

॥ सा विद्या या विमुक्तये ॥



स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड

“ज्ञानतीर्थ” परिसर, विष्णुपुरी, नांदेड - ४३१६०६ (महाराष्ट्र)

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY NANDED

“Dnyanteerth”, Vishnupuri, Nanded - 431606 Maharashtra State (INDIA)

Established on 17th September 1994 – Recognized by the UGC U/s 2(f) and 12(B), NAAC Re-accredited with 'A' Grade

ACADEMIC (1-BOARD OF STUDIES) SECTION

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विद्यापीठ अनुदान आयोगाने शैक्षणिक वर्ष २०२०-२१ पासून मान्यता दिलेल्या व्होकेशनल कोर्सेसचे (बी.व्होक पदवी, अॅडव्हॉस डिप्लोमा, डिप्लोमा व सर्टिफिकेट) अभ्यासक्रम शैक्षणिक वर्ष २०२०-२१ पासून लागू करणे बाबत.

परिपत्रक

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, विद्यापीठ अनुदान आयोगाने शैक्षणिक वर्ष २०२०-२१ पासून मान्यता दिलेल्या व्होकेशनल कोर्सेसच्या (बी. व्होक पदवी, अॅडव्हॉस डिप्लोमा, डिप्लोमा व सर्टिफिकेट्स) अभ्यासक्रमांना मा विज्ञान व तंत्रज्ञान विद्याशाखेने दिनांक ३१ मे २०२१ रोजीच्या बैठकीतील केलेल्या शिफारशीप्रमाणे व मा. विद्यापरिषदेच्या दिनांक १२ जून २०२१ रोजीच्या बैठकीतील विषय क्रमांक २६/५१-२०२१ च्या ठरावानुसार खालील अभ्यासक्रमांस मान्यता देण्यात आली आहे.

1. B. Voc. IT/Hardware and Networking.
2. B. Voc Software Development.
3. B. Voc. Medical Laboratory Technology.
4. B. Voc. Horticulture and Post-Harvest Technology.
5. B. Voc. Herbal Medicine.
6. B. Voc. Commercial Aquaculture.
7. B. Voc. Food Processing Technology.
8. B. Voc. Skill Based Zoology.
9. B. Voc. Vocational Biotechnology.
10. B. Voc. Plant Tissue Culture Secretary.
11. Advance Diploma Radiological Physics.
12. Diploma – Computer Hardware.
13. Diploma – Computer Network Assistant.
14. Diploma – PGDMLT.
15. Diploma – Embedded System Design.
16. Diploma- Biofertilizer.
17. Diploma- Fisheries and Farm Management.
18. Diploma - Bee Keeping.

सदरील परिपत्रक व अभ्यासक्रम प्रस्तुत विद्यापीठाच्या www.srtmun.ac.in या संकेतस्थळावर उपलब्ध आहेत. तरी सदरील बाब ही सर्व संबंधितांच्या निदर्शनास आणून द्यावी. ही विनंती.

जा.क्र.:शैक्षणिक-१/परिपत्रक/व्होकेशनल अभ्यासक्रम/N-
२०२०-२१/६८

दिनांक : ०५.०७.२०२१

प्रत माहिती व पुढील कार्यवाहीस्तव :

- १) मा. कुलसचिव यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- २) मा. संचालक, परीक्षा व मूल्यमापन मंडळ यांचे कार्यालय, प्रस्तुत विद्यापीठ.
- ३) प्राचार्य, सर्व संबंधित संलग्नित महाविद्यालये, प्रस्तुत विद्यापीठ.
- ४) साहाय्यक कुलसचिव, पदव्युत्तर विभाग, प्रस्तुत विद्यापीठ.
- ५) उपकुलसचिव, पात्रता विभाग, प्रस्तुत विद्यापीठ.
- ६) सिस्टम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ.

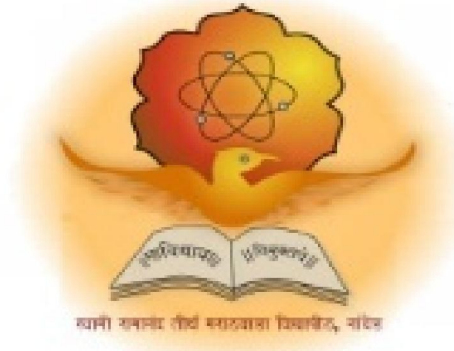
स्वाक्षरित

सहा कुलसचिव

शैक्षणिक (१-अभ्यासमंडळ) विभाग

**Swami Ramanand Teerth Marathwada
University, Nanded**

(NAAC Re-accredited with 'A' Grade)



Syllabus of

**Diploma in Computer Network Assistant
(1 year)**

Introduced from Academic Year 2020-21

Diploma in Computer Network Assistant

1. Preamble:

Skills and knowledge are the driving forces of economic growth and social development for any country. Presently, the country faces a demand – supply mismatch, as the economy needs more ‘skilled’ workforce than that is available. In the higher education sphere, knowledge and skills are required for diverse forms of employment in the sectors of education, health care, manufacturing and other services.

Government of India, taking note of the requirement for skill development among students, launched National Vocational Education Qualification Framework (NVEQF) which was later on assimilated into National Skills Qualifications Framework (NSQF). Various Sector Skill Councils (SSCs) are developing Qualification Packs (QPs), National Occupational Standards (NOSs) and assessment mechanisms in their respective domains, in alignment with the needs of the industry.

In view of this our University initiated to start skill based courses which are in demand of industries to be carry responsibilities of society. The programme is highly relevant for all those who want to pursue a professional career in software development.

2. Aim:

After successfully completing this course, students should be able to:

- Describe the general principles of data communication.
- Describe how computer networks are organized with the concept of layered approach.
- Describe how signals are used to transfer data between nodes.
- Implement a simple LAN with hubs, bridges and switches.
- Describe how packets in the Internet are delivered.
- Analyze the contents in a given data link layer packet, based on the layer concept.
- Design logical sub-address blocks with a given address block.
- Decide routing entries given a simple example of network topology
- Describe what classless addressing scheme is.
- Describe how routing protocols work.
- Use C programming language to implement network programs.
- Design and implement a network protocol.

3. Objective:

The course objectives include learning about computer network organization and implementation, obtaining a theoretical understanding of data communication and computer networks, and gaining practical experience in installation, monitoring, and troubleshooting of current LAN systems. Students are introduced to computer communication network design and its operations, and discuss the following topics: Open Systems Interconnection (OSI) communication model; error detection and recovery; local area networks; bridges, routers and gateways; network naming and addressing; and local and remote procedures. On completion of the course, students should be able, in part to design, implement and maintain a typical computer network (LAN).

4. Eligibility and Fees

Applicant should have completed secondary school or equivalent and Fees as per UGC guidelines

5. Program outcome:

Communication

Graduates are able to communicate effectively to interpret and document system and network-wide requirements through their ability to identify, analyze, and evaluate rhetorical strategies in their own and another's writing.

Computation

Graduates utilize mathematical, symbolic, logical, graphical, geometric, or statistical analysis for the interpretation and solution of problems in the natural world and human society.

Human Relations

Graduates will be able to effectively work as a member of a group or team and appropriately respond to situations by examining the relationship between self, community, and environments, evaluating potential impacts and consequences of actions, and making ethical choices and contributions based on that examination and evaluation.

Students will be awarded:

Diploma:	Student shall be required to appear in examinations of all courses. However, to award the Diploma (Software Development) a student shall study the minimum of 60 credits course and opt minimum passing credits as per university rule.

6. Assessment:

The Skill component of the course will be generally assessed by the respective Sector Skill Councils. In case, there is no Sector Skill Council for a specific trade, the assessment may be done by an allied Sector Council or the Industry partner. Further if Sector Skill Council in concerned / relevant trade has no approved QP which can be mapped progressively or due to any other reason, if the SSC expresses its inability to conduct the assessment or cannot conduct the skill assessment in stipulated time frames as per academic calendar, the institutions may conduct skill assessment through a Skill Assessment Board by 'Certified Assessors' as per the provisions enumerated in MHRD Skill Assessment Matrix for Vocational Advancement of Youth (SAMVAY). The Skill Assessment Board may have Vice-Chancellor/Principal/Director/Nodal officer/Coordinator of the programme / Centre, representatives of the partner industry(s),

one nominee of the Controller of Examination or his/her Nominee of affiliating University / Autonomous College and at least one external expert. The affiliating university may nominate additional experts on the Skill Assessment Board, if required.

The certifying bodies may comply with / obtain accreditation from the National Accreditation Board for Certification Bodies (NABCB) set up under Quality Council of India (QCI). Wherever the university/college may deem fit, it may issue a joint certificate for the course(s) with the respective Sector Skill Council(s).

The general education component will be assessed by the concerned university as per the prevailing standards and procedures. General Education credit refers to a unit by which the course work is measured. It determines the number of hours of instructions required per week.

One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week. Accordingly, one Credit would mean equivalent of 14-15 periods of 60 minutes each or 28 – 30 hrs of workshops/ labs. For internship / field work, the credit weightage for equivalent hours shall be 50% of that for lectures /tutorials. For self-learning, based on e-content or otherwise, the credit weightage for equivalent hours of study shall be 50% of that for lectures / tutorials.

The institutions offering B.Voc degree programme should adopt and integrate the guidelines and recommendations of the respective Sector Skill Councils (SSCs) for the assessment and evaluation of the vocational component, wherever available.

Letter Grades and Grade Points: it is recommended to adopt 10- point grading system with the Letter grades as given below:

Grades and Grade Points

Letter Grade	Grade Point
O (Outstanding)	10
A+ (Excellent)	9
A (Very Good)	8
B+ (Good)	7
B (Above Average)	6
C (Average)	5

P (Pass)	4
F(Fail)	0
Ab (Absent)	0

Passing percentage for each paper each course is 40%. Separate passing for continuous assessment and end semester examination and/or as per time to time guidelines of the university.

A student obtaining Grade F and Ab shall be considered failed and he/she will be required to reappear in the examination.

Computation of Semester Grade Point Average System (SGPA) and Cumulative Grade Point Average (CGPA):
The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the course components taken by a student and the sum of the number of credits of all the courses undergone by a student in a semester, i.e

$$SGPA (S_i) = \frac{\sum(C_i \times G_i)}{\sum C_i}$$

where 'C_i' is the number of credits of the ith course component and 'G_i' is the grade point scored by the student in the ith course component.

The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.

$$CGPA = \frac{\sum(C_i \times S_i)}{\sum C_i}$$

Where 'S_i' is the SGPA of the ith semester and C_i is the total number of credits in that semester.

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

The skill component would be taken as one of the course components in calculation of SGPA and CGPA with given credit weightage at respective level.

Swami Ramanand Teerth Marathwada University, Nanded
Diploma in Computer Network Assisant
 Syllabus with effective from 2020-2021

Semester I

Sr. No.	Course Code	Course Title	Continuous Assessment Credits (CA)	End Semester Exam Credits (ESE)	Total Credits
General Education					
1	DCH101	Communication Skill -I	2	2	4
2	DCH 102	Fundamentals of Computers	2	2	4
3	DCH 103	Programming Language Paradigm	2	2	4
Skill Courses					
4	DCH 104	Introduction about Computer	2	2	4
5	DCH 105	Basic networking concepts	2	2	4
6	DCH 106	LAN, WAN, MAN, PAN, CAN.	2	2	4
Practical Skill Courses					
7	DCH 107	LAB1: Introduction about Computer	1	1	2
8	DCH 108	LAB2: Basic networking concepts	1	1	2
9	DCH 109	LAB3: LAN, WAN, MAN, PAN, CAN.	1	1	2
Total					30

Semester II

Sr. No.	Course Code	Course Title	Continuous Assessment Credits (CA)	End Semester Exam Credits (ESE)	Total Credits
General Education					
1	DCH 201	Communication Skill -II	2	2	4
2	DCH 202	Environmental Studies	2	2	4
3	DCH 203	Operating System Concepts	2	2	4
Skill Courses					
4	DCH 204	Introduction to various networking devices	2	2	4
5	DCH 205	Inside the PC	2	2	4
6	DCH 206	Network basic and configuration	2	2	4
Practical Skill Courses					
7	DCH 207	LAB4: Introduction to various networking devices	1	1	2
8	DCH 208	LAB5: Inside the PC	1	1	2
9	DCH 209	LAB6: Network basic and configuration	1	1	2
				Total	30

Course Code	Course Title	Credits
DCH101	Communication Skill -I	04
Objective	1. To familiarize students with English sounds and phonemic symbols. 2. To enhance their ability in listening and speaking.	
Outcome	1. Listen to lectures, public announcements and news on TV and radio 2. Engage in telephonic conversation 3. Communicate effectively and accurately in English. 4. Use spoken language for various purposes.	
Unit I	Language and communication: Definition of Language, nature of language, Characteristics of Human Language, Varieties of English Language: British, American, Indian, Australian etc., English for specific and special purposes.	
Unit II	Communication: Importance of communication; Animal and human communication; Methods of communication (Verbal & Non-Verbal); Barriers of communication	
Unit III	Oral Communication Basic skills of communication, Listening to and Understanding a) Extended natural speech in business situations, Both face to face and on the telephone. b) Understanding standard American, British and Indian accents., Speaking with correct Pronunciation a) English Consonants b) English Vowels c) Speaking with right accent	
Unit IV	Presentation Skills : 1) Planning and preparing to speak 2) Strategies for making powerful openings in presentations. 3) Body Language 4) Voice Modulations	
Unit V	Other communications a) Meetings b) Group discussions c) Seminars d) Conference e) Interviews	
Suggested Readings	1) DEVELOPING COMMUNICATION SKILLS Krishna Mohan and Meera Bajaj 2) THE STERILING BOOK OF COMMON ERRORS IN ENGLISH Gratian Vass 3) SPOKEN ENGLISH FOR YOU.R.Radha Krishna Pillai and K Rajeevan 4) INDIAN AND BRITISH ENGLISH- A HAND BOOK OF USAGE AND PRONUNCIATION. ParooNihlani, Ray Tongue and Priya Hosali 5) A COURSE IN PHONETICS AND SPOKEN ENGLISH Sethi and Dhamija. 6) ENGLISH PRONUNCING DICTIONARY. Daniel Jones. 7) MACMILLAN'S FOUNDATION ENGLISH.R. K. Dwivedi and A. Kumar	

Course Code	Course Title	Credits
DCH102	Fundamentals of Computers	04
Objectives	<ol style="list-style-type: none"> 1. To understand basics of computer with its working, characteristics, capabilities and limitations. 2. To understand the data representation methods in computers. 3. To understand the working of inputs output devices and memory organization of computer with its hierarchy. 4. To understand working of software, OS and its relationship with hardware. 5. To understand problem solving approach using algorithms and flowcharts. 	
Outcome	<ol style="list-style-type: none"> 1. Students will be able to understand the computer organization and architecture with data representation techniques in computers. 2. Students will be able to understand the working, functions and handling of operating system. 3. Students will be able to understand and design algorithms and flowchart for solving problems. 	
Unit I	<p>Introduction to Computers : Development history of Computers, Computer system concepts, Characteristics, Capabilities and limitations, Classification of Computers - Micro, Mini Mainframe, Super Computer, PC, Server, Workstations, Generations of Computers, Basic components of a computer system – CU, ALU, CPU, Block diagram of computer, Von Neumann Architecture, Instruction Execution Cycle. Data representation in computers - Bit, Byte, KB, MB, TB, WORD, ASCII, EBCDIC, BCD Code, Introduction to Number system: Binary, Octal, Decimal and Hexadecimal, Conversation from one number system to another number system, Introduction to Basic Gates.</p>	
Unit II	<p>Input Output Devices: Input Devices Keyboard, Mouse, Direct Entry Devices - Card readers, scanning devices (BAR CODE, OMR, MICR), Voice input devices, Light pen, Touch Screen, Scanner, Output Devices: Printers and their types - Impact and Non-impact printers, CRT, LCD, CD-WRITTER, DVD, Web Camera, Modem</p>	
Unit III	<p>Computer Memory Organization: Concept of computer memory, Memory types and its hierarchy – RAM, ROM, EPROM, PROM, Cache memory Flash Memory, Virtual memory, Secondary memory storage devices - HDD, SDD, Magnetic tapes, Pen drives.</p>	
Unit IV	<p>Softwares and Operating System Concept of operating system, Functions of OS, Types of OS-Batch Processing, Single User, Multi User, Multiprogramming, Multi-Tasking, Introduction of Windows and DOS, booting process, file & directory structure, Basic DOS Commands, Concept of Software, Types of Software–System software, Application software, Utility Software, Demoware, Shareware, Freeware, Firmware, Programming languages–Machine, Assembly, High Level, 4GL,</p>	

	Compilers, Interpreters, Assemblers, Linkers, Loaders.
Unit V	<p>Computer Program Planning using Algorithms and Flowcharts</p> <p>Purpose of program planning, Algorithm, Definition and properties, algorithm steps with some examples, Flowchart, Principles of flowcharting, Flowcharting symbols, Converting algorithms to flowcharts, levels of flowchart, advantages and limitations of flowchart.</p>
Suggested Readings	<ol style="list-style-type: none"> 1. Fundamentals of Computers By V. Rajaraman and Neeharika 6th Edition PHI Learning Pvt. 2. Computer Fundamentals By Pradeep K. Sinha & Priti Sinha, 6th Edition, BPB Publication. 3. Computer Fundamentals, By Anita Goel, Pearson Education India, First edition. 4. Fundamentals of Computers By Reema Thareja, Oxford University Press, 2nd Edition 5. Fundamentals of Computer Algorithms, By Horowitz Ellis, SatranjSahani, 2nd Edition. 6. Operating System Concepts By Abraham Silberschatz, Peter Galvin

Course Code	Course Title	Credits
DCH103	Programming Language Paradigm	04
Objective	<ol style="list-style-type: none"> 1. To understand the concept of programming languages and its features. 2. To understand basic paradigms of programming languages with variables, data types, decision making and control flow statements for designing the computer program. 3. To understand concepts of object orientation, data abstraction and implementation 	
Outcome	<ol style="list-style-type: none"> 1. Students will be able to understand general features of Computer Languages 2. Students will be able to use Functional Programming language to solve the problems 3. Students will be able to understand and implement the concepts of object orientation, data abstraction 	
Unit I	Introduction : Programming Languages and Paradigms, Programming language spectrum, Programming Environments, Functional Programming Language, Basic LISP Primitives, Procedure definition and binding, Predicates and Conditional, Procedure Abstraction and Recursion	
Unit II	Data types and Control Flow: Introduction, Primitive Data Types, Character String Types, User defined Ordinal types- Enumeration & Sub range types, Array types, Associative Arrays, Record types, Union Types, Pointer and Reference Types, Control Flow Expression Evaluation, Structured and Unstructured Flow, Sequencing, Selection, Iteration, Recursion	
Unit III	Subprograms and Implementing subprograms: Fundamentals of subprograms, Design issues for subprograms, Local referencing environments, Parameter passing methods, Parameters that are subprograms, Overloaded subprograms, Generic subprograms, , Co-routines, Semantics of Calls and Returns	
Unit IV	Programming language based on Logic (Turbo Prolog): Introduction, Facts, Objects and Predicates, Variables, Using Rules, Input and Output, Controlling execution – fail, repeat and cut predicate, Arithmetic operations, Compound objects, Dynamic database, Lists, Strings, Files	
Unit V	Names, Scopes, and Bindings : The Notion of Binding Time, Object Lifetime and Storage Management, Scope Rules, The meaning of Names in a Scope, The Binding of Referencing Environments, The Binding of Referencing Environments, Macro Expansion	
Suggested Readings	<ol style="list-style-type: none"> 1. Concepts of Programming Languages By Robert W. Sebesta, 8th Edition, Pearson Education. 2. Programming Language Concepts By Carlo Ghezzi, Mehdi Jazayeri, 3rd Edition, Wiley Publication 3. Programming Languages: Concepts and Constructs By Sethi Ravi, Pearson 2nd Edition 4. LISP By Patrick Henry Winston & Berthold Klaus Paul Horn, Addison Wesley Publishing Company 3rd Edition 	

	5. Introduction to Turbo Prolog By Carl Townsend, Sybex Inc, U.S., 2nd Revised edition
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Course Code	Course Title	Credits
DCH104	Introduction about Computer	04
	Basics of computer Organization of computer. Software and hardware. Input/output devices.	
Course Code	Course Title	Credits
DCH107	LAB1: Introduction about Computer	02

Course Code	Course Title	Credits
DCH105	Basic networking concepts	04
	Network topologies	
	Introduction to servers and network security	
	Types of servers: Files servers, Email Servers, Proxy servers etc. Basics of Internet and Intranet	
Course Code	Course Title	Credits
DCH108	LAB1: Basic networking concepts	02

Course Code	Course Title	Credits
DCH106	LAN, WAN, MAN, PAN, CAN.	04
	Networking Model The OSI model TCP/ IP Model Network adapters. Introducing protocols. Cabling and troubleshooting.	
Course Code	Course Title	Credits
DCH109	LAB1: LAN, WAN, MAN, PAN, CAN.	02

Course Code	Course Title	Credits
DCH201	Communication Skill –II	04
Objective	<ol style="list-style-type: none"> 1. To enhance learner's communication skills by giving adequate exposure (use of language lab) in listening and speaking skills and the related sub-skills. 2. To create learner's confidence in oral and interpersonal communication by reinforcing the basics of pronunciation. 3. To help learners to recognize and make use of sentence structures in English 	
Outcome	<ol style="list-style-type: none"> 1. Students will be aware of listening and speaking skills and the related sub-skills. 2. They can focus a lot on listening style to be the better speaker of English language 	
Unit I	Reading: Reading and understanding business letters, Reports and memos. Reading and understanding scientific texts. Reading a dictionary, thesaurus, and encyclopedia. Reading passages and poems.	
Unit II	Writing : Letters- Formal and Informal, Note taking and note making, Reports, Curriculum Vitae, Making advertisements for newspapers, Rearranging the jumbled sentences.	
Unit III	Use of Grammar and usage reference sources : Morphology: Word formation processes, Word classes, Phrase, Clause and Sentence, Punctuation and Capitalization. Common errors in the use of English.	
Unit IV	Aspects of Communication a) Communication through body language: i) Eye contact. ii) Gesture. iii) Posture. b) Communication through Technology: Email and PPT	
Unit V	Written Communication a) Comprehension c) Composition c) Précis Writing	
Suggested Readings	<ol style="list-style-type: none"> 1. Balasubramaniam, T. 1981. A Textbook of Phonetics for Indian Students. New Delhi: Macmillan. 2. Sethi, J. & P. V. Dhamija, 1997. A Course in Phonetics and Spoken English. New Delhi, Prentice-Hall. 3. Crystal, David. 1985. Rediscover Grammar with David Crystal Longman. 4. Bakshi, R. N. A Course in English Grammar Orient Longman. 	

Course Code	Course Title	Credits
DCH202	Environmental Studies	04
Objective	1. To create better understanding about the deteriorating condition of our environment among students	
Outcome	1. <i>Have better awareness and concern about current environmental issues</i> 2. <i>Develop a healthy respect and sensitivity to environment</i> 3. <i>Develop pride in social and environmental activism.</i>	
Unit I	The Multi-disciplinary Nature of Environmental Studies: Definition, scope and importance, Need for Public Awareness, Ecology and Ecosystems: Definition of Ecology, Structure and function of an ecosystem, Producers.	
Unit II	Consumers and Decomposers, Energyflow in the ecosystem, Ecological succession, Food chains, food webs and ecologicalpyramids, Introduction, types, characteristics features and function of – forest ecosystem,grassland ecosystem, desert ecosystem, aquatic ecosystem(ponds, streams, lakes, rivers,oceans, estuaries)	
Unit III	Biodiversity and its conservation: Introduction, genetic, species and ecosystem diversity definition, value of biodiversity, biodiversity at global, national and local levels,India as a mega diversity nation, hot spots of biodiversity, threats to biodiversity – habitatlose, poaching of wild life, man wild life conflicts, endangered and endemic species of India	
Unit IV	Biodiversity and its conservation: Introduction, genetic, species and ecosystem diversity definition, value of biodiversity, biodiversity at global, national and local levels,India as a mega diversity nation, hot spots of biodiversity, threats to biodiversity – habitatlose, poaching of wild life, man wild life conflicts, endangered and endemic species of India	
Unit V	Social issues and the environment: From unsustainable to sustainable development, urban problems related to energy, water conservation, rain water harvesting,water shed management, resettlement and rehabilitation of people- it's problems andconcerns, case studies, environmental ethics- environmental value relation ships,environmental ethics and species preservation, climate change, global warming, acid rain,Ozone layer depletion, nuclear accidents and holocaust, case studies, waste land reclamation,consumerism and waste products, legislation to protect the environment, environmentalprotection act, dir(prevention and control of pollution) act, water(prevention and control of pollution) act, wild life protection act, forest conservation act, environmental managementsystems(EMS),	
Suggested Readings	1. Kiran B Chokkas and others : "Understanding Environment", Sage 2004 2. P. VenugopalaRao, Environmental Science & Engineering, PHI 3. Benny Joseph: Environmental Studies, Tata McGraw Hill 4. Lester R Brown, Plan B: rescuing a Planet under stress and a civilization in trouble,Orient LongmanKurien Joseph & R Nagendran, Essentials of Environmental Studies,Pearson	

Course Code	Course Title	Credits
DCH203	Operating System Concepts	04
Objective	<ol style="list-style-type: none"> 1. To understand the Resources used in Operating System 2. To aware the working of DOS, Windows and Linux Operating system 3. To analyze the system using the various commands of O.S. 	
Outcome	<ol style="list-style-type: none"> 1. Students are able to execute the commands and interpret the outcome 2. Students are able to install, repair the operating systems 3. Students are able use various system calls 	
Unit I	Overview of Operating System: Operating System Concepts, Operating System Structure, Operating system as resource manager, Types of Operating systems and File systems: FAT16, FAT32, NTFS, Ext2, Ext3, SWAP, RAID.	
Unit II	Working of DOS, Windows and Linux Operating System : Introduction to DOS , Installation of DOS6.2, Introduction to windows, Installation of various windows versions, Installation of Linux, Introduction to Virtual Box, creation of Virtual Machines for DOS, Linux and windows using Virtual Box, Components of Windows GUI Environment, Components of Linux GUI Environment	
Unit III	DOS Commands : DOS internal Commands: MD, RD,CD, Date, Time, CUT, COPY, DIR, Type, REN, CLS, Path, VER,VOL, DEL, Prompt, Copy Con. External Commands: Sort, Find, Xcopy, Attrib, Format, Edit, label, diskcopy, chkdsk, tree, doskey, backup, restore.	
Unit IV	Linux commands : LS, tar, Man,CP, CAL, Date, Time, CAT, dig, grep, fgrep, egrep, alais,cd, chmod, chown, curl, df, diff, echo,, exit, find, finger, free, gzip, head, history, kill,mkdir, mv, passwd, ping, ps, pwd, shutdown, sudo, top, uname, whoami.	
Unit V	System calls: What is system call, need of system calls, how system call works, types of system calls, examples of system calls.	
Suggested Readings	<ol style="list-style-type: none"> 1. Abraham Silberschatz, Peter B. Galvin, G. Gagne, "Operating System Concepts", Sixth Edition, Addison Wesley Publishing Co., 2003 2. Stuart E Madnik and John J Donovan, "Operating Systems", MGH Publications 3. DuCharme, B. (1994). The Operating Systems Handbook: UNIX, OpenVMS, OS/400, VM and MVS. United Kingdom: McGraw-Hill. 4. Mark G. Sobell, A Practical Guide to Linux Commands,Editors, and Shell Programming" PHI Publication SECOND EDITION 5. Helmut Tornosdorf "MS-DOS for beginners" Abacus Data Becker Book 	

Course Code	Course Title	Credits
DCH204	Introduction to various networking devices:	04
	Routers. Switches. Modems. Hubs etc. Wired and Wireless technology.	
Course Code	Course Title	Credits
DCH207	LAB1: Introduction to various networking devices	02

Course Code	Course Title	Credits
DCH205	Inside the PC:	04
	Opening the PC and identification. Study of different blocks, Assembling and disassembling.	
Course Code	Course Title	Credits
DCH208	LAB1: Inside the PC	02

Course Code	Course Title	Credits
DCH206	Network basic and configuration:	04
	Setting IP addresses, Sharing files and folders. Network troubleshooting. PING test, ipconfig etc.	
	Types of Internet connections:	
	Dialup, Broadband, Leased Line, Wi-Fi, Wi-Max, 2G, 3G, 4G, WWW, E- mails, Search Engines, Social Networking. Cloud application. Audio-video Conferencing. Voice over Internet Protocol (VOIP). Recovery and backup. Essential security measures.	
Course Code	Course Title	Credits
DCH206	LAB1: Network basic and configuration:	02
