

**Sir Padampat Singhania University**

Udaipur

Lesson Plan

Program : B.Tech Semester : IV

Session : 2017-18 Subject Code : CS-255

Subject Name : Programming Languages

Credits : 3 (L) + 0 (T) + 2 (P) = 5

Prepared By :

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DEPARTMENT OF COMPUTER SCIENCE

* **Learning Objectives:**

The basic thrust of this course will be on learning the distinctive techniques in the different paradigms and what semantic and compiling issues come up in the various languages considered. The course introduces Imperative Languages, functional programming, declarative programming and semantics of object-oriented programming.

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| --- | --- | --- | --- |
| S.N | Unit Name | Contents in the Unit | No. of Lecture |
| 1 | Introduction to Programming language | **Introduction to Programming languages Programming Concepts and paradigms, Syntax, semantics, and pragmatics, Language processors, Historical development.** | 2 |
| **Reasons for Studying Concepts of Programming Languages, Programming Domains** | 2 |
| **Influences on Language Design, Language Categories, Language Design Trade-Offs, Implementation Methods, Programming Environments** | 2 |
| 2 | Values and types | **Introduction to types, Primitive types, Composite types** | 2 |
| **Recursive types, Type systems, Expressions.** | 2 |
| 3 | Variables and storage | **Variables and storage, Simple variables, Composite variables,** | 1 |
| **Copy semantics vs reference semantics,**  **Lifetime** | 1 |
| **Pointers, Commands, Expressions with side effects** | 1 |
| 4 | Bindings, scope | **Bindings and environments, Scope,** | 1 |
| **Declarations, Blocks** | 1 |
| 5 | Procedural abstraction | **Introduction to Procedural abstraction, Function procedures and proper procedures** | 2 |
| **Parameters and arguments** | 2 |
| 6 | Data abstraction | **Program units, packages, and encapsulation.** | 2 |
| **Abstract types, Objects and classes** | 2 |
| 7 | Control Flow | Introduction to Control Flow, Sequencers, Jumps, Escapes, Exceptions | 2 |
| 8 | Imperative Languages | Key concepts, Pragmatics, Values and types, Variables, storage, and control, Bindings and scope, Procedural abstraction, Independent compilation and separate compilation, Preprocessor directives, Function library | 5 |
| 9 | Object-Oriented Programming Languages. | Objects and programming with objects, classes and instances, hierarchies and inheritance, encapsulation, semantics of OO languages and  Implementation issues. Case Study of C++/Java. | 5 |
| 10 | Functional Programming Languages | Functions, recursion, macros, user-defined control constructs, higher order constructs, types, data abstraction, polymorphism, semantics, Implementation issues. | 5 |

* **Total no. of Lectures: 40**
* **Text Book**

1. D. A. Watt. Programming Languages and Paradigms*,* Prentice-Hall, 1990.

* **Reference Books**

1. David A. Watt, Programming Language Design Concepts by, John Wiley & Sons Ltd.
2. Robert W. Sebesta, Concepts Of Programming Languages, Tenth Edition, Pearson

* **Evaluation Method: -**

There will be a continuous evaluation of students at all levels. Each credit will carry 50 marks. Hence a 5 credit course will have total of 250 marks. Each course component will be evaluated. This means that a course will be evaluated for lectures and practical. For 1 credit there shall be 50 marks. For lectures marks will be divided between mid-terms and end term examinations.

3 – 0 – 2 (a 5 credit course) will be evaluated for 150 (3 x 50) marks for lectures and 100 (2 x 50) marks for practical leading to a total of 250 (5 x 50) marks for the 5 credit course.

* **Theory**

Maximum duration for final examination should be 3 hours. The evaluation pattern for theory examination will be as follows:

Cre**dit Mid-term-I Mid-term II End-term Total Final Total**

3 25 25 100 150 150

* **Practical**

All practical will be evaluated in the same manner of 1 credit carrying 50 marks. The 100 marks for practical will be divided as follows:

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| --- | --- | --- | --- | --- | --- |
| S. No | Evaluation Criteria | Mid Term Examination | End Term examination | | Total |
| Max Marks | Max Marks | |
| 1. | Practical Files | 10 | 10 | | 20 |
| 2. | Lab Attendance | - | 10 | | 10 |
| 3. | Viva | 10 | 20 | | 30 |
| 5. | Lab Written Work | 10 | 30 | | 40 |
|  | | | | | |
| TOTAL | | | | 100 | |

Name(s) of the faculty: Signature of the HOD:

Harish Tiwari