# PGDCA (Post Graduate Diploma in Computer Applications)
## PGDCA Semester-I

| Course Code | PS01CDCA51 | Title of the Course | PC Software |
|---|---|---|---|
| Total Credits of the Course | 4 | Hours per Week | 4 |

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| Course Objectives: | 1. To introduce students to<br>• computer fundamentals<br>• features of word processing, presentation tool and spreadsheets. |

| Course Content | | |
|---|---|---|
| Unit | Description | Weightage* (%) |
| 1. | **Computer Fundamentals & Word processing**<br>- Definition, Functions, Block diagram, components of computer, input and output devices, types of computers and characteristics.<br>- Introduction to Word Processing software, benefits of Word Processing software, examples of word processors<br>- Working with documents – basic operations, formatting text & paragraphs<br>- Using tables, shapes, inserting pictures<br>- Mail merge facility | 25 |
| 2. | **Presentation tool**<br>- Presentation tool – Introduction and basic features<br>- Working with presentation slide – creating, editing, formatting and previewing<br>- Inserting picture, clip art, shapes and chart<br>- Adding header, footer, animations and slide transitions<br>- Printing slide content | 25 |
| 3. | **Spreadsheet – I**<br>- Introduction to Spreadsheet and Spreadsheet packages<br>- Building Spreadsheets using formulas, conditional calculations<br>- Built in functions<br>- Database Utilities : sorting, filtering, extracting<br>- Creating charts | 25 |
| 4. | **Spreadsheet – II**<br>- Working with External data<br>- Data analysis using What if analysis, Goal seek and scenario | 25 |

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|---|---|---|
| | - Pivot table and Pivot chart<br>- Macro facility | |

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| Teaching-Learning Methodology | Blended learning approach incorporating traditional classroom teaching and online /ICT-based teaching practices. |

| Evaluation Pattern | | |
|---|---|---|
| Sr. No. | Details of the Evaluation | Weightage |
| 1. | Internal Written / Practical Examination (As per CBCS R.6.8.3) | 15% |
| 2. | Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3) | 15% |
| 3. | University Examination | 70% |

| Course Outcomes: Having completed this course, the learner will be able to | |
|---|---|
| 1. | To understand computer fundaments |
| 2. | To understand features of word processing, presentation tool and spreadsheets. |

| Suggested References: | |
|---|---|
| Sr. No. | References |
| 1. | Manuals of PC software. |
| 2. | Taxali R K : PC Software made simple for Windows, Tata McGraw-Hill Publishing Co. Ltd., 2000. |

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## PGDCA (Post Graduate Diploma in Computer Applications)
## PGDCA Semester-I

| Course Code | PS01CDCA52 | Title of the Course | Python Programming |
|---|---|---|---|
| Total Credits of the Course | 4 | Hours per Week | 4 |

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| Course Objectives: | 1. To learn the basics of Python programming language, expressions, control structures<br>2. To learn the concepts of functions and methods, lists, dictionaries and strings. |

| Course Content | | |
|---|---|---|
| Unit | Description | Weightage* (%) |
| 1. | **Introduction to Computer Programming**<br>– Introduction to computers and computer programming<br>– Problem analysis, flow charts, algorithms<br>– Introduction to the Python programming language and development environment<br>– Variables, literals, data types, Assignment, Input and output, comments | 25 |
| 2. | **Expressions and Control Structures**<br>– Operators, evaluation of expressions<br>– The range type<br>– The if statement, The while loop, The for loop<br>– The break and continue statements | 25 |
| 3. | **Functions and Methods**<br>– Concept of functions and methods<br>– Built-in functions<br>– Operations on strings | 25 |
| 4. | **Lists and Dictionaries**<br>– Introduction to lists<br>– Operations on lists<br>– Introduction to dictionaries<br>– Operations on dictionaries<br>– Operations on strings | 25 |

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| Teaching-Learning Methodology | Blended learning approach incorporating traditional classroom teaching and online /ICT-based teaching practices. |

| Evaluation Pattern | | |
|---|---|---|
| Sr. No. | Details of the Evaluation | Weightage |
| 1. | Internal Written / Practical Examination (As per CBCS R.6.8.3) | 15% |
| 2. | Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3) | 15% |
| 3. | University Examination | 70% |

| Course Outcomes: Having completed this course, the learner will be able to | |
|---|---|
| 1. | Understand basics of Python computer programming language. |
| 2. | Understand expressions and control structures. |
| 3. | Understand functions and methods. |
| 4. | Understand lists, dictionaries and strings. |

| Suggested References: | |
|---|---|
| Sr. No. | References |
| 1. | Downey Allen: Think Python, O'Reilly, 2012. |
| 2. | Lutz Mark: Learning Python, 4th Edition, O'Reilly, 2009. |
| 3. | Hetland Magnus: Beginning Python – From Novice to Professional, Apress, 2005. |
| 4. | Lutz Mark: Python – Pocket Reference, 4th Edition, O'Reilly, 2009. |
| 5. | Python documentation. |

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## PGDCA (Post Graduate Diploma in Computer Applications)
## PGDCA Semester-I

| Course Code | PS01CDCA53 | Title of the Course | LOGICAL ORGANIZATION OF COMPUTER |
|---|---|---|---|
| Total Credits of the Course | 4 | Hours per Week | 4 |

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|---|---|
| Course Objectives: | 1. To provide basic understanding of logical organization and architecture of a computer.<br>2. To impart fundamental knowledge on processors, memory, input/output, instructions and flow of control.<br>3. To introduce fundamental concepts related to gates and logic circuits used in a digital computer. |

| Course Content | | |
|---|---|---|
| Unit | Description | Weightage* (%) |
| 1. | **Introduction to Computer Organization**<br>– Block Diagram of a simple computer and its different functional units.<br>– Representation of Information<br>– Number Systems and arithmetic - Introduction of Number System, Conversion, Addition of( B,H,O,D)<br>– Integer & Floating Point representation<br>– Character codes (ASCII & EBCDIC), Error detection and correction codes. | 25 |
| 2. | **Processors, Memory and Input/ Output**<br>– Instruction Execution<br>– CPU organization<br>– Parallel Instruction Execution<br>– Memory : Main memory, Secondary memory, Types & Organization<br>– Input/ Output: Common types of I/O devices, Controllers | 25 |
| 3. | **Instructions and Flow of Control, Gates and Boolean Algebra**<br>– Instruction formats<br>– Addressing, Instruction types<br>– Traps & Interrupt<br>– Gates , Boolean Algebra, Truth Tables<br>– Circuit Equivalence, De Morgan's Theorems | 25 |

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|---|---|---|
| 4. | **Basic Digital Logic Circuits, Memory Elements & Counters**<br>– Arithmetic Circuits - Multiplexer , Encoder, Decoder<br>– Half Adder , Full Adder , Binary Adder , 2's compliment adder/ subtractor<br>– Flip flops(RS , D)<br>– Registers, Counters | 25 |

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| Teaching-Learning Methodology | Blended learning approach incorporating traditional classroom teaching and online /ICT-based teaching practices. |

| Evaluation Pattern | | |
|---|---|---|
| Sr. No. | Details of the Evaluation | Weightage |
| 1. | Internal Written / Practical Examination (As per CBCS R.6.8.3) | 15% |
| 2. | Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3) | 15% |
| 3. | University Examination | 70% |

| Course Outcomes: Having completed this course, the learner will be able to | |
|---|---|
| 1. | Understand the fundamental concepts related to organization of a computer system. |
| 2. | Develop the fundamental knowledge on processors, memory, input/output, instructions and flow of control. |
| 3. | Understand the fundamental concepts related to gates and logic circuits used in a digital computer. |

| Suggested References: | |
|---|---|
| Sr. No. | References |
| 1. | V.Rajaraman : Fundamentals of Computers, Prentice Hall Of India Pvt. Ltd. |
| 2. | Tanenbauma.S. Structured Computer Organization, Prentice Hall Of India Pvt. Ltd. |
| 3. | Malvino A.P.: Digital Computer Electronics, Tata Mcgraw Hill Publication Co. Ltd. |

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## PGDCA (Post Graduate Diploma in Computer Applications)
## PGDCA Semester-I

| Course Code | PS01CDCA54 | Title of the Course | DATABASE MANAGEMENT SYSTEMS |
|---|---|---|---|
| Total Credits of the Course | 4 | Hours per Week | 4 |

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| Course Objectives: | 1. To introduce students to relational model, E-R diagram, normalization.<br>2. To introduce students to database transaction, concurrent access and database locking mechanism.<br>3. To introduce students to SQL and PL/SQL. |

| Course Content | | |
|---|---|---|
| Unit | Description | Weightage* (%) |
| 1. | **Relational model**<br>– Relational model concept<br>– E-R diagram and its conversion to relations<br>– Normalization<br>– Introduction to transactions<br>– Concurrent access to database and related problems<br>– Introduction of Locking techniques | 25 |
| 2. | **SQL**<br>– Data definition, queries, grouping and ordering<br>– Insert, Delete, Update<br>– Constraints: Primary key and Foreign key<br>– Built-in functions | 25 |
| 3. | **Procedural Language- I**<br>– Data types, variables and constants, assignment<br>– Conditional control, iterative control and display messages | 25 |
| 4. | **Procedural Language- II**<br>– Introduction of Implicit and explicit cursors and its attributes<br>– Exceptional handling<br>– Procedures<br>– Functions<br>– Introduction to Triggers | 25 |

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| Teaching-Learning Methodology | Blended learning approach incorporating traditional classroom teaching and online /ICT-based teaching practices. |

| Evaluation Pattern | | |
|---|---|---|
| Sr. No. | Details of the Evaluation | Weightage |
| 1. | Internal Written / Practical Examination (As per CBCS R.6.8.3) | 15% |
| 2. | Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3) | 15% |
| 3. | University Examination | 70% |

| Course Outcomes: Having completed this course, the learner will be able to | |
|---|---|
| 1. | understand relational model, E-R diagram, normalization. |
| 2. | understand database transaction, concurrent access and database locking mechanism. |
| 3. | understand SQL and PL/SQL. |

| Suggested References: | |
|---|---|
| Sr. No. | References |
| 1. | Elmasri And Navathe :Fundamentals of Database Systems, Addison-Wesley Publishing Co. 1994. |
| 2. | John G. Hughes: Database Technology A Software Engineering Approach, Prentice Hall International Series 1993. |
| 3. | Ivan Bayross: SQL , PL/SQL BPB Publications. |
| 4. | System Manuals. |

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## PGDCA (Post Graduate Diploma in Computer Applications)
## PGDCA Semester-I

| Course Code | PS01CDCA55 | Title of the Course | Foundation of Software Development |
|---|---|---|---|
| Total Credits of the Course | 4 | Hours per Week | 4 |

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| Course Objectives: | 1. To introduce students to basics of data structures.<br>2. To introduce students to fundamentals of Operating Systems.<br>3. To introduce students to basics of Systems Analysis and Design.<br>4. To introduce students to basics of Software Engineering. |

| Course Content | | |
|---|---|---|
| Unit | Description | Weightage* (%) |
| 1. | **Basics of Data Structures**<br>– Introduction to Data Structures, Applications, Operations<br>– Primitive and Non-primitive Data Structures<br>– Linear and Non-linear Structures<br>– Introduction to Array, Stack, Queue, Linked List, Trees and Graphs | 25 |
| 2. | **Fundamentals of Operating Systems**<br>– Operating System - definition, examples<br>– Services provided by an Operating System<br>– The concept of a process, process scheduling<br>– Queuing diagram representation of process scheduling<br>– Memory management : Paging, Virtual Memory | 25 |
| 3. | **System Analysis and Design**<br>– The concept of a System, Basic Components<br>– Phases of the Classical Systems Development Life Cycle (SDLC) Method<br>– The Prototype methods<br>– The structured development approach using Functional Decomposition Diagram (FDD), Data Flow Diagram (DFD) | 25 |
| 4. | **Software Engineering**<br>– Software – meaning, general characteristics and applications<br>– Software Engineering – meaning, goal and needs<br>– Software Development Process Models – Waterfall, Iterative, Spiral, etc. | 25 |

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|---|---|---|
| | – Software Testing – introduction, needs and levels | |

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| Teaching-Learning Methodology | Blended learning approach incorporating traditional classroom teaching and online /ICT-based teaching practices. |

| Evaluation Pattern | | |
|---|---|---|
| Sr. No. | Details of the Evaluation | Weightage |
| 1. | Internal Written / Practical Examination (As per CBCS R.6.8.3) | 15% |
| 2. | Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3) | 15% |
| 3. | University Examination | 70% |

| Course Outcomes: Having completed this course, the learner will be able to | |
|---|---|
| 1. | Understand basics of data structures. |
| 2. | Understand fundamentals of Operating Systems. |
| 3. | Understand basics of Systems Analysis and Design. |
| 4. | Understand basics of Software Engineering. |

| Suggested References: | |
|---|---|
| Sr. No. | References |
| 1. | Singh Bhagat & Naps Thomas : Introduction to Data Structures, Tata McGraw-Hill Publishing Co. Ltd.,1985. |
| 2. | Tanenbaum A. S. : Modern Operating Systems, 3rd edition, Prentice-Hall, 2008. |
| 3. | Sajja, P.S. "Essence of Systems Analysis and Design: A Workbook Approach", Springer International Publishing, Singapore, 2017. |
| 4. | Jalote Pankaj : Integrated Approach to Software Engineering, 3rd Edition, Narosa Publishing House, 2005 (ISBN 978-81-7319-702-4). |

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# PGDCA (Post Graduate Diploma in Computer Applications)
# PGDCA Semester-II

| Course Code | PS01CDCA56 | Title of the Course | Practicals |
|---|---|---|---|
| Total Credits of the Course | 5 | Hours per Week | 10 |

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| Course Objectives: | 1. To enable students to apply knowledge of word processing, and presentation tools.<br>2. To enable students to apply knowledge of Python language.<br>3. To enable students to apply knowledge of SQL and PL/SQL. |

| Course Content | |
|---|---|
| Description | Weightage* (%) |
| Part-1 : Practical based on PS01CDCA51 | 30 |
| Part-2 : Practical based on PS01CDCA52 | 35 |
| Part-3 : Practical based on PS01CDCA54 | 35 |

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| Teaching-Learning Methodology | Hands on training and programming using computer. |

| Evaluation Pattern | | |
|---|---|---|
| Sr. No. | Details of the Evaluation | Weightage |
| 1. | Internal Written / Practical Examination (As per CBCS R.6.8.3) | 15% |
| 2. | Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3) | 15% |
| 3. | University Examination | 70% |

| Course Outcomes: Having completed this course, the learner will be able to | |
|---|---|
| 1. | create documentation, presentation and work with spreadsheet packages. |
| 2. | work with SQL and PL/SQL. |

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|---|---|
| 3. | develop program using Python programming. |

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