Course Plan

CS 348 IMPLEMENTATION OF PROGRAMMING LANGUAGES LAB

JAN-MAY 2026

PROF. SUKUMAR NANDI

Course Instructor & TAs

Course Instructor: Prof. Sukumar Nandi

PhD TAs:

- **Vivekananda G (g.vivekananda@iitg.ac.in)**
- **Sahana A R (a.sahana@iitg.ac.in)**
- **Gautham Suresh (s.gautham@iitg.ac.in)**

M.Tech TAs:

- To be announced.

Moodle Page

Link: https://www.iitg.ac.in/moodle/course/view.php?id=032

Key: **CS3482026**

All course materials, assignments, and other important documents will be shared on Moodle.

Marks Distribution

CS 348 0-2-3-7

Weightages:

Tutorials: 55%

Lab: 45%

Evaluation Structure - Tutorials

Total 4 Quizzes

Quiz 1: End of January

Quiz 2: Surprise Quiz (in February)

Quiz 3: End of March

Quiz 4: Surprise Quiz (in April)

Evaluation Structure - Lab

Total 6 Assignments (Including in-lab assignments)(further details will be sent via Email/Moodle)

First Lab class (Tuesday) will be an introductory session on Assembly Language Programming.

You will be provided with 2/4 questions to solve, you will be evaluated and graded on each submission.

Subsequent assignments will be announced in due course of time.

Being present in the Lab is mandatory, attendance will be taken.

CS 348 Syllabus

Prerequisites: CS204 (Algorithms and Data Structures Lab) and CS205 (Formal Languages, Automata Theory and Computation)

Syllabus: Assembly language programming: basic concepts of computer organization, instruction and data representation; Linux Assembly language; assembly language programming and simulation using X86; C-macro linker and loader; design of linkers and loaders in C: compile and go loader, absolute loaders, relocating loaders, direct linking loaders; programming assignments to build a compiler for a subset of a C-like programming language, using tools such as Lex / Flex / JLex and Yacc / Bison / CUP etc.

CS 348 Reference Books

1. S. Tanenbaum, Structured Computer Organization, Prentice Hall, 1999.
2. Britton, MIPS Assembly Language Programming, Prentice Hall, 2003.
3. J. Donovan, Systems Programming, 45th Reprint, Tata Mc-Graw-Hill, 1991.
4. Pal, Systems Programming, Oxford University Press, 2012.
5. Levine, Linkers and Loaders, MORGAN KAUFFMAN, 1999.
6. Brown, J. Levine, T. Mason, Lex and Yacc, 2nd Edition, O'REILLY Publications
7. N. Fischer, R. J. Le Blanc, Crafting a Compiler with C, Pearson Education, 2009.
8. V. Hall, Microprocessor and Interfacing, Tata McGraw Hill, Second Edition, 1999.