

CS6843: Program Analysis

January-May 2019

CS 24; G slot (Mon 12, Wed 16:50, Thu 10, Fri 9)

Instructor: Rupesh Nasre (rupesh@cse)

TA(s): Bikash, Meghana, Seshagiri Rao

Note: Course related communication will be on IITM Moodle site (<https://courses.iitm.ac.in/course/view.php?id=3556>).

- Principles of Program Analysis, F. Nielson, H. Nielson, C. Hankin, Springer 2004.

1 Course objectives

Students would learn to analyze C-like programs to extract information for varied application domains such as security and parallelization.

2 Learning Outcomes

- To apply data-flow analysis and its variants on input programs and collect relevant information such as reaching definitions, points-to information, etc.
- To design and implement analyses for new problems.

3 Course prerequisite(s)

CS3300 or equivalent

4 Classroom Mode

Traditional lectures, with one 50-minute tutorial slot per week. Tutorials would be interspersed with theory lectures.

5 Textbooks

- Advanced Compiler Design and Implementation, S. Muchnick, Morgan Kaufmann, 1997.

6 Reference Books

- Compilers: Principles, Techniques and Tools 2nd Edition, A. Aho, M. Lam, R. Sethi, J. Ullman, Addison-Wesley, 2006.

7 Course Requirements

Standard institute rules apply.

8 Planned Syllabus

The following topics will be covered:

1. Data flow analysis
2. Pointer analysis
3. Shape analysis
4. Slicing
5. Parallelization
6. Security
7. Dynamic analysis

9 Tentative Grading Policy

4 Prog. Assignments	Jan 22, Feb 17, Mar 17, Apr 14	50%
MidSem	Mar 1	25%
EndSem	May 7	25%

10 Academic Honesty

Standard institute rules apply.