।। सा विद्या या विमुक्तये ।।
स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड
"ज्ञानतीर्थ" परिसर, विष्णुपूरी, 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
25 1994 - 2019 SILVER JUBILEE YEAR

ACADEMIC (1-BOARD OF STUDIES) SECTION

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न्यू मॉडेल डिग्री कॉलेज, हिंगोली येथील विज्ञान व तंत्रज्ञान विद्याशाखेतील पदवी स्तरावरील प्रथम वर्षाचे CBCS Pattern नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०१९–२० पासून लागू करण्याबाबत.

प रि प त्र क

या परिपत्रकान्वये सर्व संबंधितांना कळविण्यात येते की, **दिनांक ०८ जून २०१९ रोजी संपन्न झालेल्या ४४व्या मा. विद्या परिषद बैठकीतील ऐनवेळचा विषय क्र.११/४४–२०१९** च्या ठरावानुसार प्रस्तुत विद्यापीठाच्या **न्यू मॉडेल डिग्री कॉलेज, हिंगोली** येथील **विज्ञान व तंत्रज्ञान विद्याशाखेतील पदवी स्तरावरील प्रथम वर्षाचे** खालील विषयांचे **C.B.C.S. (Choice Based Credit System) Pattern** नुसारचे अभ्यासक्रम शैक्षणिक वर्ष २०१९–२० पासून लागू करण्यात येत आहेत.

1. Computer Science

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

'ज्ञानतीर्थ' परिसर,
विष्णुपुरी, नांदेड – ४३१ ६०६.
जा.क्र.: शैक्षणिक–१/परिपत्रक/न्यूमॉडिकॉहिं/पदवी–सीबीसीएस अभ्यासक्रम/२०१९–२०/**४६७**
दिनांक : ११.०७.२०१९.

स्वाक्षरित/–
उपकुलसचिव
शैक्षणिक (१–अभ्यासमंडळ) विभाग

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, न्यू मॉडेल डिग्री कॉलेज, हिंगोली.
४) साहाय्यक कुलसचिव, पदव्युत्तर विभाग, प्रस्तुत विद्यापीठ.
५) उपकुलसचिव, पात्रता विभाग, प्रस्तुत विद्यापीठ.
६) सिस्टम एक्सपर्ट, शैक्षणिक विभाग, प्रस्तुत विद्यापीठ.

Swami Ramanand Teerth Marathwada University's

New Model Degree College, Hingoli - 431513

Syllabus of Bachelor in Computer Science

(B.Sc. in Computer Science)

With effective from 2019-2020 and onwards

Swami Ramanand Teerth Marathwada University, Nanded

A Candidate shall be admitted to the first year of the B.Sc. in Computer Science (B.Sc. in C.S.) degree course only if he/she satisfies the following condition:

1. He/ She must have passed the higher secondary (multipurpose) examination conducted by H.S.C. board Government of Maharashtra with science / technical subjects Or an Examination of any statutory University and Board recognized as equivalent thereto.

OR

He / She must have passed examination prescribed at the end of second year of the junior college conducted by the H.S.C. board, Government of Maharashtra with English, Second language, Physics, Chemistry, Mathematics and or Biology or one of the technical subjects prescribed at the said examination as the optional or elective subjects or an examination recognized as equivalent thereto.

OR

Candidate having offered prescribed vocational course (MCVC) with Computer techniques/I.T./Electronics.

OR

Three years Diploma Course in engineering conducted by the board of technical Education, Maharashtra State.

2. He/ She must have passed at qualifying examination.

A candidate who has passed the B.Sc. in Computer Science examination of this university may be allowed to present himself subsequently at the degree examination in a subject or subjects other than those he has taken earlier provided that he puts in three years of attendance as a regular candidate for First, Second and Third year in the subject or subjects concerned excluding compulsory English, Second Language and remaining optional subject(s).

A candidate shall not be allowed to appear for such examination if he has passed the higher examination.

The Degree of Bachelor of Science (Computer Science) shall be conferred on candidate who has pursued a regular course of study consisting of six semesters in the relevant subject as prescribed and has appeared at the end examination and passed under the credit based system in all the examination prescribed for the Degree course in the faculty.

The pattern of the examination and the scope is indicated in the syllabus:

- The Number of students in a theory class shall not exceed 60.
- Maximum number of students in a batch for practical's in first four semesters shall consist of 20 students and for fifth & sixth semester the batch shall consist of 15 students.
- The rules for admission to the subsequent (next) semesters will be the same as per the University guidelines.
- For Each course the concerned teacher will have to conduct Class tests after completion every 02 units. The mark list of the same is to be submitted to the university authority within 7 working days after the completion of class tests.
- Final Examination will be conducted by the college based on the complete syllabus.
- Final Practical Examination will be conducted by the university and examiners will submit the marks in the prescribed format of students for practical examination to the university.

Student Intake Capacity:

The intake capacity for B.Sc. in Computer Science is 60 students in the first year.

PEO, PO and CO Mappings

1. **Program Name** : B.Sc.(Computer Science) at NDMC
2. **Program Educational Objectives**: After completion of this program, the graduates / students would

PEO I :Technical Expertise	Implement fundamental domain knowledge of core courses for developing effective computing solutions by incorporating creativity and logical reasoning.
PEO II : Successful Career	Deliver professional services with updated technologies in C**omputer Science** based career.
PEO III :Hands on Technology and Professional experience	Develop leadership skills and incorporate ethics, team work with effective communication & time management in the profession.
PEO IV :Interdisciplinary and Life Long Learning	Undergo higher studies, certifications and research programs as per market needs.

3. **Program Outcome(s):** Students / graduates will be able to

PO1: Apply knowledge of mathematics, science and algorithm in solving Computer problems.
PO2: Generate solutions by conducting experiments and applying techniques to analyze and interpret data
PO3: Design component, or processes to meet the needs within realistic constraints.
PO4: Identify, formulate, and solve problems using computational temperaments.
PO5: Comprehend professional and ethical responsibility in computing profession.
PO6: Express effective communication skills.
PO7: Recognize the need for interdisciplinary, and an ability to engage in life-long learning.
PO8: Actual hands on technology to understand it's working.
PO9: Knowledge of contemporary issues and emerging developments in computing profession.

PO10: Utilize the techniques, skills and modern tools, for actual development process
PO11: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings in actual development work
PO12: Research insights and conduct research in computing environment.

4. **Course Outcome(s):** Every individual course under this program has course objectives and course outcomes (CO). The course objectives rationally match with program educational objectives. The mapping of PEO, PO and CO is as illustrated below

5. Mapping of PEO& PO and CO

Program Educational Objectives	Thrust Area	**Program Outcome**	Course Outcome
PEO I	Technical Expertise	PO1,PO2,PO3,PO6	All core courses
PEO II	Successful Career	PO4,PO5,PO11,	All discipline specific electives courses
PEO III	Hands on Technology and Professional experience	PO8,PO10	All Lab courses
PEO IV	Interdisciplinary and Life Long Learning	PO7,PO9,PO12	All open electives and discipline specific electives

Swami Ramanand Teerth Marathwada University's New Model Degree College, Hingoli

Course Structure of B.Sc. (Computer Science)* w.e.f-AY 2019-2020

(* As per the strict guidelines of the UGC, New Delhi for syllabi at Model colleges)

Sem.			Course Code	Course Title	Credit	Total Credit
First Year B.Sc. (Computer Science)-NMDC						
First Sem	**Language Curriculum**		MCBCS- E-101	Functional English	4	**30**
			MCBCS-SL-102	Second Language (Marathi/Hindi/)	4	
	Major Curriculum	**Major Core**	MCBCS-103T	Introduction to Information Communication Technology (ICT)	5	
			MCBCS-104T	Programming in C	5	
		Major Supportive	MCBCS-105T	Mathematical Foundation for Computer Science	4	
		Major Applied	MCBCS-106P	Expression (Training), Creation (Project) and Self Evaluation based on MCBCS-101T & MCBCS-102T [Comp. Lab.1]	4	
	Life Skill Curriculum	**Job Oriented Soft Skill**	MCBCS-107	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR Communication Skills – 1	2	
		Value Oriented Courses	MCBCS-108	Office Automation	2	
Second Sem	**Language Curriculum**		MCBCS- E-201	Functional English	4	**30**
			MCBCS-SL-202	Second Language (Marathi/Hindi/)	4	
	Major Curriculum	**Major Core**	MCBCS-203T	Object Oriented Programming using C++	5	
			MCBCS-204T	Digital Electronics and Microprocessor	5	
		Major Supportive	MCBCS-205T	Statistical Method	4	
		Major Applied	MCBCS-206P	Expression (Training), Creation (Project) and Self Evaluation based on MCBCS-203T [Comp. Lab.2]	4	
	Life Skill Curriculum	**Job Oriented Soft Skill**	MCBCS-207	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR Communication Skills – 2	2	
		Value Oriented Courses	MCBCS-208	Computer System Architecture	**2**	

Second Year B.Sc. (Computer Science)-NMDC						
Third Sem	**Language Curriculum**		MCBCS-E-301	Functional English	4	**30**
			MCBCS-SL-302	Second Language (Marathi/Hindi/)	4	
	Major Curriculum	**Major Core**	MCBCS-303T	RDBMS	5	
			MCBCS-304T	Java Programming	5	
		Major Supportive	MCBCS-305T	Data Structure and Algorithms	4	
		Major Applied	MCBCS-306P	Expression (Training), Creation (Project) and Self Evaluation based on MCBCS-303T & MCBCS-304T [Comp. Lab. 3]	4	
	Life Skill Curriculum	**Job Oriented Soft Skill**	MCBCS-307	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR Numerical Abilities	2	
		Value Oriented Courses	MCBCS-308	Cyber Forensics	2	
Fourth Sem	**Language Curriculum**		MCBCS-E-401	Functional English	4	**30**
			MCBCS-SL-402	Second Language (Marathi/Hindi/)	4	
	Major Curriculum	**Major Core**	MCBCS-403T	Windows Programming using VB	5	
			MCBCS-404T	Advanced Operating Systems	5	
		Major Supportive	MCBCS-405T	Data communication and Networking	4	
		Major Applied	MCBCS-406P	Expression (Training), Creation (Project) and Self Evaluation based on MCBCS-403T [Comp. Lab.4]	4	
	Life Skill Curriculum	**Job Oriented Soft Skill**	MCBCS-407	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR Logical Reasoning	2	
		Value Oriented Courses	MCBCS-408	Multimedia Development	2	

Third Year B.Sc. (Computer Science)-NMDC						
Fifth Sem	**Major Curriculum**	**Major Core**	MCBCS-501T	Web Programming Techniques	5	**30**
			MCBCS-502T	C# Programming	5	
		Major Supportive	MCBCS-503T	Software Engineering	4	
		Major Applied	MCBCS-504P	Expression (Training), Creation (Project) and Self Evaluation based on MCBCS-501T & MCBCS-502T [Comp. Lab.5]	4	
			MCBCS-505	Software Project Management	4	
	Life Skill Curriculum	**Job Oriented Soft Skill**	MCBCS-506	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR System Analysis and Design (SAD)	4	
		Value Oriented Courses	MCBCS-507	Advanced Java Programming	4	
Sixth Semester	**Major Curriculum**	**Major Core**	MCBCS-601T	Essentials of Computer Security	5	**30**
			MCBCS-602T	Digital Image Processing	5	
		Major Supportive	MCBCS-603T	Web Development using PHP Programming	4	
		Major Applied	MCBCS-604P	Expression (Training), Creation (Project) and Self Evaluation based on MCBCS-603T [Comp. Lab.6]	4	
			MCBCS-605	Project Development activity and Seminar	4	
	Life Skill Curriculum	**Job Oriented Soft Skill**	MCBCS-606	University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR Introduction to Open Source Software	4	
		Value Oriented Courses	MCBCS-607	Software Quality Testing	4	

THE DETAILED SYLLABUS IS AS BELOW,

Scheme of Evaluation (Marks Distribution)

For 04 credits course

Internal : 50 Marks University: 50 Marks Total: 100 Marks

Credits: 4 Hours per Week : 5 Total Lectures: 60

A) Internal : Total 50 Marks

Sr. No.	Title	Marks
1	Class Test I	15
2	Class Test I	15
3	Assignment	20
Total		50 Marks

For 05 credits course

Internal : 75 Marks University: 50 Marks Total: 125 Marks

Credits: 5 Hours per Week : 5 Total Lectures: 60

A) Internal : Total 75 Marks

Sr. No.	Title	Marks
1	Class Test I	15
2	Class Test I	15
3	Assignment	20
4	Seminar	25
Total		75 Marks

B) University Assessment: Total 50 Marks

Note: 1) Q. No. 1 is compulsory and from Q. No. 2 to Q. No 8 solve any four.

2) All questions carry equal marks.

Q. No.	**Format**	**Marks**
1.	Write a short note on following: a) b) c) d) e)	2 x 5 = 10
2.	Brief Question	10
3.	Brief Question	10
4	Brief Question	10
5.	Write brief note on the following (Solve any two) a) b) c)	5*2 = 10
6.	Brief Question	10
7.	Brief Question	10
8.	Brief Question	10

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY'S

NEW MODEL DEGREE COLLEGE, HINGOLI

Syllabus for B.Sc. (CS) I Semester

Paper No.: MCBCS- E-101 **Functional English**

Internal: 50 University: 50 Total: 100 Marks Credits: 4
Hours per Week: 4 Total Lectures: 60

Course Objectives: 1) To encourage the students to speak English
2) To enable students to use English in day-to-day communication
3) To build up their confidence in the usage of English
4) To expose them to light prose and poetry
5) To develop their written communicative competence
Course Outcome: Confident students with readiness for competitive exams

Unit – I

Prose:
1) The Bet – Anton Chekov
2) Socrates and the Schoolmaster – F. L. Brayne
3) An Astrologer's Day – R. K. Narayan
4) The Gift of the Magi – O' Henry
5) With the Photographer – Stephen Leacock

Unit – II

Spoken Communication:
1) Meeting People, Exchanging Greetings and Taking Leave
2) Introducing Yourself
3) Introducing People to Others
4) Answering the Telephone and Asking for Someone
5) Dealing with a Wrong Number
6) Taking and Leaving Messages
7) Making Inquiries on the Phone
8) Calling for Help in an Emergency

Unit – III

Grammar and Vocabulary:
Articles, prepositions, modal auxiliaries, antonyms, synonyms, one-word substitutes

Unit – IV

Written Communication:
Summarizing

Reference Books:

1. **'Prism: Spoken and Written Communication, Prose & Poetry'published by Orient Longman**

Swami Ramanand Teerth Marathwada University's

New Model Degree College, Hingoli

Syllabus for B.Sc. (CS) I Semester

Paper No.: MCBCS-SL-102 **Second Language (Marathi/Hindi/)**

Internal: 50 University: 50 Total: 100 Marks Credits: 4
Hours per Week: 4 Total Lectures: 60

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY'S

NEW MODEL DEGREE COLLEGE, HINGOLI

Syllabus for B.Sc. (CS) I Semester

Paper No.: MCBCS-103T Introduction to Information Communication Technology (ICT)
Internal: 75 University: 50 Total: 125 Marks Credits: 5
Hours per Week: 5 Total Lectures: 60

- **Course Objectives:** The objective of this course is to study the fundamentals of Computer System and to learn how computer systems work and underlying principles
- **Course Outcome : Awareness of ICT**

Unit – I

Introduction: Definition of Computer, Characteristics of Computer, Evaluation of Computer, Computer Generation

Basic Computer Organization: Block Diagram, Input Unit, Output Unit, Storage Unit, Arithmetic Unit, Control Unit, Central Processing Unit, the System Concept.

Number Systems: Non-Positional Number Systems, Positional Number Systems: Binary, Octal, Decimal, Hexadecimal. Conversion from one number system to another number system.

Binary Arithmetic: Addition, Subtraction, Multiplication, Division. Adaptive method.

Computer Codes: BCD, EBCDIC, ASCII, UNICODE, Collecting Sequence.

Unit – II

Main Memory: Storage Evolution criteria, Main Memory Organisation, Main Memory Capacity, Types of Memory Chips, Cache Memory.

Secondary Memory: Sequential and Direct Access Devices, Magnetic Taps, Magnetic Chips, Optical Disks, Memory Storage Devices (Pen Drives, SD/MMC), Mass Storage Devices

Unit – III

Input Devices: Keyboard, Point-and-draw devices, Data scanning devices, Digitizer, Electronic Card Reader, Speech Recognition Devices, and Vision input devices.

Output Devices: Monitor, Printers, Plotter, Screen image projectors, Voice response systems.

Unit – IV

Computer Software: Software, Relationship between Hardware and Software, Types of Software.

Internet: Definition, History, Basic Services (E-mail, FTP, Telnet, Usenet News), WWW, Search Engine, Use of Internet.

Classification of Computers: Notebook, PCs, Workstation, Mainframe, Super, Clint and Server, Hand held computers (Tablet, PDA, Smartphone).

Reference Books:

1. Computer Fundamentals (Sixth Edition), P.K. Sinha & Priti Sinha
2. Foundation of Computer, P.K. Sinha

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY'S

NEW MODEL DEGREE COLLEGE, HINGOLI

Syllabus for B.Sc. (CS) I Semester

Paper No.: MCBCS-104T **Programming in C**
Internal: 75 University: 50 Total: 125 Marks Credits: 5
Hours per Week: 5 Total Lectures: 60

Course Objectives:

- To be able to build own logic for a given problem and finally develop one's own programs
- To understand the syntax and the semantics of C programming language.

Course Outcome : Competency in Programming Languages

Unit – I

Introduction: What is C, Getting Started with C ,The C Character Set, Constants, Variables and Keywords, Types of C Constants ,Rules for Constructing Integer Constants, Rules for Constructing Real Constants, Rules for Constructing Character Constants, Types of C Variables, Rules for Constructing Variable Names, C Keywords, The First C Program, Compilation and Execution, Receiving Input, C Instructions, Type Declaration Instruction, Arithmetic Instruction, Integer and Float Conversions, Type Conversion in Assignments, Hierarchy of Operations, Associativity of Operators, Control Instructions in C.

Unit – II

The Decision Control Structure: Decisions, The *if* Statement, The Real Thing, Multiple, Statements within *if* , The *if-else* Statement, Nested *if-elses,* Forms of *if* , Use of Logical Operators, The *else if* Clause, The ! Operator, Hierarchy of Operators Revisited, A Word of Caution, The Conditional Operators, Decisions Using *switch,* The Tips and Traps, *switch* Versus *if-else* Ladder, The *goto* Keyword

The Loop Control Structure : Loops, The *while* Loop, Tips and Traps, More Operators, The *for* Loop, Nesting of Loops, Multiple Initializations in the *for* Loop, The Odd Loop, The *break* Statement, The *continue* Statement, The *do-while* Loop.

Unit – III

Functions & Pointers: What is a Function, Why Use Functions, Passing Values between Functions, Scope Rule of Functions, Calling Convention, One Dicey Issue, Advanced Features of Functions, Function Declaration and Prototypes, Call by Value and Call by Reference,

Pointers: An Introduction to Pointers, Pointer Notation, Back to Function Calls, Conclusions, Recursion, Recursion and Stack, Adding Functions to the Library.

Unit – IV

Arrays: What are Arrays, Array Initialization, Bounds Checking, Passing Array Elements to a Function, Pointers and Arrays, Passing an Entire Array to a Function, Two Dimensional Arrays, Initializing a 2-Dimensional Array, Memory Map of a 2-Dimensional Array, Pointers and 2-Dimensional Arrays, Pointer to an Array Passing 2-D array to a Function, Array of Pointers, Three Dimensional Array.

Reference Books :

1. Let Us C, Kanitkar
2. Ansi C, Balaguru Swami
3. Programming in C, Khanale

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY'S

NEW MODEL DEGREE COLLEGE, HINGOLI

Syllabus for B.Sc. (CS) I Semester

Paper No.: MCBCS-105T **Mathematical Foundation for Computer Science**
Internal : 50 University: 50 Total: 100 Marks Credits: 4
Hours per Week : 4 Total Lectures: 60

Course Objectives:

- To get the knowledge about the Sets, matrices, relational functions etc..
- To study the basics of differential and integral calculus

Course Outcome : Development of Analytical Mind

Unit – I

Set Theory: Introduction, Basic Concepts, Terminology and notation, Sub set, Operation on sets, Algebra sets, Venn Diagram, Collection of sets, Multiset, Countable and Uncountable sets, Ordered pairs and Cartesian product, Computer representation of sets, fuzzy sets.

Unit – II

Relation and Function: Introduction, Relations on Sets, Some operations on sets, Types of Relations in a set, Properties of Relations, Representation of Relations, Composition of Relations, Closure of Relations.

Function: Introduction, Classification of Functions, Types of Functions, Composition of Functions, Recursively defined function, Some Special Function.

Unit – III

Graph Theory: Introduction, Basic terminology, Simple graph, Multigraph, pseudo graph, Degree of vertex, Types of Graphs, Subgraphs and Isomorphic graphs, Operation of Graphs, Paths, Cycles and Connectivity, Eulerian and Hamiltonian graph, Shortest path problems, Representation of graph, Planar Graphs, Graph Coloring.

Unit – IV

Trees: Introduction, Trees and their properties, Spanning Tree, Binary Tree, Tree Traversal.

Probability: Introduction, Random Experiment, Sample Space, Set Notations, Probability Events, Compound Event, Conditional Probability.

Reference Books :

1. A Textbook of Discrete Mathematics, Swapan Kumar Sarkar, S.Chand
2. Discrete Mathematical Structures with Application to Computer Science, Tremblay and Manohar, McGraw Hill.
3. Advanced Engineering Mathematics, Erwin Keryzig
4. Foundations of Discrete Mathematics, K.D.Joshi, Wiley Eastern Ltd.
5. Discrete Mathematics and Its Application, Kenneth H. Rosen, McGraw Hill
6. Discrete Mathematical Structures, Kolman & Ross, PHI

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY'S

NEW MODEL DEGREE COLLEGE, HINGOLI

Syllabus for B.Sc. (CS) I Semester

Paper No.: MCBCS-106P **Expression (Training), Creation (Project) and Self Evaluation based on MCBCS-101T & MCBCS-102T (Comp.Lab.1)**

Internal: 50 University: 50 Total: 100 Marks Credits: 4
Hours per Week: 4 Total Learning Hours: 120 (3 x 40) in Comp. Lab.

Unit – I (Internal: 20 Marks)

Assignment Expression: Training for installation of some popular operating systems, Experience of working with operating systems, Comparisons among various operating systems.

Unit –II (Internal: 20 Marks)

Creation: Project report preparation based

Unit – III (Internal: 10 Marks)

Self Evaluation: Based on checklist provided by instructor.

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY'S

NEW MODEL DEGREE COLLEGE, HINGOLI

Syllabus for B.Sc. (CS) I Semester

Paper No.: MCBCS-107 **University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR Communication Skills – 1**

Scope for Communication Skills – 1 Credits: 2

Objectives of the Course:

1. To make a comprehensive use of English in day-to-day life.
2. To help Students develop the ability to learn and contribute critically.
3. To develop the writing skills of the students.
4. To help the students to understand the basic usages of English.

Course outcome:

By the end of this course students should be able to:

1. Understand and demonstrate Basic English usages for their different purposes.
2. Clear entrance examination and aptitude tests.
3. Write various letters, reports required for professional life.

Unit I

1. Basic English Grammar **15**

1.1 Noun
1.2 Verb
1.3 Adjective
1.4 Adverb

Unit II

2. Transformation of Sentences: **10**

2.1 Simple to Complex
2.2 Complex to Compound

Unit III

3. Writing Skills **15**

3.1 Essay Writing
3.2 Email Writing
3.3 Resume

Unit IV

4. Group Discussion **10**

4.1 Group Discussion:
4.2 Seminar Conference
4.3 Meeting
4.4 Interview

References:-

1 Fundamental of Computer –5th& 6th Edition, P.K.Sinha, BPB Publication
2 Fundamental of Computer - V. Raja Raman, PHI Publication

Paper No.: MCBCS-108 **Office Automation** Credits: 2

Objectives

The main objective of Office Automation is to enhance and upgrade the existing system by increasing its efficiency and effectiveness. It will simplify the task and reduce the paper work means the software improves the working methods by replacing the existing manual system with the computer-based system.

Outcomes

After completion of this course student will be able to understand the computer software, hardware, made available to simplify and automate a variety of office operations such as data processing, data manipulating and data presentation with various application those are presents in Microsoft office tools packages.

Unit – I

Introduction to Ms-Word

- Uses of Ms- Word.
- Introduction to Ms-Word Windows: Title bar, Menu bar, Toolbar, Standard Toolbar, Formatting toolbar, The Ruler bar, Insertion point, Scroll Bars, The status bar.
- Dialog Boxes: Command buttons, check boxes, Drop-down lists, tabs, radio Buttons, Increment buttons.
- Wizards and Templates.
- Basic Text Editing: Cut, Copy, Paste, Undo, Redo, Delete

Unit – II

Formatting:

- Character formatting by using Font dialog box, Paragraph Formatting by using Keeping text together, Adding borders and shading, page and section formatting, page setup, Numbering pages.

Unit – III

Working with Tables and Columns

- History of table, creating a table, entering text in a table using table tools.
- Changing column's width with Auto fit, Gridlines.
- Merging Cells
- Table Formatting:-Sorting tables, copying tables, deleting tables.
- Mail merge

Unit – IV

Introduction to Ms-Excel

- Spreadsheet overview, starting excel, creating spreadsheet, excel menu.
- Working with Formulas and Functions: Introduction using basic formulae, advance formulae, designing formulae
- Formatting: Types of formatting:

1. Using borders, color and patterns
2. Conditional formatting

Introduction to Power point

- Creating PowerPoint Presentation.

Introduction to MS-Access

- Creation Of files in Ms-Access.

Reference Books:

1. Microsoft Office 2000 By Complete (Bpb)
2. Mastering Word 2000 By Mansfield (Bpb)
3. Teach Yourself Ms-Excel 2000 In 24 Hours (Bpb)

SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY'S

NEW MODEL DEGREE COLLEGE, HINGOLI

Syllabus for B.Sc. (CS) II Semester

Paper No.: MCBCS- E-201 **Functional English**
Internal : 50 University: 50 Total: 100 Marks Credits: 4
Hours per Week : 4 Total Lectures: 60

Objectives of the Course:

5. To make a comprehensive use of English in day-to-day life.
6. To help Students develop the ability to learn and contribute critically.
7. To develop the writing skills of the students.
8. To help the students to understand the basic usages of English.

Course outcome:
By the end of this course students should be able to:

4. Understand and demonstrate Basic English usages for their different purposes.
5. Clear entrance examination and aptitude tests.

Write various letters, reports required for professional life

UNIT I

Poetry:
1) The Felling of the Banyan Tree – Dilip Chitre
2) Stay Calm – Grenville Kleiser
3) On Television – Roald Dahl
4) Say Not the Struggle Naught Availeth – Arthur Hugh Clough
5) Abou Ben Adhem – James Leigh Hunt

UNIT II

Spoken Communication:
1. Getting People's Attention and Interrupting
2. Giving Instructions and Seeking Clarifications
3. Making Requests and Responding to Requests
4. Asking for Directions and Giving Directions
5. Thanking Someone and Responding to Thanks
6. Inviting and Accepting and Refusing an Invitation
7. Apologizing and Responding to an Apology
8. Asking for, Giving and Refusing Permission

UNIT III

Grammar and Vocabulary:
Articles, prepositions, modal auxiliaries, antonyms, synonyms, one-word substitutes

UNIT IV

Written Communication:
Note Making and Note Taking

Reference Book: -

1. **'Prism: Spoken and Written Communication, Prose & Poetry' published by Orient Longman**

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Syllabus for B.Sc. (CS) II Semester

Paper No.: MCBCS-SL-202 **Second Language (Marathi/Hindi/)**

Internal : 50 University: 50 Total: 100 Marks Credits: 4
Hours per Week : 4 Total Lectures: 60

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NEW MODEL DEGREE COLLEGE, HINGOLI

Syllabus for B.Sc. (CS) II Semester

Paper No.: MCBCS-203T **Object Oriented Programming using C++**
Internal: 75 University: 50 Total: 125 Marks Credits: 5
Hours per Week: 5 Total Lectures: 60

Course Objectives:

- An understanding of all the components of advance C++.
- An understanding of advanced practical issues, including memory management,
- The course will helps to student for complex declarations and expression evaluation.

Course Outcome : Competency in Object oriented programming

UNIT I

Introduction to OOPs

Object Oriented Programming, Basic concepts of OOPS, Benefits of OOPs.

Introduction to C ++

Tokens, Keywords, Identifiers, Constant, Data types, variables, Scope resolution Operator, I/O statements, Structure of C++ program, Control statements, Looping statements, Type casting, Arrays, Pointer, References, Structure and Unions

UNIT II

Function in C++

Call by reference, Return by reference**,** Function overloading and default arguments, Inline function, Static class members, Friend functions.

UNIT III

Class & Object:

Define Class, Members, Object, Visibility Modes, Static members, Defining Data Members and Member Functions, Nested Classes, Local Classes, Pointer to members & Pointer to Objects, Constructors & Destructors

UNIT IV

Operator overloading

Overloading Unary Operators, Overloading Binary Operators, Overloading using Friend Function, Rules for Overloading.

Inheritance & Polymorphism:

Types of Inheritance with Examples, Virtual Base Classes and Abstract Base Classes, Polymorphism, Constructor and Destructor in Derived Class, Virtual Functions and Pure Virtual Function

Reference Books: -

1. Object Oriented Programming with C++ by Robert Lafore
2. Object Oriented Programming with C++ by E. Balagurusamy
3. Object Oriented Modeling and Design by James Rambough
4. The Complete Reference C++ by Herbert Shildth
5. Let us C++ by – Yashwant Kanitkar

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NEW MODEL DEGREE COLLEGE, HINGOLI

Syllabus for B.Sc. (CS) II Semester

Paper No.: MCBCS-204T **Digital Electronics and Microprocessor**
Internal: 75 University: 50 Total: 125 Marks Credits: 5
Hours per Week: 5 Total Lectures: 60

Course Objectives:

- To learn about the design principles of different digital electronic circuits
- To study the applications of above circuits
- Student will understand the 8086 microprocessor.
- Using this course student will familiarize with the architecture of microprocessors.
- Make the student aware about the functional organization of physical components and architecture of a 8086 Microprocessor Kit.

Course outcome: Easy with Hardware terminology and digital circuits

Unit – I

Boolean Algebra and Logic Circuits: Fundamental of Boolean Algebra, Postulates of Boolean Algebra, Principle of Duality, Theorems of Boolean Algebra, Boolean Functions, Logic Gates, Logic Circuits, Flip-flop, Counters, Registers

Unit – II

Introduction to Microprocessor: Evolution, Microcontroller, Embedded Microprocessor, 16-Bit Intel Microprocessor Architecture, Pin Description of 8086, Operating modes, Minimum & Maximum modes, Register Organization, BIU & EU, Interrupts.

Unit – III

8086 Instruction Set: Instruction Groups, Addressing Mode Byte, Segment Register Selection, 8086 Instructions.

Unit – IV

Assembly Language Programs for 8086: To find largest/smallest number in a array, To find Largest 8-bit number, Ascending order, Descending order, Byte move, Word move, Byte/Word move using REP instruction, sum of 16-bits/32-bits number series, Multibyte addition and etc.

Standards for Bus Architecture and Ports: ISA, EISA, MCA, PCI, VESA, USB, IDE, EIDE, ATA, ATAPI and SCSI.

Reference Books :

1. Modern Digital Electronics, R.P. Jain, Tata McGraw Hill
2. Advance Microprocessor and Interfacing, B.Ram, Pearson
3. Digital Computer Electronics, Malvino & Brown, Tata McGraw Hill
4. Computer System Architecture, M. Morris Mano, Pearson
5. Computer Organisation and Design, P. Pal Chaudhari, PHI

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NEW MODEL DEGREE COLLEGE, HINGOLI

Syllabus for B.Sc. (CS) II Semester

Paper No.: MCBCS-205T **Statistical Methods**
Internal : 50 University: 50 Total: 100 Marks Credits: 4
Hours per Week : 4 Total Lectures: 60

Course Objectives:

- To acquaint students with various statistical methods and their applications in different Fields.
- To cultivate statistical thinking among students.
- To develop skills in handling complex problems in data analysis and research design.

Course Outcome: Establishment of quantitative components

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Unit – I

Population, Sample and Data Condensation: Definition and scope of statistics, concept of population and sample with Illustration, Raw data, attributes and variables, classification, frequency distribution, Cumulative frequency distribution.

Unit – II

Measures of Central Tendency: Concept of central Tendency, requirements of a good measures of central tendency, Arithmetic mean, Median, Mode, Harmonic Mean, Geometric mean for grouped and ungrouped data.

Unit – III

Measures of Dispersion: Concept of dispersion, Absolute and relative measure of dispersion, range, variance, standard deviation , Coefficient of variation.

Permutations and Combinations: Permutations of 'n' dissimilar objects taken 'r' at a time (with or without repetitions). nPr = n! / (n-r) ! (without proof). Combinations of 'r' objects taken from 'n' objects. nCr = n! / (r! (n-r) !) (without proof). Simple examples, Applications.

Unit – IV

Sample space, events and Probability: Experiments and random experiments. Ideas of deterministic and nondeterministic experiments. Definition of - sample space, discrete sample space, events. Types of events, Union and intersections of two or more events, mutually exclusive events, Complementary event, Exhaustive event. Simple examples.

Classical definition of probability, Addition theorem of probability without proof (upto three events are expected), Definition of Conditional Probability Definition of independence of two events, simple numerical problems.

Reference Books :

1) S.C. Gupta - Fundamentals of Statistics – Sultan chand & sons, Delhi.
2) D.N. Elhance – Fundamentals of Statistics – Kitab Mahal, Allahabad.
3) Montgomery D.C. – Statistical Quality Control John Wiley and sons.
4) Goon, Gupta and Dasgupta – Fundamentals of Statistics - The world press private ltd. Kolkata.
5) Hogg R.V. and Craig R.G. – Introduction to Mathematical Statistics Ed 4 (1989) - Macmillan Pub. Co. New York .
6) Gupta S.P. – Statistical Methods, Pub – Sultan Chand and sons, New Delhi

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NEW MODEL DEGREE COLLEGE, HINGOLI

Syllabus for B.Sc. (CS) II Semester

Paper No.: BSCCS-206P **Expression (Training), Creation (Project) and Self Evaluation based on MCBCS-203T(Comp.Lab.2)**

Internal : 50 University: 50 Total: 100 Marks Credits: 4
Hours per Week : 4 Total Learning Hours: 120 (3 x 40) in Comp. Lab.

Unit – I (Internal: 20 Marks)

Assignment Expression: Training for Assembly programming, Training for C Programming.

Unit –II (Internal: 20 Marks)

Creation: Individual Minor Project using C language.

Unit – III (Internal: 10 Marks)

Self Evaluation: Based on checklist provided by instructor.

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NEW MODEL DEGREE COLLEGE, HINGOLI

Syllabus for B.Sc. (CS) II Semester

Paper No.: MCBCS-207 **University recognized MOOC (NPTEL / SWAYAM / others) OR Intra / Inter Departmental courses OR Communication Skills – 2**

Scope for Communication Skills – 2 Credits: 2

Objectives of the Course:

1. A comprehensive use of English in day-to-day life.
2. To help Students develop the ability to learn and contribute critically.
3. To develop the writing skills of the students.
4. To help the students to understand the basic usages of English.

Course outcome:

By the end of this course students should be able to:

1. Understand and demonstrate Basic English usages for their different purposes.
2. Clear entrance examination and aptitude tests.
3. Write various letters, reports required for professional life.

Unit I

1. Practical usage of English:

1.1 Group Discussion
1.2 Seminar and Conference
1.3 Interview

Unit II

2. Business Communication:

2.1 E-mail and Cover letter writing
2.2 Resume and CV
2.3 Report writing

Unit III

3. Functional English

3.1 Articles
3.2 Prepositions
3.3 Conjunctions
4.4 Quantifiers

Unit IV

4. Basic Structures:

4.1 Phrases
4.2 Clauses
4.3 Sentence: Basic Structures

Reference Books -

1) Modern English Grammar -L. S. Deshpande (creative Publication)
2) A Practical English Grammar - A. J. Thomson. (Oxford University)
3) Developing Communication Skills.- Krishna Mohan & Meera Banerji (Macmillan India)
4) Macmillan Foundation English. - R. K. Dwivedi & a. Kumar (Mammalian India Ltd)
5) Writing English for You- G. Radhakrishna Pillai (Emerland Publication)
6) High School English Grammar & Composition - Wren & Martin (S. Chand)

Paper No.: MCBCS-208 **Computer System Architecture**

Credits: 2

Objectives

Through this paper Student should learn basic principles of computer. The paper is designed to aim at importing basic level of Computer.

Outcome

To learn Basic Function of Devices like I/O, HDD etc. To Understand the Fundamental of Software and Hardware. Understand the Concept of Operating System and Network.

Unit I

Number system

Introduction to Number system, Binary, Octal, Hexadecimal, binary-complement representation, BCD-ASCII, conversion of numbers from one Number system to the other, binary arithmetic Signed numbers, 1's and 2's complement method,

Unit II

Logic Gates

Basic Logic Gates – Basic Theorems and Properties of Boolean Algebra – NAND, NOR implementation – Sum of Products – Product of Sums, Karnaugh ma, Tabulation Method, Don't
Care Conditions. Full Adder, Half Adder,

Unit III

Processor Organization

General Register Organization - ALU - Instruction codes - Instruction Formats - Stack Organization - Addressing modes

Unit IV

Control Unit

Register transfer and micro operations, Timing and Control, Control Memory, micro programming, Hard wired control

Suggested Readings:

1. M. Morrris Mano, "Digital Logic and Computer Design", PHI.
2. M. Morrris Mano, "Computer system architecture" Third Edition, PHI/ Pearson Education.
3. Albert Paul Malvino, Donald P. Leach, "Digital Principles and Applications", Tata Mc GrawHill Pub. Company Ltd.
4. J.P.Hayes, "Computer Architecture and Organization" Tata Mc Graw Hill Pub Ltd