CO316 – Computer Architecture Lab

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What you'll learn ...

- How to program heterogeneous parallel computing systems and achieve
    - high performance and energy efficiency
    - functionality and maintainability
    - scalability across future generations

What you'll learn ...

- Topics
  - Parallel programming frameworks – CUDA and Xeon Phi
  - Processor architecture features and constraints

Reference Material

- D. Kirk and W. Hwu, "Programming Massively Parallel Processors – A Hands-on Approach," 3e, MK.

- NVIDIA, NVidia CUDA C Programming Guide, Nvidia

- Rezaur Rahman, Intel Xeon Phi Coprocessor Architecture and Tools, Apress Open, 2013.

- Intel Xeon Phi Coprocessor Developer's Quick Start Guide

- Online Courses
    - Udacity
    - Hwu and Kirk, Coursera (UIUC)

Course Coverage

- CUDA C and Xeon Phi Parallel Programming

- GPU Memory Model

- Memory Bandwidth Conservation

  – Matrix-matrix multiplication

- Parallel Scan Pattern

- Parallel Histogram Pattern and Atomic Operations

Course Components

- Programming Lab Assignments

- Programming Quizzes

- Course Project
  - NP hard problems, Domain problems

- Midsem and Endsem exams