MANGALORE UNIVERSITY

National Education Policy – 2020
[NEP-2020]

Curriculum Structure
For
B.Com. COMPUTER APPLICATIONS
(VOCATIONAL)

Syllabus for III and IV semesters

SYLLABUS FOR III AND IV SEMESTERS

Sem.	Course Code and Course Title	Hour / Week	
		Theory	Lab
III	B.Com 3.2: Java Programming	3	
	B.Com 3.3: DBMS	3	
	B.Com 3.4: Java and DBMS Lab		4
IV	B.Com 4.2: Web Application Development	3	
	B.Com 4.3: Computerized Accounting	3	
	B.Com 4.4: WEB and Tally Lab		4

III SEMESTER

Course Title: Java Programming	Course code: B.Com 3.2
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

At the end of the course, students will be able to:

- Understand the object-oriented concepts and JAVA Technology
- Present the Java Technology basics including classes, objects, sub-classes, etc.
- Implement Classes and multithreading using JAVA.
- Demonstrate the basic principles of creating Java applications with GUI.

Unit	Description	Hours
1	Java Evolution: Java history, Java features, Java support systems, Java environment. Overview of Java Language: Introduction, Java program structure, Java Tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command line arguments. Constants, Variables and Data Types: Introduction, Constants, variables, data types, Declaration of variables, Scope of variables, Standard default values. Operators: Introduction, Arithmetic, Relational, Logical, Assignment, Increment & decrement, conditional, Bitwise operators, special operators, Precedence of operators Expressions: Arithmetic expressions, Evaluation of expressions, Type conversions in expressions, Operator precedence and associatively, Mathematical functions.	11

2	Decision making and branching: Introduction, Decision making with If statements, simple IF statement, Nesting of IF …….ELSE statements. ELSE…….if…….ladder, switch statement, ?: operator, Decision making and Looping: Introduction, while statement, Do statement, For statement, Jumps in Loops, Labeled Loops. Classes objects and methods: Introduction, Defining a Class, Adding Variables, Adding methods, Creating Objects, Accessing Class members, Constructors, Methods Overloading, Static Members, Nesting of Methods, Inheritance, Overriding Methods, Final variables and Methods, Final classes, Finalizer Methods, Abstract Methods and Classes, Visibility Control.	11
3	Arrays: One dimensional Arrays, Creating an Array, Two Dimensional Arrays, Strings, Vectors, Wrapper Classes. Interfaces: Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interface Variables. Packages: Introduction, Java, API Packages, Using System Packages, Naming Conventions, Creating Packages, accessing a Package, using a Package, adding a class to a Package, Hiding classes.	10
4	Managing Errors and Exceptions: Introduction, Types of Errors, Exceptions, Syntax of Exception Handling Code, Multiple Catch Statements, Using Finally Statement, throwing our own Exceptions, Using Exceptions for Debugging Input / Output Programming: The Java I/O Classes and Interfaces, The Stream Classes, The Byte Streams, The Character Streams, Basics of File Programming: Reading from the file and Writing to the file.	10

Text Books:

1. Programming with Java, By E Balaguruswamy – A Primer, 4th Edition, McGraw Hill Publication.
2. Core Java Volume I – Fundamentals, By Cay S. Horstmann, Prentice Hall.

References:

1. Object Oriented Programming with Java: Somashekara M.T., Guru, D.S., Manjunatha K.S, 1st Edition, PHI Learning 2017.
2. Java 2 - The Complete Reference, Herbert Schildt, 5th Edition, McGraw Hill Publication, 2017.
3. Java - The Complete Reference, Herbert Schildt, 7th Edition, McGraw Hill Publication, 2017.

Semester: III

Course Title: DBMS	Course code: B.Com 3.3
Total Contact Hours: 42	Course Credits: 03

Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

At the end of the course, students will be able to:

- Explain the various database concepts and the need for database systems.
- Identify and define database objects, enforce integrity constraints on a database Identify entities and relationships and draw ER diagram for a given real-world problem.
- Convert an ER diagram to a database schema and its representation in Relational model. Formulate queries in Relational Algebra and implement using Structured Query Language (SQL) The importance of transaction processing and concurrency control techniques.

DSC7: DBMS

Unit	Contents	Hours
1	Database Architecture: Introduction to Database system applications. Characteristics and Purpose of database approach. Data models. Database schema. Database architecture. Data independence. Database languages, interfaces, and classification of DBMS. E-R Model: Entity-Relationship modeling: E-R Model Concepts: Entity, Entity types, Entity sets, Attributes, Types of attributes, key attribute, and domain of an attribute. Relationships between the entities. Relationship types, roles and structural constraints, degree and cardinality ratio of a relationship. Weak entity types, E -R diagram.	11
2	Relational Data Model: Relational model concepts. Characteristics of relations. Relational model constraints: Domain constrains, key constraints, primary & foreign key constraints, integrity constraints and null values. Basics of SQL: Table fundaments, Data types, CREATE TABLE command, Inserting data into table, Viewing Data in the table, sorting data in a table, Creating a table from a table, Inserting data into a table from another table, Delete operations, Updating the contents of a table, Modifying the structure of tables, Renaming tables, destroying tables, displaying table structure.	11
3	Integrity Constraints: Types of data constraints, IO constraints-The PRIMARY KEY constraint, The FOREIGN KEY constraint, The UNIQUE KEY constraint, Business Rule Constraints- NULL value concepts, NOT NULL constraints, CHECK constraint, DEFAULT VALUE concepts.	10

	Operators and Basic Functions: Arithmetic Operators, Logical Operators, Range Searching, Pattern Matching, Oracle Table – DUAL, Oracle Function- Types, Aggregate Function, Date Conversion Function. GROUPING DATA FROM TABLES IN SQL: Group By clause, Having clause, subqueries, JOINS, Using the UNION, INTERSECTION, MINUS clause. Control Structure - Conditional Control, Iterative Control	
4	Basics of PL/SQL: The Generic PL/SQL Block, Character set, Literals, Data types, Variables, Logical comparisons, Comments PL/SQL Transactions: Cursor-Types of Cursor, Cursor Attributes. Explicit cursor-Explicit cursor Management, Cursor for loop PL/SQL Database Objects: Procedures and Functions, Oracle Packages, Error Handling in PL/SQL. Database triggers: Use of database triggers, Applying database triggers, Syntax of creating triggers. Oracle Packages, Components of an oracle package, use of packages, Packages Specification, Creating packages. Error handling in PL/SQL: Oracle's Named Exception handlers (only predetermined internal PL/SQL Exceptions)	10

Text Books:

1. RamezElmasri and Shamkant B. Navathe, Fundamentals of Database Systems,7th Edition, Pearson Education Asia Publication,2016
2. Ivan Bay Ross, SQL, PL/SQL the Programming Language of Oracle, 4th Edition, BPB Publication 2009.

References:

1. Database Systems Concepts, Abraham Silberschatz, Henry Korth, S.Sudarshan, 6thEdition, McGraw Hill, 2010.
2. Introduction to Database System, C J Date, Pearson, 1999.
3. Database Management Systems, Raghu Rama Krishnan and Johannes Gehrke, 3rd Edition, McGraw Hill, 2002

Semester: III: PRACTICAL LIST -: Java and DBMS Lab

Course Title: Java and DBMS Lab	Course code: B.Com 3.4
Total Contact Hours: 52	Course Credits: 02
Formative Assessment Marks: 25	Duration of SEE/Exam: 03 Hours
Summative Assessment Marks: 25	

PART-A: JAVA Lab:

1. Write a Java program to find whether the given number is palindrome or not.
2. Write a program to initialize an integer array and find the maximum and minimum value of the array.
3. Given two strings, *a* and *b*, print a new string which is made of the following combination-first character of *a*, the first character of *b*, second character of *a*, second character of *b* and so on. Any characters left, will go to the end of the result.

    a. *Sample Example:*

        i. Input string: Hello,World ii.
        Output string: HWeolrllod
4. Create a class Box that uses a parameterized constructor to initialize the dimensions of a box. The dimensions of the Box are width, height, depth. The class should have a method that can return the volume of the box.
5. Create a school application with a class called Person. Create name and D ate of Birth as member variables. Create a class called Teacher that inherits from the Person class. The teacher will have additional properties like salary, and the subject that the teacher teaches. Create a class called Student that inherits from Person class. This class will have a member variable called student-Id. Create a class called College Student that inherits from Student class. This class will have college Name, the year in which the student is studying (first/second/third/fourth) etc.

    Create objects of each of this classes, invoke and test the methods that are available in these classes.
6. Write a Menu drive Java program to perform following operation using Vector.
    a. INSERT an ITEM
    b. DELETE a SPECFIC ITEM
    c. DISPLAY SPECFIC ITEM
    d. DISPLAY ALL ITEMS
7. Write a Java program using package to convert Celsius to Fahrenheit.
8. Write a Java program to read number form NUMBER.txt file and count the number of zero's, positive and negative numbers and display the result.

PART-B: DBMS Lab

SQL Queries

1. Create a table EMPLOYEE using SQL command, employee (empno, ename, desg, dept, gender, salary). Specify primary key and NOT NULL constraints and allow 'M' or 'F' for gender.

    Write the following SQL Queries:

    a. Display all the information about all employees.
    b. Display empno,ename and desg of all em ployees.
    c. Display the details of all female employees.

d. List empno, ename and desg of all employees whose salary more than 5000.

e. Display the names of employees who gets the maximum salary.

f. Display the number of employees woring in marketing and sales department.

2. Create table STUDENT using SQL command to store

Column Name	Data Type	Size
rno	Varchar2	6
Name	Char	15
Class	Varchar2	8
Marks1	Number	3
Marks2	Number	3
Marks3	Number	3

Write SQL queries for the following:

a). Display the structure of the table STUDENT.

b). Add new column TOTAL and update the contents of TOTAL column of STUDENT table.

c). Display the students details whose TOTAL is between 70 to 90.

d). Display the names of students whose name ends with 'th'.

e). Delete all the records of the table STUDENT.

3. Create a table BOOK using SQL command to store

Column_Name	Data Type	Size
BOOKCODE	Varchar2	10
TITLE	Varchar2	20
PUBLISHER	Varchar2	15
CATEGORY	Varchar2	10
YEAR	Number	04
PRICE	Number	8,2

Write SQL queries for the following:

a). List the details of the books whose publisher's name start with 'M'.

b). List the details of publishers having 'A' as the second character in their names.

c). Find the books published in 2010,2011,2012.

d). Display the BOOKCODE, TITLE, PUBLISHER of all books in the descending order of YEAR.

e). Display the details of all books other than MICROSOFT PRESS publishers.

4. Create the following tables by identifying primary and foreign keys. Specify the not null property for mandatory keys.

   SUPPLIERS (SUPPLIER_NO, SNAME, SADDRESS, SCITY)

   COMPUTER_ITEMS (ITEM_NO, SUPPLIER_NO, ITEM_NAME, IQUANTITY)

   Write SQL statement for the following:

   a) List ITEM and SUPPLIER details.
   b) List the names of the suppliers who are supplying keyboard.
   c) Display the items supplied by 'Microtech'.
   d) List the items supplied by the suppliers 'Cats' and 'Electrotech'.

PL/SQL

5. Write a PL/SQL program to process a bank transaction whenever a request for withdrawal issued, a check is made if there is sufficient fund in the account. If the fund is not available print the message fund not available.

6. Write a PL/SQL program to compute DA, HRA, Tax and net pay of employees which contains the following columns. empno, empname, basicpay , DA , HRA,TAX,NET PAY. Given HRA is 10% of basicpay, DA is 12% of basicpay, Tax is 10% of basicpay. Using Open, fetch and close statements.

7. Write a PL/SQL program to find factorial of a given number using function.

8. Write a PL/SQL program to compute the selling price of books depending on the book code. The Book table contains columns: BookNo, Book Code, Author, Title and Price.

   The selling price= Price-Discount.

   The discount is calculated as follows:

Book Code	Discount percentage
A	10% of Price
B	20% of Price
C	25% of Price

SCHEME FOR PRACTICAL VALUATION:

Question No. 1: From Part A -10 marks

Question No. 2: from Part B - 10 marks

Record – 05 Marks

Total: 25 Marks

SEMESTER: IV

Course Title: Web Application Development	Course code: B.Com 4.2
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs):

At the end of the course, students will be able to:

- Design and implement websites with good aesthetic sense of designing
- Use scripting languages and web services to add interactive components to web pages.
- Select and apply markup languages for processing, identifying, and presenting information in web pages.
- Have a sound knowledge of Web Application Terminologies, Internet Tools and web services. Design to be reusable the software components in a variety of different environments.

WEB APPLICATION DEVELOPMENT

Unit	Contents	Hours
1	Internet Basics, Hyper Text Markup Language: Formatting Tags, Creating Web Page Links, Listing Text, Tables in HTML, Frames in HTML, Brightening Page With Animated Text And Images, HTML5: Web Forms, Building forms in HTML5, Drawing with the Canvas Element, Cascading Style sheet, Style sheet basic, Applying CSS to HTML document, Understanding CSS Transitions, Enriching Forms Using CSS3 Properties, Transforming The Message	11
2	Introduction to JavaScript, Advantages of JavaScript, JavaScript syntax, Data type, Variables, Arrays, Operator & expression, Looping constructor, Function Dialog Box	11
3	JavaScript document object model, Introduction, Objects in HTML, Event Handling, Window Object, Document Object, Browser Object, Form Object, Navigator Object Screen Object, Build In Object, User Defined Object, Cookies.	10
4	ASP. NET Language Structure: Introduction To Visual Studio 2012 IDE, Understanding ASP.NET 4.5 Directives. HTML server controls, Anchor, Tables, Forms and Files, Basic Web server Controls, Label, Textbox, Button, Image, Links, Check & Radio button, Hyperlink. Data List Web Server Controls, Check box list, Radio button list, Drop down list, List box, Data grid, Repeater.	10

Text Book:

1. Ivan Bayross, HTML5 and CSS3 made Simple, BPB publications.
2. ASP.NET4.0 in Simple Steps, Kogent Publication and dreamtech PRESS Publication
3. ASP .NET 4.5(covers c# and vb codes), Black book by Kogent and Dreamtech PRESS Publication
4. Javascript, A Beginner's Guide 3rd edition, by John Pollock, Published by McGraw-Hill Professional Publishing
5. Javascript:The Definitive Guide, 6th edition By David Flanagan – Published by O'Reilly Media, Inc

Course Title: Computerized Accounting	Course code: B.Com 4.3
Total Contact Hours: 42	Course Credits: 03
Formative Assessment Marks: 40	Duration of SEE/Exam: 02 Hours
Summative Assessment Marks: 60	

Course Outcomes (COs): At the end of the course, students will be able to:

- Understanding of basic concepts of accounting in respect of revenue, expense, assets, liability and equity
- Competency to enter accounting transactions in the accounting software and generate different accounting reports/documents.
- Abilities to make cost analysis reports, profit & loss accounts, balance sheets, and cash flow statements
- Develop skills in maintaining accounting records, provides in-depth exposure to accounts receivable/ accounts payable, payroll and inventory modules.
- Know about Computerized Accounting for account maintenance, making management decisions, and processing common business applications with primary emphasis on a general ledger package

COMPUTERIZED ACCOUNTING

Unit	Contents	Hours
1	Advanced Excel: Sorting and Filtering, Look up data by using Functions, Apply Advanced Date and Time Functions, Perform Data Analysis and Business Intelligence, Troubleshoot Formulas. Create and Manage Pivot Charts, Create Advanced Charts and Tables. Define Named Ranges and Objects, Macros,	11
2	Computerized Accounting: Introduction–Importance-Application -Advantages and disadvantages – Difference between Manual Accounting and Computerized Accounting – Features of Accounting packages – Creation of Company– Groups–Ledgers, Pre-defined vouchers - Displaying - Altering – Deleting of vouchers, ledger and company.-	11
3	Accounts with Inventory: Creation of Company with inventory and stock – Creation of Groups - Stock categories - Stock items – Godowns - Units of Measure - Inventory Vouchers - Pure Inventory Vouchers - Creating purchase order & Sales order – Invoicing - Display of inventory reports & statements. Reports: Account Books – Registers - Statement of Accounts - Bank Reconciliation Statement - Day Book – Cash and Bank Books- Final Accounts of Sole Traders: Trail Balance - Profit and Loss Account - Balance Sheet	10

4	Tax Accounting: Goods and Service Tax (GST): Create Company and Activate GST in Company Level, Creating Master and Set GST Rates, Creating Tax Ledgers, Recording GST Sales and Printing Invoices, Recording GST Interstate Sales and Printing Invoices, Recording an Advance to Supplier under GST, Recording GST Local Purchase, Recording GST Interstate; Payroll: Introduction, steps to generate pay-slips, creation of Employee group and Employee, Salary details, Payroll reports.	10

Text Books:

1. Student Guide-40571A Micrsoft Excel expert 2019
2. SIA Experts, Computerized Accounting, SIA Publishers & Distributors Pvt Ltd, 2018
3. Yadagiri M., Srinivas G., Computerized Accounting, Jain Book Agency, 1st edition, 2008
4. Francis Princy, Computerized Accounting Tally-9 , Kalyani Publications, 2014
5. Tally Education Pvt Ltd, GST Using Tally. ERP 9 Release 6.1, Sahaj Enterprises; 1 Edition, 2017.

Reference Books:

1. Parag Joshi, Tally.ERP 9 with GST with Solved Problems, Dnyansankool Prakashan; 1st edition, 2017.
2. Asok K. Nadhan, Tally ERP 9 Training Guide, BPB Publications; Fourth edition, 2018.
3. Rajesh Chheda, Learn Tally.ERP 9 with GST and E-Way Bill, Ane Books; 3 edition, 2018.
4. Yogesh Patel, Free Accounting with Free Software, Skylark Publications (UK); First edition, 2011.