COMPUTER ARCHITECTURE

PROF. SMRUTI RANJAN SARANGI

Department of Computer Science and Engineering
IIT Delhi

PRE-REQUISITES : C programming
INTENDED AUDIENCE : 2nd year UG students
INDUSTRIES APPLICABLE TO : Intel, AMD, IBM, Oracle, NVidia, Fujitsu

COURSE OUTLINE :
This is an introductory computer architecture course for beginners. We will start out with a discussion on binary representations, and a discussion on number systems (1s complement and 2 complement). Then, the course will move on to discuss assembly languages, and computer arithmetic. Once, we are done with the fundamentals, we shall look at the design of a simple processor, concepts of pipelining, and the design of a modern memory system.

ABOUT INSTRUCTOR :

Prof. Smruti R. Sarangi is an Associate Professor in the Computer Science and Engineering department at IIT Delhi. He has a Ph.D in computer science from the University of Illinois at Urbana Champaign, USA, and a B.Tech from IIT Kharagpur. Prior to his appointment as a faculty member in IIT Delhi in 2011, he spent 5 years working for IBM Research Labs, and Synopsys Research. He has published 60 papers in prestigious international conferences and journals, and holds 5 US patents. He is a member of the IEEE and ACM.

COURSE PLAN :

Week 1: Introduction to Computing

Week 2: Number Systems

Week 3: Floating Point Numbers

Week 4: Assembly Language -I
Week 5: Assembly Language - II

Week 6: Algorithms for Binary Addition

Week 7: Algorithms for Multiplication and Division

Week 8: Processor Design

Week 9: Pipelining - I
Week 10: Pipelining - II

Week 11: Memory Systems - Caches

Week 12: Virtual Memory