

Introduction to the Computational Science and Engineering Program at Purdue

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Abstract: The Integrative Computational Studies (ICS) at Purdue University offers MS and PhD level area of specializations: 'Computational Science' and 'Computational Engineering' through the CS&E program and 'Computational Life Science' through the CLS program, in the participating departments. The CS&E program provides students with the opportunity to study a specific science or engineering discipline along with computing in a multi-disciplinary environment. The aim of the program is to produce a student who has learned how to integrate computing with another scientific or engineering discipline and is able to make original contributions in both disciplines. A student registered in the CS&E program receives MS/PhD degree in his/her home department with an area of specialization in 'Computational Science'/'Computational Engineering'. CS&E Curriculum includes Core and Relevant courses, CS&E core courses are selected from Introduction to CS&E, Computational Mathematics, High Performance Computing, Intelligent Computing, Scientific Visualization, Computational Optimization. The relevant courses span across many engineering and science disciplines and all have a substantial computing component. General CS&E requirements for MS students include 2 core courses, 1 relevant course, and a seminar. For PhD students the requirements include 2 core courses, 2 relevant courses, seminar and committee. The CS&E program is well aligned with the educational goals of the NNSA PRISM center and, for the graduate students in PRISM, opting for CS&E specialization should be natural and beneficial. In this talk, I will outline the academic details for obtaining the area of specialization and funding opportunities available to CSE/CLS students. I will also give a sample plan of study for CS&E specialization (relevant to NNSA PRISM students) from engineering departments that participate in the CS&E program. CS&E/CLS students play an active role in the SIAM student chapter, the first interdisciplinary graduate student association at Purdue. The Computing Research Institute (CRI) supports CSE/CLS programs in its seminar, workshop, research, and academic initiatives.



Bio: Dr. Jyoti Mathur manages the training and research activities of the CS&E and the CLS interdisciplinary graduate programs at Purdue University. Dr. Mathur received her PhD in Computer Science in 1984 from the Birla Institute of Technology and Science (BITS), Pilani, India. She got her M.Tech in CS, MS in Mathematics, and BS in Physical Science, all from BITS. She has been a Fulbright Fellow at the Georgia Tech from 1985 to 1987 before joining Purdue University. She has taught courses in programming languages, data structures and database systems at BITS, Georgia Tech and Purdue. Her teaching experience also includes Algebra and problem solving at community college and Super Summer programs for K-12 students. Dr. Mathur has been with the CS&E program since its inception, in 1995, as the first interdisciplinary graduate specialization in the nation. Dr. Mathur has served on the academic development committees at Purdue to establish the CLS program in 2004 and Homeland Security program in 2006 and is a co-PI for the CS&E GAANN awards in 2000-2004. In 2007 Dr. Mathur initiated the formation of SIAM student chapter at Purdue on behalf of CSE/CLS programs, the first interdisciplinary graduate student association at Purdue.