CPE 315 – Computer Architecture

1. CPE 315 – Computer Architecture

2. credit units 4  contact hours 6

3. Course Coordinator: John Seng

4. Textbook (or other required material):
   Computer Organization and Design, Patterson and Hennessy, Morgan Kaufmann

5. a. Course Description:
   In-depth study of the instruction set architecture and hardware design of a specific CPU.
   Introduction to pipelines, input/output and multi-processors. Computer abstractions and
   performance measurement. Not open to students with credit in CPE 333. 3 lectures, 1 laboratory.

   b. Prerequisite: CSC/CPE 102 and CSC/CPE 103, or CSC/CPE 202 and CSC/CPE 203; and one of
      the following: CSC 225, CPE/EE 229, or CPE/EE 233.

   c. Required/Elective/Selective Elective for CPE, CSC, EE, SE

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6. a. Course Learning Objectives

   The student will be able to:
   - Compute the execution time of programs on a single cycle processor
   - Identify the various hardware components of a pipelined processor
   - Explain the performance impact of various assembly instruction sequences on
     processors
   - Write assembly language programs as applied to the architecture studied in the
     course

   b. Level at which Student Outcomes are addressed

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7. Major Topics Covered: (number of lecture hours per)
   - Computer Abstractions (2)
   - Performance measurement (3)
• The MIPS instruction set (2)
• Computer arithmetic (1)
• Datapath and Control (4)
• Pipelining (3)
• Memory hierarchies and virtual memory (3)
• I/O Devices (3)
• Parallel Processors (3)
• Exceptions (3)