CSI 3640: Computer Organization

Credits Hours: 4 credits, 3.57 contact hours/week.

Instructor: Debatosh Debnath, Ph.D.

Text book: D. A. Patterson and J. L. Hennessy, Computer Organization and Design: The Hardware/Software Interface, Fifth Edition, Morgan Kaufmann, 2014 (ISBN: 978-0-12-407726-3).

Specific course information

Assembly language, addressing modes, RISC and CISC architectures, assemblers, loaders, linkers, arithmetic and logic unit, hardware functional units, input/output organization, memory organization, cache memory, virtual memory, control unit, pipelining, parallel computer organization.

Prerequisites: EGR 2400 and major standing

Required course for CS major

Course Objectives: Upon successful completion of this course, students should be able to

- Write simple assembly language programs [ABET CS: (c, i)]
- Design ALUs and control units [ABET CS: (a, b, c, i)]
- Describe RISC and CISC architecture, software systems such as assemblers, loaders, linkers, and compilers [ABET CS: (a)]
- Describe cache and main memory units and explain how they affect system performance [ABET CS: (a, j)]
- Explain organization and function of input/output systems [ABET CS: (a)]
- Describe pipeline architectures and parallel architectures [ABET CS: (a)]

List of Topics:

- RISC architecture
- CISC architecture
- Assemblers, loaders, linkers
- Arithmetic and logic unit
- Hardware functional units
- Input/output organization, memory organization
- Cache memory, virtual memory,
- Control unit,

Pipelining, parallel computer organization