**Course Outline, Spring 2016**

**CSE340: Computer Architecture**

**Faculty: Dr. Amitabha Chakrabarty (ACH)**

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**Class Schedule**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S. No. | Sun | Mon | Tue | Wed | Thu |
| 1  UB30603 | 9.30am-10.50am |  | 9.30am-10.50am | **Consultation**  **9.30am~12.30pm** |  |
| 2  UB30501 | 12.30pm-1.50pm | **Consultation**  **9.30am~12.30pm** | 12.30pm-1.50pm |  |  |
| 3  UB30501 | 5.00pm-6.20pm |  | 5.00pm-6.20pm |  | **Consultation**  **9.00am-12.00pm** |
| 4  UB30503 | **Consultation**  **9.00am-12.00pm** | 3.30pm-4.50pm |  | 3.30pm-4.50pm |  |
| 5  UB30603 | **Consultation**  **12.00pm~2.00pm** | 2.00pm-3.20pm |  | 2.00pm-3.20pm |  |

**Overview:** The term computer architecture emphasizes the engineering decisions and tradeoffs that must be made in order to produce a "good" design. The computer architect answers questions like...[1]:

* + How many registers should there be?
  + What machine instructions should there be?
  + How should the cache be organized?
  + What hardware support should there be for virtual memory?

**Tentative Lecture Topics:**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.N** | **Topic** | **Notes** | **Exam** |
| **1** | **Introduction** |  |  |
| **2-5** | **Review of DLD** | **Handouts** | **Q1** |
| **6-8** | **MIPS ISA** | **Chapter 2** |  |
| **9-12** | **MIPS ALU & Mid Term Exam Review** | **Chapter 3** |  |
| **13-14** | **Addressing and understanding performance** | **Chapter 4** |  |
| **15-17** | **MIPS non-pipelined datapath/control path** | **Chapter 5** | **Q2** |
| **18-19** | **MIPS pipelined datapath** | **Section 6.1-6.3** |  |
| **21-22** | **Overcoming data hazards&**  **Containing Control Hazards** | **Section 6.4-6.5**  **Section 6.6 and 6.8** |  |
| **Q3** |
| **23** | **Multiple Issue Introduction** | **Section 6.9** |  |
| **24** | **Memory Hierarchy Review** | **Section 7.1** |  |
| **25** | **Cache Introduction &**  **Improving Cache Performance** | **Section 7.2** | **Q4** |
| **Section 7.3 and 7.5** |  |
| **26** | **Final Exam Review** |  |  |

1. <http://courses.cs.vt.edu/~cs1104/SystemsOrg/COrgn_1.htm>

**Text Book:**

* **Computer Organization and Design, by Patterson and Hennessey 3rd or 4th edition.**
* **Find the 4th edition on TSR**
* **PDF Handouts**
* **Google group: Computer Architecture:CSE340BU, Quizzes:**
* **There will be in total *3~4* quizzes. One will be dropped from the total number of quizzes in calculating final grade.**
* **No makeup quizzes**

**Marks Distribution (tentative):**

|  |  |
| --- | --- |
| **Category** | **Percentage** |
| **Assignments + Attn** | **15%** |
| **Quiz** | **20%** |
| **Midterm** | **20%** |
| **Final Exam** | **45%** |
| **Total** | **100%** |

**Grading System:   
The grades for the program will be indicated in the following manner:**

**90 - 100 = A (4.0) Excellent  
85 - <90 = A- (3.7)   
80 - <85 = B+ (3.3)   
75 - <80 = B (3.0) Good  
70 - <75 = B- (2.7)   
65 - <70 = C+ (2.3)   
60 - <65 = C (2.0) Fair  
57 - <60 = C- (1.7)   
55 - <57 = D+ (1.3)   
52 - <55 = D (1.0) Poor  
50 - <52 = D- (0.7)   
<50 -- -- = F (0.0) Failure**

**Good Luck**