**CIT 3150**

**Computer System Architecture/Computer Organization and Architecture**

**Course purpose**

The course introduces the design concepts in computer systems which helps the student to understand the different design options and their implications to the performance of a computer system.

**Expected Learning Outcomes:**

At the end of the course, the student should be able to:

* Understand principles of computer design.
* Understand the architecture of 80 x 86 and Pentium computers.
* Identify current and future developments in computer architecture.

**Course Content:**

Basic computer organization, Principles of computer design, computer performance. Instruction set; classification, memory addressing, operations, type and size of operands, pipelining; data path, control, data hazards and performance. Memory hierarchy design; cache, main memory and virtual memory. Storage systems; storage devices, buses, reliability, availability and RAID. Designing an I/O system. Performance measures. Multiprocessors; centralized memory architectures, distributed shared-memory architectures; synchronization. and RISC architectures. Case study of Intel Itanium Architecture.

**Mode of Delivery:**

* Lectures.
* Problem based learning.
* Group based learning.
* Independent studies.

**Course Assessment.**

* Continuous Assessment 30 %
* End of Trimester Examination. 70 %

**Core Reading Material**

* William Stallings, W.: *Computer Organization and Architecture: Design for performance*; Pearson Education Inc. 2010
* David Money Harris, Sarah L. Harris; *Digital design and computer architecture*. Elsevier inc. 2007.

**Recommended Reference Material:**

* Patterson, D. A., Hennessy, J. L.: *Computer Organization and Design*; Morgan Kaufmann, 2005.
* David A. Patterson, John L. Hennessy, *Computer Organization and Design: The Hardware/Software Interface***.** Elsevier Science & Technology Books 2006