishings and textiles/fabrics used in the design	08	15	L1, L2	
Module 3	Printing and its techniques	10	15	L1, L2	
Module 4	Embroideries and its types	10	15	L1, L2	
Module 5	Exploration of materials, techniques and technologies for the development of surface design	12	15	L2, L3	
Module 6	Final surface designs and presentation	12	25	L3	
		60	100		

Detailed Syllabus:

Module -1: Textiles and Its Types

- Introduction to textiles – Indian (kalamkari, matanipachedi, ikkat) and international textiles.
- Special embellishment techniques: Batik, Tie and dye - lehariya, bandhini ,shibori, sunray and marbling.

Module – 2: Research soft furnishings and textiles/fabrics used in the design

- Table Linens
- Rugs & Carpets
- Window dressings (Curtains & Blinds)
- Towels
- Bedding & Bedspreads
- Cushions & Throws
- Lampshades

- Wallpaper
- Tiles
- Flooring

Module -3: Printing and its techniques

- Print application through block printing, Lino printing, Wood cut printing, Lithograph printing
- Print application through screen & block printing (vegetable block and wooden blocks, Appliqué, quilting, Smocking, honey comb, Fabric painting, Stencil- dabbing and spraying).
- Natural dyeing techniques and explorations.

Module -4: Embroideries and its types

•Basic Hand Embroidery, their technique, variations and applications. Basic running stitch, backstitch, stem stitch, chain stitch, lazy daisy stitch, buttonhole stitch, featherstitch, herringbone stitch, knot stitch, satin stitch and cross-stitch.

•Traditional Embroidery- Origin, application &colours. Kantha, Chikan, Kasuti, Zardosi, Kutch and Mirror work.

Module -5: Exploration of materials, techniques and technologies for the development of surface design

- Print – Screen, Block, Mono etc.
- Stenciling
- Fabric Dye (Natural and Azo free)
- Fabric paints
- Fabric and textiles Embellishment

Module -6: Final surface designs and presentation

- Develop surface designs for a range of applications.

Reference Books:

• The Complete Technology Book on Dyes & Dye Intermediates Paperback – 1 Jan 2003 by NIIR Board of Consultants & Engineers (Author)

• Biodegradation of Azo Dyes by HaticeAtacagErkurt (Editor) – Publisher: Springer (9 August 2010), ISBN-10: 3642118917

• Second Skin: Choosing and Caring for Textiles and Clothing by India Flint Murdoch Books, 2011 ISBN 978-1-74196-720

• Indigo:The Color that Changed the World by Catherine Legrand Thames & Hudson, 2013 ISBN 978-0500516607

• Warp and Weft:
Woven Textiles in Fashion, Art and Interiors by Jessica HemmingsBloomsbury, 2012 – ISBN 978-1-4081-3444-3

• Quilt National 2013:The Best of Contemporary Quilts by The Dairy Barn Cultural Arts Center

• DragonThreads Extraordinary Textile Arts Books, 2013 - ISBN 978-0-9818860-4-6

• Surface Design for Fabric: Studio Access Card Printed Access Code – February 15, 2015 by Kimberly Irwin Publisher: Fairchild Books (February 15, 2015) ISBN-10: 1501395033

Websites

- https://www.houseology.com/masterclass/design-school/chapter-eight-soft-furnishings
https://www.twosistersecotextiles.com/pages/azo-dyes

Course Name- Study of Textiles
Course Code- GEB 301
Mode-Offline/ Blended

Course Objectives:

The course is designed to provide working knowledge of textile, the best utilization of available fabric resources, the awareness of its property, suitability for a particular use. The students will be able to understand and apply the acquired knowledge in their designs., and enhance aesthetic and functional value of textile material for fashion industry.

Course Outcomes (CO):

Sl	Course Outcome	Mapped modules
1	Remember & Understand different types of Textile materials available in the market and their uses.	M1, M2
2	Understand various kinds of fabrics, their structure, properties and the utility.	M2,
3	Understand Textile dyeing, printing and finishing techniques and	M3, M4.
4	Apply dyeing & Printing techniques on fabric samples to add aesthetic value to it	M4, M6
5	Remember & Understand various traditional hand embroidery techniques of India, and Apply this techniques for surface ornamentation of fabric samples	M5
6	Apply different embellishment techniques on different samples for value addition to it	M6

Module	Content	Total Hours	%age of questions	Covered CO	Blooms Level	Remarks (If any)
Module 1	Fiber Classification	4	12	1	1,2	
Module 2	Yarn & Fabric Formation	10	20	1	1,2	
Module 3	Fabric Finishing	6	20	2,3	1,2	
Module 4	Dyeing & Printing	8	20	3,4	2,3	
Module 5	Embroidery (Practical)	16	16	5	2,3	
Module 6	Surface Embellishment (Practical)	16	12	4, 6	2,3	
		60	100			

Detailed Syllabus:

ModuleI (4 Hours)
Introduction to Textiles and classification off ibres
According to source- Natural and Manmade.
Identification and proper ties of Textile fibres- Cotton, Silk, Wool ,Linen, Rayon(regenerated),Acetate ,Polyester, Nylonand Acrylic.

ModuleII (10 Hours)
Process of yarn for mation- handspinning, mechanical-ring spinning and modern-open end spinning. Yarn classification-simple and novel tyyarns, characteristics, properties and uses of different yarn.
Method of fabric construction: Weaving-. Basic weaves-plain, satin, twill and their variations. Fancy weaves-pile, dobby, jacquard, extrawarp and weftfigure, leno, crepe and double cloth.
Other method of fabric construction- knitting, braiding, lace and felt. Non-woven fabrics and their applications.

ModuleIII (6Hours)

Finishes given to fabrics- definition, importance to the consumer, classification according to durability and function. singeing, scouring, bleaching, mercerization calendaring, sizing, de-sizing, brushing, carbonizing, crabbing, fulling, heat setting, shearing, weighting, stentering, napping.
Special Finishes and Treatments- water repellent and waterproof finishes, antistatic finish, anti-slip finish, flame retardant finishes, crease resistant finishes, durable press and shrink resistant finishes.

Module IV (8 Hours)

Dyeing-Stages of dyeing- fibrestage, yarn dyeing, fabric, cross, union dyeing and product stage. Method of dyeing- batch dyeing, reeldyeing, jig dyeing and package dyeing.
Printing- Direct roller printing, block printing, duplex printing, discharge printing, screenprinting-flat androtary, resist, batikandtie-dye.

ModuleV (Practical) (16 Hours)

Embroidery

Embroidery tools and techniques, embroidery threads and their classification, selection of threads, needle and cloth, tracing techniques, ironing and finishing of embroidered articles.

Basic Hand Embroidery. Basic and two variations of running stitch, backstitch, stemstitch, chainstitch, lazy daisy stitch, button hole stitch, feather stitch, herring bone stitch, knot stitch, satin stitch and cross stitch.

Traditional Embroidery- Origin, application & colours. Kantha, Chikan, Kasuti, Zardosi(Fourvariations), Kutchand Mirrorwork (Twovariations).

ModuleVI (Practical) (16Hours)

Surface Embellishment

Printing & Painting techniques:–originand applications –Block printing, Kalamkari and Patachitra.
Dyeingand weaving techniques:- Ikats, Patola, Bhandini, Laharia, Shibori, Brocade weave and Carpet weaving.
Special embellishment techniques: Batik-splash, t-janting, crackled, Tie and dye-lehariya, bandini, shibori, sunray and marbling, Block printing- vegetable block and wooden blocks, Applique(2methods), quilting(2 methods), Smocking-Chinese smocking(2 methods), honey comb, gathered with embroidery, Fabric painting(4methods), hand, Stencil- dabbing and spraying.

Suggested readings:

1. Fibertofabric.,B.T.Corbman,Mc.GrawHill
2.Fromfiberto fabrics,E.gale,Allman&SonsLtd.
3.FiberScienceandtheirselection.,Wingate,Prenticehall
4.Encyclopediaoftextiles.,EditorsofAmericanfabricmagazine.
5.Textiles.,Hollen.N.,Macmillanpublishingcompany.
6.Murphy.W.S.,TextileFinishing,AbhishekPublications,Chandigarh.
7.IndianTie-DyedFabrics,VolumeIVofHistoricTextilesofIndia.Merchant: CelunionShop
8.Traditional Indian Textiles., JohnGillow/NocholasBarnard, Thames& Hudson.
9.Surfacedesignforfabric,RichardMProctor/JenniferFLew,Universityof Washington Press.
10.Artof Embroidery: Historyofstyleandtechnique, LantoSynge,Woodridge
11.TheTimelessEmbroidery,HelenM,David&Charles.
12.Readers Digest, CompleteguidetoSewing,1993, Pleasantville-Nu GailL,SearchPressLtd.
13.Barbara. S,CreativeArt ofEmbroidery,Lundon,NumblyPub.groupLtd.
14.ShailajaN,TraditionalEmbroideriesof India.,MumbaiAPHPublishing.

Course Name: IT Literacy

Course Code: GEB 302

Mode-Blended

Course Objective: This course is designed impart a foundational level appreciation for the implementation of IT in business and management. Students will be utilizing digital tools for communication, researching and interpreting digital information, developing advanced spreadsheets, understanding operating systems and word processing functions, supporting the evaluation, selection and application of office productivity software appropriate to a sports management context.

Sl	Course Outcome	Mapped modules
1	Identify the principal components of a relevant computer system and describe computer technology for communication in management.	M1, M3
2	Interpret fundamental hardware components that make up a computer's hardware and the role of each of these components relevant to Management.	M1,M2
3	Relate the usage of Digital innovations in Sports Threats and Opportunities of Digital Application in Sports, SWOT analysis.	M2, M4
4	Explain the role of information technology in presentation supporting the functions of large sport events and their stakeholders, as well as the needs of sports federations.	M1, M2, M3
5	To understand the emerging technological trends, as well as solutions and applications that will impact broadcasting and media industries and spectators' experience.	M1, M4, M5, M6
6	Demonstrate developing technology solutions and understanding the limits of data capture (what, how, and why) in sport.	M4, M6

Module	Content	Total Hours	%age of questions	Blooms Level	Remarks (If any)
M 1	Data and Information Storage	12	20	1,2	
M2	Digital Transformation and innovation in Sports Management	10	15	1, 2	
M3	Presentation Software	08	15	1, 2	
M4	Management Information System	06	15	1, 2	
M5	DOS System commands and editors	10	15	2,3	
M6	Programs involving the use of arrays with subscripts and pointers	12	20	2, 3	
		58	100		

Detailed Syllabus:

Module 1 – Data and Information Storage – Data and Information, definition and meaning Data Storage device: Primary storage – RAM, ROM, EEROM, PROM, EPROM; Secondary storage – direct access devices, serial access devices: hard disks, CD-ROM, DVD Centra Processing Unit – Control Unit. Computer languages, machine language, assembly language and high level language, role of assembler and compiler. Storage devices, floppy disc, hard disc CD ROM and DVD. Importance of Computer as data storage for Businessand Management **Fundamental Hardware Applications in Sports Management** – RFID Chips, Sensors, Timing System, andtheir applications in Sports Management. **Operating System and Applicatior**

Software– Meaning of software; broad classification of software; system. Software and application software; utilities. Systems software – Operating systems: Brief introduction to different types of operating systems like DOS, Windows, Unix, Linux etc.,Importance and application of Cloud, Mobile, Artificial Intelligence in Sports Management. Use. **[Total Hours – 12]**
Module 2 - Digital Transformations and Innovations– Digital Transformation and future changes, challenges in Management, factors of success, Impact of Digital media on business new digitized innovations in modern Management. Impact of Digital media, SWOT analysis.**Role of Data Bases -** Roles, Types, Functions, Current Practice and Future Potentials, Importance of digital technology in Management. **[Total Hours – 10]**
Module 3 - Presentation Software - Power Point – Creating new presentations – Auto content wizard – Using template – Blank presentation – Opening existing presentations - Adding, editing, deleting, copying , hiding slides – Presentations – Applying new design – Adding graphics – Using headers and footers – Animations text – Special effects to create transition slides – Controlling the transition speed – Adding sounds to slides – Using action buttons **Word processing software:** WORD – Creating a new document with templates & Wizard - Creating own document – Opening/modifying a saved document – converting files to and from other document formats – Using keyboard short-cuts & mouse – Adding symbols & pictures to documents – header and footers – Finding and replacing text – spell check and Grammar check – Formatting text - paragraph formats - adjusting margins, line space – character space – Changing font type, size – Bullets and numbering – Tables – Adding, editing, deleting tables – Working within tables – Adding, deleting, modifying rows and columns – merging & splitting cells. **Spreadsheet software -** EXCEL – Working with worksheets – cells – Entering editing, moving, copying, cutting, pasting, transforming data – Inserting and deleting of cells rows & columns – Working with multiple worksheets – switching between worksheets – moving copying, inserting & deleting worksheets – Using formulas for quick Calculations – Working & entering a Formula – Formatting a worksheet – Creating and editing charts – elements of an Excel Chart – Selecting data to a chart – Types of chart – chart wizard – Formatting chart elements – Editing a chart – Printing charts. **[Total Hours - 08]**
Module 4 - Management Information Management (MIS) - database management, data communications, transaction processing information systems, decision support systems, information reporting systems, office automation, networks, expert systems, and systems analyses and design. **ERP**: Introduction – Need for ERP – Advantages – Major ERP Packages - Applications. **[Total Hours - 06]**
Module 5 - DOS System commands and Editors (Preliminaries) used in Sports Management **UNIX system** commands and vi (Preliminaries) – Applications in Management. **Programs to demonstrate control structure:** text processing, use of break and continue, etc. **Programs involving functions and recursion,** Use and application in Business and Management. **[Total Hours - 10]**
Module 6 - Programs involving the use of arrays with subscripts and pointers, Programs using structures and files. Applications of C Language. **Microsoft office -** Word, Excel PowerPoint, Mail merge, Internet – Use and Applications. **[Total Hours – 12]**

Suggested Readings:

1.Mano – Computer System Architecture; Pearson Education

2.Tanenbaum – Structured Computer Organization,Pearson Education

3.Martin & Powell – Information Systems: A Management Perspective; mcgraw-Hill

4.Laudon & Laudon – Management Information Systems: Pearson Education

5.Comer: Computer Networks and the Internet: Pearson Education Graham Curtis – Business Information Systems: Addison Wesley

6Introduction to Computers with MS-Office, Leon, TMH

7.An Introduction to Database Systems - C.J. Date, Pearson Education

8Windows 98 6 in one by Jane Calabria and Dorothy Burke – PHI

9.Using Microsoft Office 2000 by Ed, Bott – PHI

10.Enterprise Resource planning (ERP): Text and case studies by Murthy, C S V, HPH

11.Teach yourself SAP in 24 hours by George Anderson; Danielle Larocca - Pearson Education

12.Teach yourself SAP in 24 hours by George Anderson; Danielle Larocca - Pearson Education

13.Running MS – DOS by Van Wolverton, 20th Anniversary Edition

14.C Programming Language (Prentece Hall Software) by Brian W. Kernighan

15.Let Us C by Yashavant Kanetkar.

16.Data Structure Through C by Yashavant Kanetkar

17.C in depth by Deepali Srivastava and S.K.Srivastava

Course Name: Operating Systems with LINUX
Course Code: GEB401
Mode-Offline/ Blended

Course Objective: The course is designed to understand the fundamental utilities which are required on daily basis to work on a modern operating system. The course will cover an introduction on the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems. On successful completion of this course students will be able to make effective use of Linux utilities to solve problems

Sl	Course Outcome	Mapped modules
1	Remember fundamental components of a computer operating system	M1
2	Remember and Understand policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems	M2, M3
3	Understand the basic commands of Linux operating system	M4
4	Understand & Apply the knowledge to create file system and directories	M1, M4, M5
5	Apply the knowledge to create processes, perform pattern matching	M1, M4, M6
6	Application of the gathered knowledge to develop simple programs	M1, M4, M5, M6

Module	Content	Total Hours	%age of questions	Blooms Level	Remarks (If any)
M 1	Introduction	4	5	1	
M 2	Process	10	20	1,2	
M 3	Resource Manager	6	15	2	
M 4	Introduction to Unix OS	12	20	2,3	
M 5	Files	12	20	3	
M 6	Shells & Process	12	20	4	
		56	100		

Detailed Syllabus:

Paper: Operating system with LINUX

Module 1: Introduction

Importance of OS, Basic concepts and terminology, Types of OS, Different views, Journey of a command execution, Design and implementation of OS. **(Total hours -4)**

Module 2: Process (10L)

Concept and views, OS view of processes, OS services for process management, Scheduling algorithms, Performance evaluation; Inter-process communication and synchronization, Mutual exclusion, Semaphores, Hardware support for mutual exclusion, Queuing implementation of semaphores, Classical problem of concurrent programming, Critical region and conditional critical region, Monitors, Messages, Deadlocks. **(Total hours -10)**

Module 3: Resource Manager

Memory management, File management, Processor management, Device management. **(Total hours -6)**

Module 4: Introduction to UNIX Operating System

Introduction to UNIX UNIX operating system, UNIX architecture: Kernel and Shell, Files and Processes, System calls, Features of UNIX, POSIX and single user specification, Internal and external commands.

Utilities of UNIX Calendar (cal), Display system date (date), Message display (echo), Calculator (bc), Password changing (password), Knowing who are logged in (who), System information using uname, File name of terminal connected to the standard input (tty)
UNIX file system File system, Types of file, File naming convention, Parent – Child relationship, HOME variable, inode number, Absolute pathname, Relative pathname, Significance of dot (.) and dotdot (..), Displaying pathname of the current directory (pwd), Changing the current directory (cd), Make directory (mkdir), Remove directories (rmdir), Listing contents of directory (ls), Very brief idea about important file systems of UNIX: /bin, /usr/bin, /sbin, /usr/sbin, /etc, /dev, /lib, /usr/lib, /usr/include, /usr/share/man, /temp, /var, /home
(Total hours – 6)

Assignment –
LINUX Utilities - Calendar, Display system date, Message display, Calculator, Password changing, Knowing who are logged in, Knowing System information
Directory creation, removal, listing, navigation –
Displaying pathname of the current directory (pwd), Changing the current directory (cd), Make directory (mkdir), Remove directories (rmdir), Listing contents of directory (ls and its options), Absolute pathname, Relative pathname, Using dot (.) and dotdot (..)
(Total Hours – 6)

Module 5: Files
Ordinary file handling Displaying and creating files (cat), Copying a file (cp), Deleting a file (rm), Renaming/ moving a file (mv), Paging output (more), Printing a file (lp), Knowing file type (file), Line, word and character counting (wc), Comparing files (cmp), Finding common between two files (comm), Displaying file differences (diff), Creating archive file (tar), Compress file (gzip), Uncompress file (gunzip), Archive file (zip), Extract compress file (unzip), Brief idea about effect of cp, rm and mv command on directory.
File attributes File and directory attributes listing and very brief idea about the attributes, File ownership, File permissions, Changing file permissions – relative permission & absolute permission, Changing file ownership, Changing group ownership, File system and inodes, Hard link, Soft link, Significance of file attribute for directory, Default permissions of file and directory and using umask, Listing of modification and access time, Time stamp changing (touch), File locating (find). **(Total Hours – 6)**

Assignment –
Ordinary File Handling - Displaying and creating files, Copying a file, Deleting a file, Renaming/ moving a file, Paging output, Knowing file type, Line, word and character counting (wc), Comparing files, Finding common between two files, Displaying file differences
File attributes – File and directory attributes listing, File ownership, File permissions, Changing file permissions – relative permission & absolute permission, Changing file ownership, Changing group ownership, File system and inodes, Hard link, Soft link, Default permissions of file and directory and using umask, Listing of modification and access time, Time stamp changing, File locating **(Total Hours – 6)**

Module 6: Shell and Process
Shell Interpretive cycle of shell, Types of shell, Pattern matching, Escaping, Quoting, Redirection, Standard input, Standard output, Standard error, /dev/null and /dev/tty, Pipe, tee, Command substitution, Shell variables
Process Basic idea about UNIX process, Display process attributes (ps), Display System processes, Process creation cycle, Shell creation steps (init ->getty -> login -> shell), Process state, Zombie state, Background jobs (& operator, nohup command), Reduce priority (nice),

Using signals to kill process, Sending job to background (bg) and foreground (fg), Listing jobs (jobs), Suspend job, Kill a job, Execute at specified time (at and batch) **(Total Hours – 6)**

Assignment –

Shell - Types of shell, Pattern matching, Escaping, Quoting, Redirection, Pipe, tee, Command substitution, Shell variables

Process - Display process attributes, Display System processes, Background jobs, Reduce priority, Sending job to background and foreground, Listing jobs **(Total Hours – 6)**

Readings

1.Operating Systems, Galvin, John Wiley

2.Operating Systems ,Milankovic, TMH

3.UNIX-Concepts & Applications, Sumitava Das, TMH

4.Learning UNIX Operating System, Peek, SPD/O'REILLY

5.Understanding UNIX, Srirengan, PHI 4. Essentials Systems Administration, Frisch, SPD/O'REILLY