NATIONAL SANSKRIT UNIVERSITY

Erstwhile RASHTRIYA SANSKRIT VIDYAPEETHA

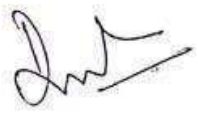
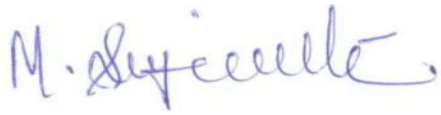
TIRUPATI – 517 507 (AP)

DEPARTMENT OF COMPUTER SCIENCE

F.No.NSUT/BoS/Computer Science/2021 Date: 21st May, 2021

Minutes of the meeting of the Board of Studies of Computer Science held on 28th April, 2021 at 6.00PM and 4th May, 2021 at 6.00PM through Online Meeting (https://meet.google.com/iao-tmos-jdq)

MEMBERS PRESENT

			Signature
1	**Prof. R.J.Ramasree,** Professor & Head, Dept of Computer Science, National Sanskrit University, Tirupati	Chairman	
2	**Prof. G. Sreedhar,** Professor, Dept of Computer Science, National Sanskrit University, Tirupati	Member	
3	**Dr.B.Chandrasekharam,** Asso. Professor, Dept of Computer Science, National Sanskrit University, Tirupati	Member	
4	**Dr. G. Nagalakshmi,** Asst. Professor, Dept of Computer Science, National Sanskrit University, Tirupati	Member	
5	**Dr. Mary Sujatha,** Asst. Professor, Dept of Computer Science, National Sanskrit University, Tirupati	Member	
6	**Prof. M. Padmavathamma,** Professor, Sri Venkateswara University, Tirupati	External Member	
7	**Prof. T. Sudha ,** Professor, Sri PadmavathiMahila University, Tirupati	External Member	

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TIRUPATI – 517 507 (AP)

DEPARTMENT OF COMPUTER SCIENCE

F.No.NSUT/BoS/Computer Science/2021 Date: 21st May, 2021

BOARD OF STUDIES RESOLUTIONS

Minutes of the meeting of the Board of Studies of Computer Science held on 28th April, 2021 at 6.00PM and 4th May, 2021 at 6.00PM through Online Meeting (https://meet.google.com/iao-tmos-jdq)

In view of the circular issued by Dean, Academic Affairs dated 26th April, 2021, it is considered to revise the syllabus of all courses offered by the Computer Science department and many suggestions is given below.

1. Prak Sastri

Syllabus of Prak Sastri was not modified in the last BOS. Hence the syllabus was reviewed and little modifications are made to the existing syllabus.

2. Sastri Sammanita/ B.A. Honours/B.Sc.. Yoga Computer Applications (3 Year Course)

For any UG & PG Course in Computer Science, it is mandatory to do a project work in the last Semester. Hence if the students opt in the beginning of III year semester that they only study 3 year UG program then they do project work at the VI semester of 3 year UG program. Accordingly the syllabus was prepared.

3. Sastri Sammanita/ B.A. Honours/B.Sc. Yoga Computer Applications (4 Year Course)

As per NEP 2020 guide lines, the syllabus was prepared. More focus is given on research in 4th year. The student is encouraged to study and to give a seminar on the literature survey of the selected topic of the project work and paper publication /presentation along with submission of thesis is proposed.

4. B.Sc Computer Science (3 Year Course)

Since the B.Sc. Degree is being offered to keep in pace with the common core syllabus observed in state universities with an intension to accommodate the learners having interest to learn sastras but already engaged in programmes offered by state universities, it is resolved to adapt common core syllabus that would be adapted by state universities when adapting NEP2020 BSc third year common core syllabus is not annexed herewith as APCHE has not released third year syllabus.It is deemed to adopt third year Common core syllabus whenever APSCHE releases the syllabus.

5.M. Sc. Computer Science and Sanskrit Language Technologies (1 Year Course)

The syllabus was prepared to suit the requirement for the PG program in Computer Science and Sanskrit Linguistics keeping in view of Sastri Sammanita 4 year program the syllabus is offered accordingly for the one year program.

6. M. Sc. Computer Science and Sanskrit Language Technologies (2 Year Course)

The syllabus was prepared to suit the requirement for the PG program in Computer Science and Sanskrit Linguistics keeping in view of Sastri Sammanita 3 year program

7. Sastri Sammanita/ B.A. Honours/B.Sc Yoga Web Technology (3 Year Course)

In view of work load, the number of students admitted and NEP 2020 guidelines, it is decided to discontinue these program from the academic year 21-22.

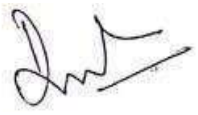
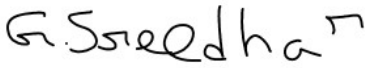
However web technologies, the syllabus first prescribed and enclosed which is applicable only for the present batch.

8. Sastri Sammanita/ B.A. Honours/B.ScYoga DTP (3 Year Course)

In view of work load, the number of students admitted and NEP 2020 guidelines, it is decided to discontinue this program from the academic year 21-22.

The number of students in DTP and web technologies are 0 and 3 respectively.

However the prime part content of these courses is offered in Sastri Sammanita (Both for 3-year and 4-year degree courses).

S. No.	BOS Member	Signature
1	**Prof. R.J.Ramasree** Chairman	
2	**Prof. G. Sreedhar** Member	
3	**Dr.B.Chandrasekharam** Member	
4	**Dr. G. Nagalakshmi** Member	
5	**Dr. Mary Sujatha** Member	
6	**Prof. M. Padmavathamma** External Member	
7	**Prof. T. Sudha** External Member	

NATIONAL SANSKRIT UNIVERSITY

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TIRUPATI – 517 507 (AP)

DEPARTMENT OF COMPUTER SCIENCE

Scheme of the courses

Sastri Sammanita/ B.A. Honours/B.Sc. Yoga (Computer Applications)

Annexure – B

YEAR	SEM	PAPER NO.	SUBJECT	PAGE NO.	THEORY MARKS		PRACTICAL MARKS	
					INT.	EXT.	INT.	EXT.
SASTRI SAMMANITA/ B.A. HON. /B.SC. YOGA COMPUTER APPLICATIONS (3 Year Course)								
I	I	1	INFORMATION TECHNOLOGY	B-01	25	75	25	25
I	II	2	PROGRAMMING WITH C	B-02	25	75	25	25
II	I	3	DESK TOP PUBLISHING	B-03	25	75	25	25
II	II	4	PYTHON PROGRAMMING	B-04	25	75	25	25
III	I	5	NATURAL LANGUAGE PROCESSING	B-05	25	75	25	25
III	I	6	VISUAL BASIC	B-06	25	75	25	25
III	II	7	PERL PROGRAMMING	B-07	25	75	-	-
III	II	8	DATABASE MANAGEMENT SYSTEM	B-08	25	75	-	-
III	II	9	PROJECT WORK	B-09	-	-	50	50
SASTRI SAMMANITA/ B.A. HON. /B.SC. YOGA COMPUTER APPLICATIONS (4 Year Course)								
I	I	1	INFORMATION TECHNOLOGY	B-01	25	75	25	25
I	II	2	PROGRAMMING WITH C	B-02	25	75	25	25
II	I	3	DESK TOP PUBLISHING	B-03	25	75	25	25
II	II	4	PYTHON PROGRAMMING	B-04	25	75	25	25
III	I	5	NATURAL LANGUAGE PROCESSING	B-05	25	75	25	25
III	I	6	VISUAL BASIC	B-06	25	75	25	25
III	II	7	PERL PROGRAMMING	B-07	25	75	25	25-
III	II	8	DATABASE MANAGEMENT SYSTEM	B-08	25	75	25	25
IV	I	9	ARTIFICIAL INTELLIGENCE	B-09	25	75	25	25
IV	I	10	CORPUS LINGUISTICS	B-10	25	75	25	25
IV	II	11	PROJECT WORK	B-11	-	-	100	200

Sastri Sammanita/ B.A. Hon. /B.Sc. (yoga) Computer Applications
I Year I Semester

Course Name : Information Technology **Paper No.: 01**

Course Objective : The introduction to information technology program aims to provide the students about basic web technology concepts that are required for developing web applications.

Theory Internal	**:**	75 Marks	**Theory External**	**:**	25 Marks
Practical Internal	**:**	25 Marks	**Practical External**	**:**	25 Marks

Unit I

Introduction – Elements of Web: Servers and Clients – Web Documents – URL – Web Sites – Web Browsers – Domain Name System. Introduction to Front Page 2003 and Dreamweaver

Unit II

Web Site Architecture: Two Tiered Architecture – The n-tiered Architecture, Elements of Web Site Design: Site Structure – Site Navigation – Web page design and layout

Unit III

Basic HTML: HTML- Advantages of HTML – Disadvantages of HTML – Structure of HTML – Working with basic tags of HTML, List Tag: Unordered List – Ordered List, IMG tag –Table in a Web Page – Cell Alignment

Unit IV

Working with Multimedia in a Web Page: Creating background sound using <BGSOUND> - Embedding Multimedia Objects in a Web Page – Creating inline video, Working with Frames

Unit V

Working with Forms - Cascading Style Sheets (CSS) introduction

Prescribed Textbook

1. Raja Raman , Introduction to computers by PHP Publications
2. Thomas A. Powell, The Complete Reference Web Design, Tata McGraw Hill edition.

Sastri Sammanita/ B.A. Hon. /B.Sc. (Yoga) Computer Applications
I Year II Semester

Course Name: **Programming with C** **Paper No**: 2

Course Objective: The course is designed to provide complete knowledge of C language. Students willbe able to develop logics which will help them to create programs, applications in C. Also by learning the basic programming constructs they can easily switch over to any other language in future.

Theory Internal	**:**	75 Marks	**Theory External**	**:**	25 Marks
Practical Internal	**:**	25 Marks	**Practical External**	**:**	25 Marks

UNIT I

Overview of C: History of C, Importance of C, Basic Structure of C programs, Executing a 'C' program. Constants, Variables and Data Types: Character Set, C tokens, Keywords and Identifiers, Constants, Variables, Data Types, Declaration of Variables, Assigning Values to Variables. Operators and Expressions: Arithmetic, Relational, Logical, Assignment, Increment, Decrement, Conditional, Bitwise and Special Operators–Arithmetic Expressions.

UNIT II

Input and Output Operations: Reading a character, Writing a character. Decision making and Branching: IF Statement - SIMPLE IF statement, IF…ELSE statement, NESTING OF IF…ELSE statements– SWITCH statement, GOTO statement.

UNIT III

Decision Making and Looping: WHILE statement, DO..WHILE statement, FOR statement

UNIT IV

Arrays: One Dimensional Array, Two Dimensional Arrays. Strings: Declaring and Initializing String Variable, String - handling Functions.

UNIT V

Functions: Definition of a function, User - defined functions, Elements of User - defined functions, Recursion, Structures and Unions: Defining a structure, Declaring Structure Variables, Accessing Structure Members, Structure Initialization, Unions

Prescribed Textbook

1. E. Balaguruswamy, Programming in ANSI C 4E, Tata McGraw – Hill

Reference Books

1. Yashavant Kanetkar, Let Us C, BPB Publications.

Sastri Sammanita/ B.A. Honours/B.Sc.(Yoga) (Computer Applications)
II Year I Semester

Course Name : Desk Top Publishing **Paper No.: 03**

Course Objective : The introduction to Desk Top Publishing program aims to provide the participants understanding of the techniques essential to build their career in desktop publishing using suitable hardware and software tools

Theory Internal	**:**	75 Marks	**Theory External**	**:**	25 Marks
Practical Internal	**:**	25 Marks	**Practical External**	**:**	25 Marks

Unit I

MSWORD: Creating and Saving documents – Page Setup – Formatting Text: Italic, Bold and Underline, Headers and Footers – Hyperlink and Book Marks, Inserting and Editing pictures - Creating Tables – Inserting and Deleting Rows and Columns – Creating Mail Merge – Printing documents

Unit II

MS POWERPOINT : Basics – Creating Presentations – Menus – Tool Bar – Opening a Presentation – Creating a new slide – Deleting a slide – Copying a slide, Slide Design- Slide numbering – Slide transition – Animations

Unit III

Introduction to DTP- Hardware requirements - General design considerations - Text Organization. Designing Common Media Publications: Newsletters, Letter Heads, Small Advertisements, Long Advertisements, etc. PageMaker – menus & tools - PageMaker basics - Editing Text, The Story Editor - Saving and Closing the Publication. Formatting Text- Working with Master Pages- Creating simple Graphics, Working with palate - Wrapping Text around a Graphic - Importing, resizing, moving cropping a Graphic - Links - The Links Manager, Managing and Printing and a Publication

Unit IV

Photoshop-History & introduction, the file menu, the tools – Working with Layers: Creating a new layer, Selecting Layers, Hiding/Showing layers, Deleting Layers, Sorting layers, Merging layers, Linking layers, Layer effects, Transforming Layers - Type: Creating type, Changing type settings, Styles - Filters: The filters menu, Artistic, Pixilated, Render, Sketch and Stylize Filters

Unit V

CorelDraw – New and enhanced Tools, A few new creature comforts, importing and exporting . Interfacing with CorelDraw, working with Dockers, using the tool box, working with tool bars, using the color palette. Opening and saving files. creating basic shapes, drawing with line tools, cutting, shaping, and reshaping objects, arranging organizing objects, Applying color fills and outlines – mastering outline properties, applying color fills, world of color,

Prescribed Text Books

1. Raja Raman , Introduction to computers by PHP Publications
2. Comdex Desktop Publishing Course Kit by Vikas Gupta, Dreamtech Press, New Delhi, (introduction 1, pagemaker 1,2,3,4,5,6), (Photoshop 1,2,3,4,5,6,7,8), Delhi (chapter from 1 to 22)

Sastri Sammanita/ B.A. Hon. /B.Sc. (yoga) Computer Applications
II Year II Semester

Course Name : Python Programing **Paper No.: 4**
Course Objective : Understanding fundamentals of python programing including operators and expressions, conditional programing. Functions and data structure usage helps to understand data usage. Object Oriented Programming in python, including classes, invoking methods and packages helps to understand reusability and built in concepts.

Theory Internal	**:** 25 Marks	**Theory External**	**:** 75 Marks
Practical Internal	**:** 25 Marks	**Practical External**	**:** 25 Marks

Unit - I
Introduction: History of Python, Need of Python Programming, Applications Basics of Python Programming, Running Python Scripts, Variables, Assignment, Keywords, Input-Output, Indentation.
Unit - II
Types, Operators and Expressions: Types - Integers, Strings, Booleans; Operators- Arithmetic Operators, Comparison (Relational) Operators, Assignment Operators, Logical Operators, Bitwise Operators, Membership Operators, Identity Operators, Expressions and order of evaluations Control Flow- if, if-elif-else, for, while, break, continue, pass
Unit - III
Data Structures: Lists - Operations, Slicing, Methods; Tuples, Sets, Dictionaries, Sequences. Comprehensions.
Unit - IV
Functions - Defining Functions, Calling Functions, Passing Arguments, Keyword Arguments, Default Arguments, Variable-length arguments, Anonymous Functions, Scope of the Variables in a Function - Global and Local Variables.
Modules: Creating modules, import statement, from. Import statement, name spacing,
Unit - V
Object Oriented Programming OOP in Python: Classes, Methods, Python packages Introduction to PIP, Using Python Packages.
Error and Exceptions: Difference between an error and Exception, Handling Exception, try except block, Raising Exceptions, User Defined Exceptions

Text Books

1. Python Programming: A Modern Approach, Vamsi Kurama, Pearson
2. Learning Python, Mark Lutz, Orielly

Reference Books

1. Think Python, Allen Downey, Green Tea Press
2. Core Python Programming, W.Chun, Pearson.
3. Introduction to Python, Kenneth A. Lambert, Cengage

M. Sc. Computer Science and Sanskrit Language Technologies I Year I Semester

Course Name : Language Speech Processing I Paper No.: 5

Course Objective : The goal of natural language processing (NLP) is to design and build computer systems that are able to analyse natural languages like Sanskrit, Telugu, English, etc and that generate their outputs in a natural language, too. Typical applications of N L Pare information retrieval, language understanding, and text classification..

Theory Internal	**: 30 Marks**	**Theory External**	**: 70 Marks**
Practical Internal	: 30 Marks	Practical External	: 70 Marks

Unit I

Introduction to NLP: Achievements and Brief history - Open Problems–Major Goal Language Structure and Language analyzer: Introduction to Language Structure, Overview of Language analyzer: Morphological Analyzer, Local word grouping (LWG), Core Parser.

Unit II

Words and their Analyzer: Introduction to Morphological Analysis (MA), MA using Paradigms–Speeding up of MA by compilation–Local Word Grouping: Verb groups, Noun groups, Strategy for grammar Development.

Unit III

Paninian Grammar: Introduction to Paninian grammar – Semantic model - Paninian theory: Karaka Relations–Active Passive: Karaka to Vibhakti Mapping, Karaka shares.

Unit IV

Paninian Parser: Introduction, Core Parser: Constraints – Preferences over Parses - Lakshan charts for Sense Disambiguation.

Unit V

Machine Translation: Introduction, Anusaraka or Language Accessories

Prescribed Text Book

AksharBharati,Vineet Chaitanya, Rajeev Sangal, Natural Language Processing – A Paninian Perspective, PHI

M. Sc. Computer Science and Sanskrit Language Technologies I Year II Semester

Course Name : Operating Systems Paper No.: 6

Course Objective : The concepts, structure and mechanism of operating system. Its purpose is to present, as clearly and completely as possible, the nature and characteristics of modern-day operating systems.

Theory Internal : 30 Marks Theory External : 70 Marks

Unit I

Operating System Overview: Operating System Objectives and Functions – The Evolution of Operating Systems – Developments leading to Modern operating systems – Microsoft windows overview- Process Description and Control: Process States, Description

Unit II

Concurrency: Mutual Exclusion and Synchronization; Principles of Concurrency – Mutual Exclusion: Software Approach and Hardware Support - Semaphores – Monitors – Message Passing

Unit III

Concurrency: Deadlock and Starvation: Principles of Deadlock–Deadlock Prevention - Deadlock Avoidance–Deadlock Detection–Integrated Deadlock Strategy–Dining Philosophers Problem

Unit IV

Memory Management: Memory Management Requirements–Memory Partitioning–Paging – Segmentation. Virtual Memory: Hardware and Control Structures – Operating System Software – Scheduling: Types of Process Scheduling–Scheduling Algorithms.

Unit V

I/O Management and Disk Scheduling: Introduction –Disk Scheduling –RAID –Disk Cache–. File Management: File Organization – File Directories - Storage Management

Prescribed Text Books

1. William Stallings, Operating Systems–Internals and design principles 7th Edition, Pearson Education.

M. Sc. Computer Science and Sanskrit Language Technologies I Year II Semester

Course Name : Data Structures **Paper No.: 7**

Course Objective : To understand concepts about searching and sorting techniques, To Understand basic concepts about stacks, queues, lists, trees and graphs, To understanding about writing algorithms and step by step approach in solving problems with the help of fundamental data structures

Theory Internal	: 30 Marks	Theory External	: 70 Marks
Practical Internal	: 30 Marks	Practical External	: 70 Marks (2 Year Course)

Unit I

Introduction to Data Structures: primitive data structures: integer, float, And character, Boolean – arrays – Stacks: push and pop operations – Queues: insert and delete operations. - Circular queues.

Unit II

Linear Linked Lists: creating a linked list, inserting a node and deleting node in linked list. - Double linked list – Circular linked list.

Unit III

Binary trees – inserting a node in a binary tree, deleting a node in binary tree, searching a node in a binary tree traversal: Pre - order, Post - order and in - order traversals.

Unit IV

Basic concepts, Representations: adjacency lists, adjacency Matrix, Searching, Depth First Search and Breadth first search methods.

Unit V

Bubble sort, Insertion sort, quick sort, selection sort – Merging, Searching: Linear search & Binary search.

Prescribed Text Books

1. SamanthaD, ClassicDataStructures,Prentice - Hallof India

Reference Books

1. D S Malik, Data Structures Using C++, Thomson, India Edition.
2. Sahani S, Data Structures, Algorithms and Applications +, McGraw - Hill,
3. Heilman G I,. Data Structures, Algorithms and Object – Oriented Programming, Tata McGraw - Hill..
4. Tremblay P, and Sorenson P G, Introduction to Data Structures and Applications, Tata McGraw - Hill
5. Drozdek A, Data Structures and Algorithms in C++, 2ndedition, Vikas Publishing House.
6. Kanetkar Y P, Data Structures through C++, BPB Publications.

M. Sc. Computer Science and Sanskrit Language Technologies I Year III Semester

Course Name : Software Engineering Paper No.: 8

Course Objective : The basic objective of software engineering is to develop methods and procedures for software development that can scale up for large systems and that can be used consistently to produce high-quality software at low cost and with a small cycle of time.

Theory Internal : 30 Marks Theory External : 70 Marks

Unit I

Introduction to Software Engineering: The Evolving Role of software – Software-Software Myths

A Generic View of Process: Software Engineering: A Layered Technology - A Process Framework – The Capability Maturity Model Integration (CMMI) – Process Patterns – Process Assessment – Personal and Team Process Models – Process Technology – Product and Process

Process Models: Prescriptive Models – The Waterfall Model – Incremental Process Models - Evolutionary Process Models

Unit II

System Engineering: The Systems Engineering Hierarchy - Product Engineering: An Overview – System Modeling

Requirements Engineering: Requirements Engineering Tasks – Initiating the Requirements Engineering Process-Eliciting Requirements – Developing Use Cases – Building the Analysis Model – Negotiating Requirements – Validating Requirements

Building the Analysis Model: Requirements Analysis – Analysis Modeling Approaches – Data Modeling Concepts

Unit III

Design Engineering: Design Concepts – The Design Model

Creating an Architectural Design: Data Design – Architectural Styles and Patterns- Architectural Design – Mapping Data Flow into a Software Architecture

Performing User Interface Design: User Interface Analysis and Design – Interface Analysis – Interface Design Steps

Unit IV

Testing Strategies: A Strategic Approach to Software Testing – Strategic Issues – Test Strategies for Conventional Software – Validation Testing – System Testing

Testing Tactics: Software Testing Fundamentals – Black box and White box Testing – Basis Path Testing – Control Structure Testing

Product Metrics: Software Quality – A Framework for Product Metrics – Metrics for the Analysis Model – Metrics for the Design Model – Metrics for Source Code – Metrics for Testing – Metrics for Maintenance

Project Management: The Management Spectrum – The People – The Product – The Process – The Project

Unit V

Estimation: The Project Planning Process – Software Scope and Feasibility – Resources – Software Project Estimation – Decomposition Techniques – Empirical Estimation Models – Estimation for Object-Oriented Projects- Specialized Estimation Techniques

Project Scheduling: Basic Concepts – Project Scheduling – Defining a Task Set for the Software Project – Defining a Task Network – Scheduling

Risk Management: Reactive vs. Proactive Risk Strategies – Software Risks – Risk Identification – Risk Projection – Risk Refinement – Risk Mitigation, Monitoring and Management – The RMMM Plan

Prescribed Text Books

1.Software Engineering: A Practitioners Approach,6th Edition by Roger S. Pressman, Publisher: McGraw - Hill