# SYLLABUS

**1)**

| | |
|---|---|
| Course Name | Computer Organization |
| Course Code | |
| Course Hour and Credit | 2 |
| Department | Computer Engineering |
| | |
| Lecturer Name-Surname | Sanjar Erdolatov |
| E-Mail | Sanjar.erdolatov@iaau.edu.kg |
| Office No- Phone No | 0555770960, 0312631425/157 |
| Office Hours | |

**2) Course Description- objectives**
**Brief Course Description**

This course has been designed with two goals in mind. The first is to cover basic concepts on which the stored program digital computer is formulated. These include the functional units of a computer (hardware), the flow (buses) and storage (memory management) of information, the representation and manipulation of numbers in binary form, and the five to seven levels around which any computer is designed. This goal addresses the question, how does a computer work and how is it organized.
The second goal is to provide students with a firm foundation for follow-on courses later in their program. In particular, the introduction to the CPU (Central Processing Unit) and assembly language programming provides a basis for CS556-Computer Architecture. While the material presented on gates, Boolean Logic and circuit designs provides a basis for further courses in digital design, computer engineering or microprocessor systems.

Ta familiarize each student with:

1. –Hardware units
2. –Binary, Octal and Hexadecimal number systems
3. –Assembly/ Machine Language
4. –Boolean Logic and Applications
5. –Future Developments

**3) Outline**

| **Weeks** | **Topics** | **Subtopics** | **Chapter** | **Home Assignments** |
|---|---|---|---|---|
| 1 | 1-Introduction | 1.1 Structured Computer Organization | | |
| 2 | 2-Computer System Organization | 2.1 Processors | | |
| 3 | The Digital Logic Level | 3.1 Gates | | |
| 4 | 4- The Micro architecture Level | 4.1 An Example Micro Architecture | | |
| 5 | 5- The Instruction Set Architecture | 5.1 Overview of ISA Level | | |
| 6 | 6- The Operating System Machine Level | 6.1 Virtual Memory | | |
| 7 | 7- The Assemble Language Level | 7.1 Introduction to | | |

| | | | | |
|---|---|---|---|---|
| | | Assemble Language | | |
| 8 | 8- Parallel Computer Architectures | 8.1 On Chip Parallelism | | |
| 9 | 9- Reading List And Bibliography | 9.1 Suggestions for Further Reading | | |
| 10 | 10- Binary Numbers | 10.1 Finite Precision Numbers | | |
| 11 | 11- Floating Point Numbers | 11.1 Principles of Floating Point | | |
| 12 | 12- Assemble Language Programming | Overview | | |
| 13 | Summary | | | |
| 14 | 13- Five to Seven Machine Levels Explanation Important Terminology (Not in Book) | | | |
| 15 | Summary | | | |
| 16 | 14- Basic Principles of Organization (Not in Book) | | | |
| 17 | Summary | | | |

**4) Assessment Policy**

Midterm, Final and Applications- Home assessment
Students will be evaluated based on a midterm and a final examination as follows:
Midterm- 40% Final 60 %

All tests are closed book and the final is comprehensive. The results will be converted to a letter grade keeping with grading policies of the college.

**5) Course Materials:**

Structured Computer Organization, 5th Edition, Andrew S.Tanenbaum, Prentice- Hall, 2006

**6) Class Rules:**

Students are expected to attend and participate in all classes. Attendance is taken at the beginning of each class. Please notify the instructor in advance of any anticipated absence whenever possible. It is your responsibility to make up any material missed whenever you are absent from class. Assignments are taken from exercises in the text. The homework problems are always covered in class and you are expected to read the section of text corresponding to the homework assignment. Questions about the problems should be raised at the next class meeting. The study of mathematics/ computer science requires regular work and plenty of practice. Postponed homework usually results in poor comprehension and performance.

**7) About Web Site**

**http://www.ece.ucdavis.edu/~vojin/CLASSES/EEC70/W2001/architct-chpt.pdf**

**8) Prerequest**

Prerequisities: CS540 or permission of the instructor.

# SYLLABUS

**1)**

| | |
|---|---|
| Course Name | Computer Organization 2 |
| Course Code | |
| Course Hour and Credit | 2 |
| Department | Computer Engineering |
| | |
| Lecturer Name-Surname | Sanjar Erdolatov |
| E-Mail | Sanjar.erdolatov@iaau.edu.kg |
| Office No- Phone No | 0555770960, 0312631425/157 |
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**3) Outline**

| **Weeks** | **Topics** | **Subtopics** | **Chapter** | **Home Assignments** |
|---|---|---|---|---|
| 1 | Introduction | Computer organization and architecture. | | |
| 2 | Computer Evolution and Performance | Computer Evolution and Performance | | |
| 3 | Top Level View of Computer Function and Interconnection | Top Level View of Computer Function and Interconnection | | |
| 4 | Buses | Buses | | |
| 5 | Cache Memory | Cache Memory | | |
| 6 | Internal Memory | Internal Memory | | |
| 7 | External Memory | External Memory | | |

| | | | | |
|---|---|---|---|---|
| 8 | High-Level Language Interface | High-Level Language Interface | | |
| 9 | Files and FAT (File Allocation Table)<br>NTFS file system | | | |
| 10 | Computer Hardware and flow of information<br>Central Processing Unit | | | |
| 11 | Main and Secondary Memory<br>Peripheral Equipment | | | |
| 12 | - Basic Principles of Organization (not in book)<br>Loading an operating system (booting up a computer) | Overview | | |
| 13 | Arithmetic for Computers | | | |
| 14 | The Processor | | | |
| 15 | The Storage ( Storage Arithmetic for Computers and Technology) | | | |
| 16 | The Multi-Core, Clusters and Performance | | | |
| 17 | Summary | | | |

**4) Assessment Policy**

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Midterm- 40% Final 60 %

All tests are closed book and the final is comprehensive. The results will be converted to a letter grade keeping with grading policies of the college.

**5) Course Materials:**

Computer Organization and Architecture, 8th Edition, William Stallings, 2010

**6) Class Rules:**

Students are expected to attend and participate in all classes. Attendance is taken at the beginning of each class. Please notify the instructor in advance of any anticipated absence whenever possible. It is your responsibility to make up any material missed whenever you are absent from class. Assignments are taken from exercises in the text. The homework problems are always covered in class and you are expected to read the section of text corresponding to the homework assignment. Questions about the problems should be raised at the next class meeting. The study of mathematics/ computer science requires regular work and plenty of practice. Postponed homework usually results in poor comprehension and performance.