गोंय विद्यापीठ
ताळगांव पठार,
गोंय - ४०३ २०६
फोन : + ९१ - ८६६९६०९०४८

**Goa University**
Taleigao Plateau,Goa - 403 206
Tel :      +91-8669609048
Email :  registrar@unigoa.ac.in
Website :    www.unigoa.ac.in

(Accredited by NAAC with Grade A+)

GU/Acad –PG/BoS-CDT /2025-26/749                                    Date: 05/02/2026

## CIRCULAR

The approved syllabus of the Change of Discipline Test (CDT) for **Post Graduate Diploma in Business Intelligence and Technologies** Programme is attached herewith.

The Dean/Vice-Dean (Academic) of the Goa Business School and the Principals of all the affiliated Colleges are requested to take note of the above and bring the contents of this Circular to the notice of all concerned, including students aspiring to pursue the Master's Programmes.

(Ashwin V. Lawande)
Deputy Registrar – Academic

To,
1. The Dean, Goa Business School, Goa University.
2. The Vice-Dean (Academic), Goa Business School, Goa University.
3. Principals of all the affiliated Colleges.

Copy to:
1. Controller of Examinations, Goa University.
2. Assistant Registrar (Admissions), Goa University.
3. Assistant Registrar Examinations (UG/PG), Goa University.
4. Director, Directorate of Internal Quality Assurance, Goa University for uploading the Syllabus on the University website.

# GOA UNIVERSITY

### SYLLABUS FOR CHANGE OF DISCIPLINE TEST (CDT) FOR POST GRADUATE DIPLOMA IN BUSINESS INTELLIGENCE AND TECHNOLOGIES PROGRAMME

### Effective from AY: 2026-2027

| Modules | Content |
|---|---|
| **Module1:** | **Digital Number Systems and Binary Arithmetic** |
| | Digital systems, binary numbers, number baseconversions, octal and hexadecimal numbers, complements, signed binary numbers |
| **Module2:** | **Algorithmic Strategies for Problem Solving** |
| | Introduction to Algorithms & Analysis: Algorithm definition, performance analysis (time/space complexity). |
| | Divide and Conquer Algorithms: Binary search, merge sort, quicksort, Strassen's matrix multiplication. |
| | Greedy Method Algorithms: Fractional knapsack, Job sequencing with deadlines, Huffman coding, Dijkstra's algorithm, Prim's/Kruskal's algorithm. |
| **Module:3** | **Database Systems** |
| | Introduction to Databases: Characteristics of the Database Approach, Advantages of usingthe DBMS Approach, A Brief History of Database Applications. |
| | Overview of Database Languages and Architectures: Data Models, Schemas andInstances, Three-Schema Architecture and Data Independence, Database Languages andInterfaces, Database System environment, Centralized and Client-Server Architecture forDBMSs. |
| **Module: 4** | **Python Programming** |
| | Introduction Data, Expressions, Statements |
| | Introduction To Python And Installation, Data Types: Int, Float, Boolean, String, And List; Variables, |
| | Expressions, Statements, Precedence Of Operators, Comments; Modules, Functions--- Function And Its |
| | Use, Flow Of Execution, Parameters And Arguments. |
| | Control Flow, Loops |
| | Conditionals: Boolean Values And Operators, Conditional (If), Alternative (If-Else), Chained Conditional |

| | |
|---|---|
| | (If-Elif-Else); Iteration: While, For, Break, Continue. |
| | Functions, Arrays |
| | Fruitful Functions: Return Values, Parameters, Local And Global Scope, Function Composition, |
| | Recursion; Strings: String Slices, Immutability, String Functions And Methods, String Module; Python |
| | Arrays, Access The Elements Of An Array, Array Methods. |
| | Lists, Tuples, Dictionaries |
| | Lists: List Operations, List Slices, List Methods, List Loop, Mutability, Aliasing, Cloning Lists, List |
| | Parameters, List Comprehension; Tuples: Tuple Assignment, Tuple As Return Value, Tuple Comprehension; |
| | Dictionaries: Operations And Methods, Comprehension; |
| | Files, Exceptions, Modules, Packages |
| | Files And Exception: Text Files, Reading And Writing Files, Command Line Arguments, Errors And |
| | Exceptions, Handling Exceptions, Modules (Datetime, Time, Os , calendar, math module), Explorepackages. |
| **Module: 5** | **Statistical Data Representation** |
| | Diagrammatic and Graphical representation of Data: Diagrams: Meaning, importance of diagrams andgeneral rules of construction of diagrams. Types of Diagrams - simple, multiple, component, percentage bardiagrams and pie diagrams with simple illustrations. |
| | Graphs: Types of Graphs - Histogram, frequency Polygon, frequency curve and Ogives, simple problems, |
| | location of mode, median and partition values from the graphs. Difference between diagrams and graphs. |
| **Module: 6** | **Spread Sheets for Data Analysis** |
| | Introduction to Excel, Uses of Excel, |
| | Functionality Using Ranges. |
| | Using Ranges, Selecting Ranges, Entering Information Into a Range, Using AutoFill |
| | Creating Formulas. |
| | Using Formulas, Formula Functions – Sum, Average, if, Count, max, min, Proper, Upper, Lower, Using AutoSum, Advance Formulas |
| | Concatenate, Vlookup, Hlookup, Match, Countif, Text, Trim |
| | Spreadsheet Charts |
| | Creating Charts, Different types of chart, Formatting Chart Objects, Changing the Chart Type, |
| | Showing and Hiding the Legend, Showing and Hiding the Data Table |
| | Data Analysis |
| | Sorting, Filter, Text to Column, Data Validation PivotTables |
| | Creating PivotTables, Manipulating a PivotTable, Using the PivotTable Toolbar, Changing Data |

| | |
|---|---|
| | Field, Properties, Displaying a PivotChart, Setting PivotTable Options, . Adding Subtotals toPivotTables |
| | Spreadsheet Tools |
| | Moving between Spreadsheets, Selecting Multiple Spreadsheets, Inserting and Deleting |
| | Spreadsheets Renaming Spreadsheets, Splitting the Screen, Freezing Panes, Copying and Pasting |
| | Data between Spreadsheets, Hiding , Protecting worksheets |
| | Making Macros |
| | Recording Macros, Running Macros, Deleting Macros |
| **Module :7** | **Organizational Structures** |
| | Basic concepts related to Organization – Authority, Responsibility, Departmentalisation, Delegation of Authority, Centralization and Decentralization, Span of Management. Types ofOrganizational Structures, Leadership: Definition, Meaning, Features and Types of Leadership, Decision making process. |
| **References/ Readings:** | 1. M. Morris Mano, Michael D. Ciletti (2008), Digital Design, 4th edition, Pearson Education Inc, India. <br> 2. Introduction to Algorithms by Cormen, Leiserson, Rivest, and Stein. <br> 3. Elmasri, R., &Navathe, S. B. (2016). Fundamentals of database systems (7th ed.). Pearson. <br> 4. Python Programming: A Modern Approach, VamsiKurama, Pearson <br> 5. Gupta S. C. Fundamentals of Statistics, Himalaya Publishing House, Bombay <br> 6. Brown, N., Lave, B., Puncochar, H., Romey, J., Schatz, M., Schneider, A., & Shingledecker, D. (2017). Beginning Excel 2019. Open Oregon Educational Resources <br> 7. Harold Koontz, Heinz Weihrich, "Essentials of Management", Tata McGraw Hill, 2015. <br> 8. Rusczyk, R. (2007). Introduction to Algebra (2nd ed.). |