

**KAVIYITRI BAHINABAI CHAUDHARI
NORTH MAHARASHTRA UNIVERSITY, JALGAON.**



**Faculty of Commerce and Management
Syllabus**

**ADVANCED DIPLOMA IN SOFTWARE TECHNOLOGY
AND MANAGEMENT (ADSTM)**

With effect from June- 2019-20

**KAVAYITRI BAHINABAI CHAUDHARI
NORTH MAHARASHTRA UNIVERSITY, JALGAON**



**ADVANCED DIPLOMA IN SOFTWARE TECHNOLOGY AND
MANAGEMENT STRUCTURE
(W.E.F. June 2019)**

Course Name: Advanced Diploma In Software Technology and Management

Short Title of Degree: A D S T M

Faculty to which assigned: Commerce and Management

Duration: 1 year part time

Pattern: Yearly

Examination Pattern: 60 (External) + 40 (Internal)

No of papers in the Year: 4 Theory + 3 Practical + 1 Project

Eligibility: Passed Higher Secondary Examination in Any Stream (H.S.C.)
OR

Diploma recognized by Board of Technical Education with minimum Duration of 3 years

Medium of Instruction: English

Objectives:

- ADSTM COURSE strives to create computer professionals with ethical and human values to reshape the nation's destiny. This programme aims to prepare young minds for the challenging opportunities in the IT industry, nourished and supported by experts in the fields.
- The ADSTM Course aims at inculcating essential skills as demanded by the global software industry through interactive learning process. This also includes team-building skills, audio-visual presentations and personality development programmes.
- The program enhances analytical, managerial and communication skill besides inculcating the virtues of self-study. The Curriculum has been designed to cater to the ever changing demands of information technology along with necessary inputs from the Industry.
- The OBJECTIVE of the course is to develop skilled manpower in the various areas of software industry and Information Technology.

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COURSE STRUCTURE
Advanced Diploma In Software Technology and Management
(ADSTM)
w.e.f. –Academic Year 2019-20

Sr. No.	Proposed Subject Titles	Paper Type and Marks
ADS 1	Systems Analysis and Design & Intro. Software Engg.	Theory - 100
ADS 2	Oracle Developer-6i	Theory - 100
ADS 3	Programming in C and C++	Theory - 100
ADS 4	Tally ERP / Web Technology (HTML,CSS, Introduction PHP)	Theory - 100
ADS 5	Practical on - Oracle Developer-6i	Practical-100
ADS 6	Practical on - Programming in C & C++	Practical-100
ADS 7	Practical on - Web Technology (HTML,CSS, Introduction PHP)	Practical-100
ADS 8	Project Viva-voce	Project & Viva-voce -100

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COURSE STRUCTURE Advanced Diploma in Software Technology and Management (ADSTM)

NOTES TO STRUCTURE (W.E.F. June 2019)

1. English medium is allowed for instructions to all the courses under this programme.
2. For all the courses (except course no .8) there shall be a same pattern of examination (Theory / practical) of 100 marks, comprising of external examination of 60 marks, and 40 marks for continuous internal assessment for every course.

Theory Examination Maximum marks

- Internal Assessment *** 40
- External Examination (Term end examination) ***60

Total Marks 100

Two internal tests are to be conducted by the subject teacher. Each test shall be of 20 marks and the concerned teacher shall consider both internal tests for Internal Assessment.

Internal Assessment Maximum marks

Internal test-I	10
Internal test-II	10
Attendance, Behaviour and classroom participation.	10
Assignments	10

Total Marks 40

3. For course no ADS-5, ADS-6, ADS-7 and ADS-8 at Three practical's & an Project has been prescribed for 100 marks, for paper ADS-8 Project and Viva-voce comprising maximum of 50 marks each to be awarded by an external examiner and an internal examiner, project report submitted and the viva-voce thereon. The said examination is to be conducted at the end of the year. In case of course no ADS-5, ADS-6, ADS-7 the pattern of marks 60:40 will be applicable.

Project Report Maximum marks

Internal Assessment	50
External Viva - voce	50
Total	100

4. There shall be External Examination Viva-Voce for Project Report. The project must be based on Computer Software Application (Desktop or Web)
5. The syllabus of each course shall be taught in 4 lectures per week during the year.

STRUCTURE OF THE QUESTION PAPER

- Each question paper shall be of 60 marks and of 2 hours duration.
- For Theory papers there will be 2 sections. In section I (Theory/practical-problem) a student shall be required to answer 3 questions out of 5 questions & in section II (Theory/practical-problem) he/she shall be required to answer 3 questions out of 5 questions. All questions shall carry equal marks i.e. 10 marks each.
- For Lab, the student will have to perform the 2- assigned practical slips, one from each section within of 3 hours.
- For Practical and project viva-voce exam both examiners are external examiners.



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FACULTY OF COMMERCE & MANAGEMENT

Advanced Diploma In Software Technology and Management

W.e.f. A.Y. 2019-20

ADS-1 Systems Analysis and Design & Introduction to Software Engineering

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

Required Lectures: 60 Lectures

1. Fundamentals of System

- 1.1 System concepts: definition, constraints, properties, elements,
- 1.2 Types of system: open & closed, Physical & abstract, temporary & permanent, Feedback System
- 1.3 Information System: TPS, MIS, DSS, ESS

2. SDLC

- 2.1 Phases in Systems Development Life Cycle
- 2.2 Roles and responsibilities and skills of system analyst, developer and users of system
- 2.3 SDLC Models : Waterfall Model, Spiral, Prototyping, Object Oriented model

3. System Planning

- 3.1 Data and fact gathering techniques: Interviews & Questionnaires, Group discussion,
- 3.2 On-site observation, Review of Written Documents.
- 3.3 Feasibility study and its importance
- 3.4 Types of feasibility study- Technical, Economical and Operational
- 3.5 System Selection plan and proposal Prototyping

4. Systems Design

- 4.1 Steps in design phase
- 4.2 Logical and physical design
- 4.3 Data Flow Diagrams
- 4.4 Entity Relationship diagrams
- 4.5 Data Dictionary, Database relationship

5. Logic Representation tools and interface designing

- 5.1 Decision Tree
- 5.2 Decision Tables
- 5.3 Structured English
- 5.4 Input forms design
- 5.5 Report layouts
- 5.6 Rules for interface designing

6. Study the following systems for developing project

- 6.1 School Admission System
- 6.2 Library System
- 6.3 Hotel System

(Study includes feasibility study, database design, dataflow diagram and ER diagram)

References:

- 1. System Analysis and Design Methods, Whitten, Bentley and Barlow, Galgotia Publication.
- 2. System Analysis and Design Elias M. Awad, Galgotia Publication
- 3. Software Engineering by Roger Pressman
- 4. Software Engineering by Yogesh Agrawal
- 5. System analysis and design by James A. Senn



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ADS-2 Oracle Developer-6i

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

Required Lectures: 60 Lectures

Oracle

1. Installation of Oracle and Architecture of Oracle:

Installation of Oracle: Server & Client, Outline Of Oracle Architecture And Its Main Components

2. Structured Query Language:

Types of SQL: DDL, DML, DCL Statements.

Constraints: Not Null, Unique, Primary Key, Check, Referential Integrity.

Clauses: where, group by, having, order by.

Functions: Numeric Functions, String Functions, Aggregate Functions, Date Functions.

3. Nested Queries, Joins & Database Objects :

Nested Query: Sub-Query.

Joins: INNER-Equi, Non-equi, Self ; OUTER- Left, Right, Full,

Database Objects: Sequence, View, Synonym.

4. Managing Users:

Managing Users: Creating user, Granting & Revoking Privileges – Object Level and Database Level.

5. PL/SQL Blocks:

Advantages of PL/SQL over SQL, Conditional branching and looping statements, stored

Procedures, Cursors: Implicit Cursor and Explicit Cursor, DML Triggers.

Developer 6i:

1. Introduction :

a. Working with the Form Developer Environment

b. Working a Basic Form Module

c. Working with Data Blocks and Frame Running the Form Developer Application

2. Data Blocks :

a. Data Block Wizard

b. Creating Block Manually

c. Base Table Block and Control Block

d. Master Details Blocks

3. Working with GUI Controls :

a. Working with Text Items

b. Input Items, Check Box, Radio Button, List Item

c. Creating Non Input Items Display item, Push Buttons

4. Record Group, LOV, Editors and Alerts :

a. Working with Record Groups

b. Creating LOVs, LOVs Wizard

c. LOV Properties

d. Types of Editors

e. Alerts, Properties

5. Menu and Trigger :

a. Creating POP UP Menu

b. Menu Properties

c. Attaching Forms and Reports to menu.

d. Trigger, Trigger Validation

6. Report :

a. Design and Running Report

b. Parameter Report

c. Group Report

d. Tabular Report.

References:

1. Oracle PL/SQL by Example, Rosenweig, Pearson Education

2. Database System Concepts: - Abraham Silberschatz, Henry F. Korth & S. Sudarshan, McGraw-Hill

3. Oracle- D2K by Ivan Bayros

4. Introduction to Database Management Systems, by – AtulKahate (Pearson Education).



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ADS-3 Programming in C and C++

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

Required Lectures: 60 Lectures

‘C’

Unit 1 -Basics of C Language

Overview of C: History of C, Importance of C, Structure of a C Program. Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant. Input/output: Unformatted & formatted I/O function in C, Input functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putchar(), puts().

Unit 2 -Control Flow and Logical Expressions

Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators, operator hierarchy & associativity

Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, goto statement.

Loops control structure: while loop, for loop, do-while loop, nested loop, break, continue, switch, exit statement

Unit 3 -Functions

Functions: Definition, prototype, passing parameters, scope of variable, recursion.

Unit 4 -Arrays and String

Array, array initialization, and Manipulation, Multidimensional array, Strings, Standard library string function strlen(), strcpy(), strcat(), strcmp(),strupr(), strlwr() etc.

Unit 5 -Pointers

Definition and declaration, Uses, Initialization, address operator, pointer arithmetic, dynamic memory allocation.

Unit 6 -Structure, Union

Structure: use of structure, declaration of structure, accessing structure elements. Union, Difference between structure and union.

‘C++’

Unit 1 – Introduction and Basics of OOP’s

Introduction to Object Oriented Paradigm, Characteristics of Object-Oriented Programming. Difference of Structured Vs. OOPs

Unit 2 –C++ Controls & Functions

Input/ Output in C++, Function overloading, Inline Function,

Unit 3 –Object and Classes

Class declaration in C++, Objects, Constructors and types of constructor (Default constructor, Copy Constructor, Parameterized constructor). Destructor, Friend Function.

Unit 4 – Operator Overloading

Operator overloading, Overloading Unary & Binary Operators without friend function. Features of operator overloading, Operators overloading using friend function.

Unit 5 – Inheritance

Inheritance- definition, concept, Types of Inheritance. visibility modes- Public, Private, Protected. Virtual Base Class, Benefits of Inheritance,

Unit 6 – Virtual Functions, Exception Handling

Virtual Function, Pure Virtual Functions, Exception handling constructs.

References:

1. Programming with problem solving through ‘C’. (ELSEVIER) (for UNIT I)
2. Programming in C”, E. Balaguruswamy Tata McGraw Hill
3. “C The Complete Reference”, H. Schildt, Tata McGraw Hill
4. The C Programming language by Brian W. Kernighan Dennis M. Ritchie Prentice Hal
5. Object Oriented Programming in C++ by E. Balaguruswamy, TMH Publishing Co. Ltd., New Delhi
6. Mastering C++ by KR Venugopal and Rajkumar, T Ravishankar; Tata McGraw Hill Publishing Co.Ltd.,New Delhi
7. C++ The Complete Reference by Herbert Schildt ; Tata McGraw Hill Publishin Publication



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ADS-4 Web Technology (HTML, CSS and Introduction to PHP)

60 + 40 Pattern: External Marks 60 + Internal Marks 40 = Maximum Total Marks: 100

Required Lectures: 60 Lectures

HTML & CSS

Unit 1 - Internet & Web Designing Concepts

Internet: Introduction to Internet, Internet Services, WWW, Protocol (HTTP), URL. Web Site Concepts: Web page, static and Dynamic web page. Hypertext Basics, Basic Components of HTML, HTML Tags, Head, and Title Tags, Body Tags, Creating HTML Code using editor, Viewing in a Browser.

Unit 2 - Formatting Text & Images

Importance of Formatting, Paragraphs and Alignment, Bold Text, Italic Text, Underline, HTML Headings, Ordered List Tags and Attributes, Unordered List Tags and Attributes Nested Lists, Font Tags, Font Attributes, Marquee Tag and Attributes. Heading Tag. Different Image Formats, Image Tags and Attributes, Background Images and Color

Unit 3 - Links & Tables

How Hyperlinks Work, Anchor Tag and HREF. Attributes, Absolute vs. Relative Links, Table Tags & Table Attributes, Row Attributes, Cell Attributes, Merging Rows & Columns.

Unit 4 - Frames and Forms

Frames, Creating Framesets, Frameset Attributes & Frameset Examples, Frame Tag and Attributes. Anatomy of A Form, Form Tag And Attributes, Text Boxes, Check Boxes, Radio Buttons, Text Areas, List Box Submit and Reset Buttons

Unit 5 - Introduction to Cascading Style Sheets

Advantages of Style Sheets, Role of CSS in Web Designing, Rules of CSS CSS Structure and Syntax, Selectors and declarations, Working with style classes, Working with style IDs, Child Selector, Type Selector, Inheriting styles Using Different Kinds of Style Sheets, Internal style sheets, External style sheets

Unit 6 - Using Cascading Style Sheets

Managing Layout and Positioning, Visual layouts, Positioning, Changing Fonts for Visual Interest and Better Readability, Body text, Headings, Hyperlinks, Externalizing Style Sheets,

PHP

Unit – 1 Introduction and Basics of PHP

Web architecture, web Server (xampp Server, apache server), History, Features & Drawbacks of PHP Introduction to PHP, Data types in PHP, Structure & Syntax of PHP, PHP with HTML, Comments, Variables, Literals, Operator, Operator Precedence, Flow Control Statements- Conditional Statements, Looping Statements, Exit, Return,

Unit – 2 Array, Function and String

Introduction to Array-Index Vs Associative Array, Multidimensional Array, array functions in PHP. Introduction to Function- Defining and Calling a function, Scope of variables in function, Function Parameters, Returning Values from a function, Recursive Functions. Strings in PHP, String functions.

Unit – 3 Object-Oriented PHP

Introduction and Benefits of OOPs, Creating a Class, Creating an Object, adding method, property & Visibility (Public, Private and Protected) Constructor and Destructors, Inheritance (Extending a class)

Unit - 4 Web Techniques

Introduction, HTTP Basics, Processing Forms, Using PHP \$_GET, Using PHP \$_POST, GET vs. POST, Form Validation.

Unit - 5 PHP with MySQL - Introduction to MySQL, Interaction between PHP and MySQL, Connecting to a Database, Execute SQL Statements

References:

1. Textbook of Web Designing By Joel Sklar, Cengage Learning Publication 2009
2. Web designing in Nut Shell (Desktop Quick Reference) by Jennifer Niederstublication – O'Reilly publication
3. Designing web navigation by James Kalbach Publication – O'Reilly publication
4. How to become web master in 14 days Publication – Techmedia publication
5. "PHP, MySql Web Development", Luke Welling, Laura Thompson, Sams, second edition
6. PHP for Beginners, Ivan Bayross, Sharanam Shah, THE X Team , SPD



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ADS-5 Practical on - Oracle Developer-6i.

60 + 40 Pattern: External Marks 60 +Internal Marks 40= Maximum Total Marks: 100

Required Sessions: 20 Lab Hours

1. Create a table, Insert 5 Records into it.
2. Create table with various constraints, insert records and also perform alter, update, delete etc.
3. Write down SQL for : Aggregate functions, Date functions, String functions,
4. Write down SQL for : Group By and Having Clause, Joins and nested queries.
5. Write down SQL for Creating: View, Sequence, Synonym.
6. Write down PL/SQL demonstrate: FOR Loop, WHILE Loop and IF.. END IF .
7. Write down PL for Implicit & Explicit cursors.
8. Write down PL for Stored procedure & Function.
9. Create Simple Data Entry form.
10. Create Master Detail data entry Form.
11. Create a Form with Menu.
12. Design Simple Report.
13. Design Master Detail Report.



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ADS-6 Practical on - Programming in C & C++

60 + 40 Pattern: External Marks 60 +Internal Marks 40= Maximum Total Marks: 100

Required Sessions: 20 Lab Hours

1. Write a program in C to demonstrate Arithmetic operators.
2. Write a program in C to demonstrate Relational operators.
3. Write a program in C to check the number is palindrome or not.
4. Write a program in C to check the number is Armstrong or not.
5. Write a program in C for Fibonacci series up to given term.
6. Write a program in C to find factorial of given number.
7. Write a program in C for Matrix Addition/subtraction.
8. Write a program in C for swapping two integer numbers using call by value and call by reference
9. Write a program in C which demonstrates the string function.
10. Write a program in C to demonstrate structure.

11. Write a program in C++ to check given number is prime or not.
12. Write a program in C++ to demonstrate use of Function overloading
13. Write a program in C++ to demonstrate encapsulation using of class.
14. Write a program in C++ to demonstrate use constructors and Destructor.
15. Write a program in C++ to demonstrate single inheritance
16. Write a program in C++ to demonstrate multiple inheritances.
17. Write a program in C++ to demonstrate use of operator overloading using friend function.
18. Write a program in C++ to demonstrate use of operator overloading without using friend function.
19. Write a program in C++ to demonstrate use of friend function.
20. Write a program in C++ to demonstrate use of Virtual and pure Virtual functions



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ADS-7 Practical on - Web Technology (HTML,CSS, Introduction PHP)

60 + 40 Pattern: External Marks 60 +Internal Marks 40= Maximum Total Marks: 100

Required Sessions: 20 Lab Hours

1. Create web page using basic HTML tags, Marquee Tag and Different Formatting tag.
2. Create a web page using different List tag.
3. Create web page using Anchor Tag (Internal Link and External Link)
4. Create web page to design time table of your college using Table tag.
5. Create Web page with different images and Frames and Frameset Tag.
6. Design a simple Webpage of College Admission Form.
7. Design static and simple website for your college.
8. Create web page to set background color & set different font style to each paragraph using CSS.
9. Design a web page using Inline and Internal CSS
10. Demonstrate the use of External CSS
11. Write PHP scripts that demonstrate fundamentals PHP.
12. Write PHP script that will display grade based on criteria given below using the marks obtained in Examination.
 - a. Distinction (70 and above)
 - b. First Class (60 - 69)
 - c. Pass (40 - 59)
 - d. Fail (below 40)
13. Write a PHP script to demonstrate different String functions.
14. Write a PHP script to demonstrate for each loop using associative array
15. Write a PHP script to Demonstrate OOPS Concept in PHP.
16. Write a PHP script to demonstrate Form Data Handling using Get and Post methods.
17. Write a PHP script to Create a database in MYSQL, Create table in database, Store, Retrieve and display data from the table.



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ADS-8 Project Viva-voce

60 + 40 Pattern: External Marks 50 + Internal Marks 50 = Maximum Total Marks: 100

Required Session of Guidance: 20 Lab Hours

1. Each student shall have to carry out the project work based on System Development which may include Application Program, Database Management System, Web Based Application, Smart phone Application, System Tools, Network System Application, etc. A project may be carried out at any outside organization or on a sub system of an organization.
2. The project work should be carried out with group of 2 students is allowed. The project title should not be repeated (More than 2-students are **not** allowed in group).
3. The topic of the project should be decided with the consultation & guidance of an internal guide teacher
4. of the institute/college. The project should be necessarily innovative and problem solving. No teacher shall be entrusted with more than 15 students for guidance and supervision.
5. The student should clearly mention the need of project , database(s), files required for the project, DFD , Normalization, ERD, software used for the project, reasons for selection of that software, inputs required, outputs produced etc.
6. The application should be menu driven and should provide the facilities of storage of data, modifications in existing data, deletion of unwanted data, and viewing of data.
7. The student has to write a report based on the actual work undertaken during the vacations at the specific selected enterprise/ organization or sub system and get it certified by the concerned teacher that the Project report has been satisfactorily completed and submit TWO typed copies of the same to the Head / Director of the institute /Principal of the college.
8. One copy of the report submitted by the student shall be forwarded to the University by the Institute.
9. No student will be permitted to appear for Viva-Voce examinations, unless and until the project report is submitted within the stipulated time.