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| **Lesson Plan**  **Discipline** : Computer Science and Engineering **Semester** : 3rd sem **Subject** : Principles of programming Languages **Lesson Plan Duration**: 15 weeks  **Subject Code**  : ES-227A **Work Load** (Lectutre/Practical) per week (in hours): Lectures 03 hours | | | | | |  |
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| **Week** | **Lecture** | **Topics Covered** |  |  |  |  |
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| 1 | 1 | **Introduction**: A brief history |  |  |  |  |
| 2 | Characteristics of a good programming language |  |  |  |  |
| 3 | Programming language translators compiler & interpreters |  |  |  |  |
| 2 | 1 | Elementary data types – data objects |  |  |  |  |
| 2 | Variable & constants |  |  |  |  |
| 3 | Data types, Specification & implementation of elementary data types |  |  |  |  |
| 3 | 1 | Declarations ,type checking & type conversions |  |  |  |  |
| 2 | Assignment & initialization, Numeric data types |  |  |  |  |
| 3 | Enumerations, Booleans & characters. |  |  |  |  |
| 4 | 1 | Introduction, general problem of describing syntax |  |  |  |  |
| 2 | Formal method of describing syntax, attribute grammar dynamic semantic. |  |  |  |  |
| 3 | Structured data objects & data types |  |  |  |  |
| 5 | 1 | Specification & implementation of structured data types |  |  |  |  |
| 2 | Declaration & type checking of data structure |  |  |  |  |
| 3 | Vector , arrays and records |  |  |  |  |
| 6 | 1 | Character strings, variable size data structures |  |  |  |  |
| 2 | Union, pointer & programmer defined data objects |  |  |  |  |
| 3 | Sets and files |  |  |  |  |
| 7 | Minor II | |  |  |  |  |
| 8 | 1 | Evolution of data type concept abstraction |  |  |  |  |
| 2 | Encapsulation , information hiding and Subprograms |  |  |  |  |
| 3 | Type definitions, abstract data types, Over loaded subprograms and generic subprograms. |  |  |  |  |
| 9 | 1 | Implicit & explicit sequence control |  |  |  |  |
| 2 | Sequence control within expressions |  |  |  |  |
| 3 | Sequence control within statement |  |  |  |  |
| 10 | 1 | Subprogram sequence control: simple call return, recursive subprograms |  |  |  |  |
| 2 | Exception & exception handlers, co routines, sequence control. |  |  |  |  |
| 3 | Concurrency – subprogram level concurrency, synchronization through semaphores |  |  |  |  |
| 11 | 1 | Names & referencing environment, Static & dynamic scope |  |  |  |  |
| 2 | Block structure , Local data & local referencing environment |  |  |  |  |
| 3 | Shared data: dynamic & static scope. Parameter & parameter transmission schemes |  |  |  |  |
| 12 | 1 | Major run time elements requiring storage, programmer and system controlled storage management & phases |  |  |  |  |
| 2 | Static storage management, Stack based storage management |  |  |  |  |
| 3 | Heap storage management, variable & fixed size elements. |  |  |  |  |
| 13 | 1 | Introduction to procedural, non- procedural, structured languages |  |  |  |  |
| 2 | Logical, functional and object oriented programming language |  |  |  |  |
| 3 | Comparison of C & C++ programming languages. |  |  |  |  |
| 14 | Minor II | |  |  |  |  |
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| 15 | 1 | Test (1-2) |  |  |  |  |
| 2 | Test (2-3) |  |  |  |  |
| 3 | Revision |  |  |  |  |