# BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Subjects</th>
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<td>English – I</td>
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<tr>
<td>3</td>
<td>Major 1: Pascal and Data Structures</td>
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<td>Allied 1: Computer Oriented Numerical and Statistical Methods</td>
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<td>8</td>
<td>Major 2: Object Oriented Programming and C++</td>
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<td>Allied 2: Financial and Cost Accounting</td>
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<td>Practical 2: Object Oriented Programming and C++</td>
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<td>Major 4: System Software</td>
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<td>Major 5: Internet and Java Programming</td>
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<td>Practical 4: Project viva-voce</td>
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**Elective Subjects**

1. Computer Graphics
2. Artificial Intelligence
3. System Analysis and Design
4. Multimedia and Virtual System
5. Software Engineering

FIRST YEAR

Paper – 1

Paper – 2
ENGLISH PAPER – 1

Detailed Text

PROSE
1. In Prison – Jawaharlal Nehru
2. What is Science? – George Orwell
3. On Marriages – Nirad Chaudari
4. The Luncheon – N. Somerset Maugham
5. The Mourners – V. S. Naipaul
6. The Plane Crash – Juliane Koepcke

POETRY
1. Polonius’ Advice to his Son – William Shakespeare
2. Every Town a Home Town - Kaniyan Purkunran
3. The Village Schoolmaster – Oliver Goldsmith
4. The Solitary Reaper – William Wordsworth
5. On his Blindness – John Milton
6. The Tyger – William Blake

Non-Detailed
The following stories
1. The Gifts – O. Henry
2. The Two Friends – Guy de Maupassant
3. The Bear Hunt – Leo Tolstoy
4. The Goblins and the Grave Digger – Charles Dickens
5. The Nightingale and the Rose – Oscar Wilde

GRAMMER
1. Articles and Prepositions
2. Infinitives and Gerunds
3. Five basic sentence patterns (SV SVC, SVO, SVOO, SVOC(A))
4. Arranging the component parts so as to form a sentence
5. Language work at the end of all lessons
6. Language work at the end of all lessons
7. Question Tag, Active and Passive Voice
8. Degrees of Comparison

COMPOSITION
1. Letter Writing (Formal and Informal)
2. Developing the hints
3. Comprehension
4. Writing Telegram
5. Completion of a passage
6. Precis Writing

Paper – 3
PASCAL AND DATA STRUCTURES

UNIT I:
Data types – Operators and statements – Structure of Pascal program – Statements – Comment – Input / Output statements – Formatting output data – Simple programs – Control statements.

UNIT II


UNIT III


UNIT IV

Linked list operations – Linked stacks and queues – Polynomial addition – Circular lists – Doubly linked list – Operations on Doubly linked list.

UNIT V

Trees and Graphs : Basic Terminology – Binary Trees – Conversion of Forest to Binary Tree – Tree Traversals. Graph : Definition – Types of Graphs – Graph Traversal – Shortest path (Dijkstra’s Algorithm)

Text Books

2. Pascal Plus Data Structures Algorithms and Advanced programming – Neli Dale and Susan C. Lilly, TMH.

Paper – 4

COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS

1. LINEAR SYSTEM OF EQUATIONS
Solution of systems of equations - Solution of simultaneous linear equations - Gauss Elimination methods - Gauss - Jordan methods, Jacobi and Gauss- Seidal iterative methods.

2. NUMERICAL DIFFERENTIATION AND INTEGRATION

Interpolation, Differentiation and Integration - difference table - Newton's forward and backward interpolation - Lagrangian interpolation - Differentiation formulae - Trapezoidal and Simpson rules – Gaussian - Quadrature.

3. DIFFERENTIAL EQUATIONS


4. CORRELATION REGRESSION

Correlation Co-efficient – Rank correlation of determination - Linear Regression – Method of Least Squares – Fitting of the Curve of the Form ax+b, ax+bx+c, ab^x and ax^b – Multiple and Partial Correlation(3-variable only).

5. PROBABILITY DISTRIBUTIONS

Probability Distributions - Random Variables - Moment Generating Functions, Characteristic functions - Standard distributions (Discrete and Continuous)

Text Book


References

SECOND YEAR

Paper – 5

HINDI- I

Paper – 6

ENGLISH PAPER – II

Detailed Text

PROSE

8. A Visit to India – Julian Huxley
9. University Days – James Thurber
10. I Have a Dream – Martin Luther King
11. The Story Teller – H.H. Munro (Saki)
12. George Bernard Shaw – Bertrand Russel
13. Only then shall we find Courage – Albert Einstein

POETRY

7. The Day is Done – Henry Wadsworth Longfellow
8. King Arthur’s Farewell – Alfred Tennyson
9. O Captain! My Captain! – Walt Whitman
10. My Last Duchess – Robert Browning
11. Ode to a Nightingale – John Keats
12. Lochinvar – Walter Scott

Non-Detailed
A collection of One Act Plays -

1. Remember Ceasar – Gordon Daviot
2. The Proposal – Anton Chekov
3. The Miracle Merchant – Saki
4. The Stepmother – Arnold Bennet
5. The Mahatma – Rama Sarma

GRAMMER

1. Relative Clauses
2. Conditional Sentences
3. Modal auxiliaries
4. Reported Speech
5. Transformation of Sentences
   a. Affirmative, Negative and Interrogative Sentences
   b. Simple, Compound and Complex Sentences
6. a,b,r clauses
7. Correction of Sentences based on
   a. Subject, Verb and Concord
   b. Tenses
   c. Articles and Prepositions.
   d. Question Tags

COMPOSITION

7. Paraphrasing
8. Dialogue Writing
9. Report Writing
10. Note Making
11. General Essay

Paper – 7

OBJECT ORIENTED PROGRAMMING AND C++
UNIT I:
Introduction to Object Oriented Programming – Basic concepts – Benefits of OOP.
Object Oriented Languages – Application of OOP.

UNIT II:
C++ : Introduction – Identifiers and keywords – data types – constants – operators –
Type conversion – Variables – Statements – Feature of iostream.h – Manipulators – I/O
stream flags – control statements.

UNIT III:
Functions and program structures – Arrays – Pointers – Structures – Union and Bit
fields.

UNIT IV:
Classes and Objects – Constructors – Destructors – Inline member functions – Static
class members – Friend functions – Dynamic Memory allocations – Inheritance –
Overloading.

UNIT V:
Polymorphism – Templates and exception handling – data file operations.

TEXT BOOKS:
1. Object Oriented Programming C++, Balagurusamy, T.M.H. (Unit I)
2. Programming with C++, D.Ravichandran, T.M.H.

REFERENCE BOOKS:
1. Programming with C++ , Schaum’s outline series, T.M.H.

Paper – 8
FINANCIAL AND COST ACCOUNTING

UNIT I

UNIT II

UNIT III

UNIT IV
Fund flow analysis and cash flow analysis

UNIT V
Marginal Costing – absorption costing- practical application of marginal costing technique in different situations- P/V ratio- B.E.P- margin of safety

THIRD YEAR
Paper – 9
DATA AND COMPUTER COMMUNICATION

1. INTRODUCTION
Communication model - Data communications networking - Data transmission concepts and terminology - Transmission media - Data encoding -Data link control.

2. NETWORK FUNDAMENTALS
3. NETWORK LAYER


4. TRANSPORT LAYER


5. APPLICATIONS


Text Book

References:

Paper – 10
SYSTEM SOFTWARE

1. INTRODUCTION

Basic Concepts – Machine Structure – Typical Architectures

2. ASSEMBLERS
Functions - Machine dependent and Machine independent assembler Features - Design and Implementation - Examples.

3. LOADERS AND LINKERS


4. MACRO PROCESSORS

Functions - Features - Recursive macro expansion - General-purpose macro processors - Macro processing within language translators - Implementation – Examples.

5. COMPILERS AND UTILITIES

Introduction to compilers - Different phases of a compiler - Simple one pass compiler - Code optimization techniques - System software tools - Text editors - Interactive debugging systems.

Text Book

References:
UNIT I:

UNIT II:

UNIT III:
Classes, Objects and Methods – Arrays, Strings and Vectors – Multiple inheritance.

UNIT IV:
Packages – Multithreaded Programming – Managing Errors and Exceptions.

UNIT V:

Reference Books


PRACTICAL 3: INTERNET AND JAVA PROGRAMMING

1. Command Line Arguments

Write a Java Application which converts the given string in uppercase and lowercase using command line arguments.

2. CALL-ME telephone department send telephone bill to its customers on the 15th day of the month. The telephone bill details consist of teleno (integer), cust nm (10 characters), cust-add (30 characters) and no-calls (integers), amt (float).

With the help of Java program create a class named bill with above mentioned telephone bill details. Code a constructor such that it initialises the data member to fixed values and finalizer methods to destroy the data member.

CALL-ME
Telephone Department

Customer Name: ……………………… Tel No. ……………
Customer Add: ………………………
Call made: <no calls>
Total bill: …………..

If paid after 10 days, you have to pay: …………..

Write a Java program.

Note: normally, the department charges Rs. 0.80/- per call. For late payment, (the department charges Rs. 1.00/- per call).

3. Assume that a bank maintains 2 kinds of account for its customers, one called savings account and the other current account. The savings account provides compound interest and withdraw facilities but no cheque book facility, the current account provides cheque book facility but no interest current account holders should also maintain minimum balance and if the balance falls below this level, a service charge is imposed.
Create a class account that stores customers name, account number and type of account. From this, derive the class cur-acct and sav-acct to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks.

a. Accept deposit from a customer and update the balance.
b. Display the balance.
c. Compute and deposit Interest.
d. Permit withdrawl and update the balance.
e. Check for the minimum balance, impose penalty, if necessary and update the balance.

Use constructors and methods to initialize the class members.

4. Write a program to extract portion of a characters from the string and print the extracted string. Assume that M characters are Extracted starting with the nth characters.

5. Write a program that accepts a shopping list of five items from the command line and stores them in a vector and accomplish the following.
   - To delete an item in the list
   - To add an item at a specified location in the list.
   - To ad an item at the end of the list.
   - To print the contents of the vector.

6. Implementation of the concept of multiple Inheritance using interfaces and design a package to contain the class students and another package to contain the interface sports.

7. Develop a simple real-life application program to illustrate the use of multithreads.

8. a. Create a try block that is likely to generate three types of exception and then incorporate necessary catch blocks to catch and handle them appropriately.
b. Define an exception called ‘No match Exception’ that is thrown when a string is not equal to ‘India’. Write a program that used this exception.

9. Write a java applet, which will create the layout below.

```
FORMAT
Enter your name      :
Enter your Age       :
Select City          :  -Delhi     - Madras
Select Software      :  -Java   - Delphi  -Oracle-Visual Basic
Ok                    cancel
```
Handle the following simple validation.
The name entered should be less than 25 characters wide.
Age entered should be less than 60. Hint use the Boolean action
(Event ev, Object arg)

10. Load an image on to applet. As the user selects portions of this image, rectangular
regions corresponding to the selection should be highlighted by enveloping them in
rectangles (Use mouse events like mouse up and mouse down) Also, provide a mechanism
whereby the user can change the colors of selected regions.

11. Create an application which consists of dialog box that could be used to obtain an
username and a password to connect to some on-line service. The dialog box consists of two
fields ‘Username’ & ‘Password’ and 2 button ‘OK’ & ‘Cancel’ for accepting user input,
validate or cancel the dialog box.

12. Write an applet which will play 2 sound notes in a sequence continuously use the play()
methods available in the applet class and the methods in the audioclip interface.

13. Write a program which will open an existing file and then append text to that file.

14. Use the javascript to make a calculator.

15. Prepare the college profile using HTML.

ELECTIVES

COMPUTER GRAPHICS

UNIT I:
processors – Output primitives.

UNIT II:
Two Dimensional transformations – Windowing and Clipping.

UNIT III:
Segments – Display file compilation – Interactive input techniques – Physical input
devices – interactive picture construction techniques.

UNIT IV:

UNIT V:


TEXT BOOK:

REFERENCE BOOKS:

ARTIFICIAL INTELLIGENCE

UNIT – I:


UNIT – II:


UNIT – III:

Using predicate logic: Representing simple facts in Logic – Representing Instance and Isa Relationship – computable functions and predicates – Resolution – Natural

UNIT - IV:

UNIT – V:

TEXT BOOK

REFERENCE BOOKS
2. Introduction to Artificial Intelligence and Expert Systems, Dam W. Patterson, PHI, 1990.

SYSTEM ANALYSIS AND DESIGN

UNIT – I:
The system concept – characteristics of a system – elements of a system – types of system – the system development life cycle – consideration for candidate systems – the role of system analyst – real life examples for systems.

UNIT – II:
System analysis – systems planning and the initial investigation – used – determine the requirements – background analysis – fact finding technique and analysis – information gathering – review of literature – procedures – forms – online observations – interviews and questionnaires and types.
UNIT – III:

Tools of structured analysis – data flow diagram – data dictionary – decision tree –
decision table – feasibility study – system performance – identification of system objectives
– description of outputs – feasibility considerations – steps in feasibility analysis – report and
oral presentation – cost benefit analysis.

UNIT – IV:

System design – process and stages of system design – methodologies – structure and
form driven methodology – process control – data validation – I/O and form design – file
organization and database design – sequential and indexed – sequential organization –
database objectives – logical and physical data – normalization.

UNIT – V:

System Implementation – system testing and quality assurance - nature of test data –
test plan – levels of quality assurance – Implementation and software maintenance –
hardware software selection – system security applications.

TEXT BOOKS

REFERENCE BOOKS
1. Analysis design of information of systems, James A. Senn, Mc Graw Hill.
2. Introducing systems analysis and design, volume I & II, Lee, Galgotia Book Source.
3. Elements of system analysis, Marin Gore, John stubbie, Galgotia Book source.

MULTIMEDIA AND VIRTUAL SYSTEM

UNIT – I:

Introduction to Multimedia – Multimedia Hardware and Software Essentials – Text in
Multimedia – Multimedia Graphics fundamentals.

UNIT – II:

UNIT – III:
Image processing: Digital image fundamentals – Digital image development and editing – Computer Animation techniques – Animation software.

UNIT – IV:
Multimedia project design – Multimedia on CD-ROM – Multimedia file formats – Growth pace of multimedia in IT industry.

UNIT – V:
Introduction to virtual reality Brief history of Virtual reality – VR onflight simulation – VR on CAD / CAM processing – virtual banks.

REFERENCE BOOKS

SOFTWARE ENGINEERING

1. FORMAL SPECIFICATIONS
   Models - Specification languages - Abstraction levels - Domain specification language.

2. SOFTWARE MEASUREMENT
   Frame work - Process attributes - Effort, time and cost measurement - Cost estimation - Product attributes - Size - Control flow structure - Modularity - Complexity measures - Technical metrics.

3. SOFTWARE REUSABILITY
Reuse dimensions - Reuse of intermediate products - Reuse and the Software Life cycle - Reuse tools and techniques.

4. TOOLS

Computer aided software Engineering - Project management tools - Analysis and design tools - Programming tools - Integration and testing tools.

5. SOFTWARE ENGINEERING STANDARDS

ISO - SET - Specification - Design - Programming - Testing

References:
In the Bachelor of Science in Information Technology program, you'll master the technologies and services employed in modern information system environments. You'll work closely with highly knowledgeable faculty, who are also industry leaders and professionals that can share real-world applications to best prepare you for an IT career. After covering the fundamentals of computing, you'll take courses in ethics, information management, project management, programming, and more for a well-rounded education. College Composition: 5 credits College Mathematics: 5 credits Humanities: 15 credits Social Science: 15 credits Natural Science/Mathematics: 15 credits. Program Requirements. *This program requires MATH 151 (Calculus) or higher. The BSIT (Bachelor of Science in Information Technology) course offered by Westcliff University is an interdisciplinary program that offers pathways for students who want to pursue careers in the growing field of Information Technology. The program focuses on addressing business challenges and creating new opportunities with technology. Focuses on the practical and theoretical dimensions of information technology, and prepares students for careers in the fields of information technology, IT management and cybersecurity. Starting Academic Year 2018-2019 (August 2018), the Bachelor of Science in Information Technology program will offer three professional elective tracks for students: 1. Network and Security The Network and Security track provides a continuation of the CCNA modules delivered during the 2nd and 3rd years of BS IT students. Focus is on hardware integration, implementation, and application rather than engineering's hardware development and design. Introduction of existing technologies, such as the Boe-Bot series and Arduino, will be used to identify and create possible applications, focusing on real-life scenarios (i.e., Internet of Things). Identity. Becoming Part of the Program. Information technology is in almost every industry and a growing trend for qualified IT specialists is being seen in healthcare and academia. As the world becomes more technological every day, well-trained IT professionals are needed. Excellent career opportunities and placements are available and a Bachelor IT degree will set you on a path for success. Bachelor's study program "Electrical Engineering and Information Technology" is designed to enable students to acquire mathematical and physical knowledge, the necessary theoretical and practical experience in electrical engineering, information technology, and cybernetics. Bachelor of Science in Information Technology and Cybersecurity. Featured. Read More. Advance your knowledge of information technology and earn your bachelor's in IT by taking a variety of courses in programming, information systems, database development, computer networking, operating systems and more. Get more information today: First Name*. Your Career in Information Technology Starts Here. Prepare yourself to meet the rising demand for highly skilled information technology professionals with UMass Lowell's Bachelor of Science in Information Technology program. Offered 100% online or as a mix of online and on-campus courses, this flexible and affordable BSIT program will position you for success in today's increasingly technical and IT-centric world.