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Department of Computer Engineering	
Computer Architecture II (66423)	
Total Credits	**3**
major compulsory	
Prerequisites	P1 : Computer Architecture I (66323)

Course Contents

Focuses on advanced concepts of computer architecture and organization, including: integer and floating point pipelines, dynamic scheduling, multicore and multithreading processors, memory hierarchy: main memory, caches and storage. IO system design

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Have the necessary skills to design basic &advanced integer and floating point pipelined processors. In addition to multi-core and multithreaded processors.	C	50 %
2	Acquire the skills necessary to design various cache memory-cache designs in addition to different IO configurations.	C	30 %
3	Ability to utilize techniques, skill and tools of modern computer organization to understand complex computer architecture systems.	K	20 %

Textbook and/ or Refrences

Computer Organization and Design: The Hardware/Software Interface 4th edition. Authors David Patterson and John Hennessy.

Assessment Criteria	Percent (%)
First Exam	22 %
Second Exam	22 %
Homeworks	6 %
Final Exam	50 %

Course Plan

Week	Topic
1	Introduction and Review of MIPS architecture
2	Introduction to pipelining and pipeline performance
3	Pipeline data hazards and forwarding
4	Pipeline control Hazards and forwarding
5	Floating point pipeline
6	Handling exceptions in the pipeline
7	MIDTERM EXAM 1
8	Superscalar and loop unrolling
9	VLIW processors
10	Dynamic scheduling
11	Multi-core and multithreading processor
12	Main memory structure
13	Cache design and performance analysis
14	MIDTERM EXAM 2
15	IO system
16	Final Exam