CIT205 Computer Hardware Course Syllabus

Course Name	Computer Hardware
Course Code	CIT205
Course Type	Compulsory
Course Level	Undergraduate
AKTS Credit	5 ECTS
Course hours per week (Institutional)	3
Practice hours per week	2
Laboratory hours per week	-
Academic Semester	2013 -2014 Fall
Course coordinator(s)	Asst. Prof. Dr. Yoney Kirsal
Instruction system	
Medium language	English
Prerequisite	-
Suggestions related to course	Lecturing; This course utilizes the Moodle course management system to share information and resources. To access the course site, log on to this link: http://elearning.gau.edu.tr and select the course from list of courses. All course materials will be posted here.
Training required	N/A
Aim of the course	The aim of this module is to provide you with key knowledge and understanding of computer hardware, networking and operating systems in order to explain the structure and operation of stand-alone, distributed, networked computers. By taking this module, students will gain an understanding of how computer and network hardware enables computers to function as networked, multi-media machines. Its emphasis is on the understanding of concepts, theory and associated terminology. Also, students will gain knowledge on Numbering systems: decimal, binary, and hexadecimal, and Measuring units: bits, byte, kilobyte, megabyte, gigabyte, terabyte.
Learning outcomes	On completion of the module, the successful student will be able to: Knowledge 1. Characterise the operation of a range of fundamental network, operating systems and processor components and their functional relationship within a variety of systems and applications. 2. Identify the ways in which basic data types can be represented within a processor-based system, and how they can be stored, processed, and transmitted efficiently, reliably, securely and rapidly over any distance 3. Describe in detail one model of a processor-based networked system and be able relate this to a range of systems familiar to you. Skills 4. Apply relevant key theoretical and operational concepts correctly to hardware, software and networked systems in problem analysis and

		solution both verbally and in writing 5. Use basic mathematical and modelling skills (including the use of computer arithmetic, Boolean logic and flow diagrams) to represent specific systems and to solve a variety of problems. 6. Conduct research effectively in order to deepen understanding and appreciation of hardware and software components, and their relationship in contexts where networked computer systems play a significant role, by drawing on a variety of primary and other information sources.
Course Content		Central processing unit, its functions, fetch/execute cycle; Digital Logic;Numbering Systems, BIN-DEC-HEX, RAM; Primary Memory, RAM –ROM technologies, details, types; Secondary memory, types, magnetic, optical solid-state; Interrupts, Handshaking; Input / Output (I/O) system; Operating Systems, layered approach;Networking,distributed systems;
Course content per week	**Week**	**Topics**
		Theory / **Practice**
	1	**Introduction to course** / Introduction to course
	2-3	**Central Processing Unit (CPU):** Introduction to CPU, identifiying the right CPU for a motherboard, installing CPU. Components of CPU, Fetch-Execute Cycle / How to identify right CPU for a motherboard, and how to speed up CPU.
	4	**Digital Logic:** Introduction to Logic gates, AND, OR, NAND, NOR, XOR gates, truth tables, / How to build truth tables for given logic gates with 2 and 3 inputs
	5	**Digital Logic:** Introduction to Logic gates, and boolean algebra. Show how to build boolean algebra from truth table and logic circuit / Building truth tables with 4 inputs, draw logic circuits with a software called Logicsim. **Quiz 1 on WEEK 5**
	6-7	**Numbering Systems:** Introduction to BINary and HEXadecimal systems. 8 bits 2's complement. Showing how to convert BIN-HEX, BIN-DEC, HEX-DEC, HEX-BIN . Addition and subrtaction in BIN and HEX systems. Also, necessity of these systems in computing will be discussed. / Exercises on Addition, subtraction, conversion between numbering systems. **Quiz 2 on WEEK 7**
	8	**Midterm Exam**
	9	**Primary Memory:** Introduction to computer memory characteristics, types of primary memory, working principles, and / How to identify primary memory and its types
	10	**Secondary Memory:** Introduction to secondary storage devices, magnetic, optical, and solid-state properties, evolution of secondary storage devices for last two decades / How to identify secondary memory and its types **Quiz 3 on WEEK 10**
	11	**Interrupts/Handshaking:** storing data on hard drive , installing a hard drive, configuring a hard disk, hard drive maintenance and troubleshooting /

	12-13	**Input/Output Devices:** Understanding I/O drivers, to/from user, network and environmental I/O devices, properties and applications	How to install and troubleshoot, understand the I/O devices. **Quiz 4 on WEEK 12**
	14	Revision	**Quiz 5 on WEEK 14**
	15	**Final exam**	
Course book and references :	• Comer, D, E "Essentials of Computer Architecture", Published by Pearson Education International, 2008, ISBN-13: 978-8177584431 • Englander I ,"The architecture of computer hardware and systems software : an information technology approach", John Wiley, 2009, ISBN-13: 978-0470400289		

ASSESSMENT METHODS

Quizzes: 30%
Midterm: 30%
Final: 40%

Term Activities	**Number**	**Contribution percentage to course mark %**
Quizzes	**5**	**30**
Midterm Exam	**1**	**30**
Final Exam	**1**	**40**
TOTAL		**100**
Percentage of Classroom Activities		**60**
Percentage of Final Activities		**40**
TOTAL		**100**

Calculation work load within the framework of learning, teaching and evaluation activities

Activities	**Number**	**Time (Hour)**	**Total Work Load (hour)**
Weekly Theory Hour	14	3	42
Weekly Practice Hour	14	2	28
Quiz	5	6	30
Midterm	1	20	20
Final	1	30	30
TOTAL WORKLOAD (hour)= 150			

COURSE ECTS CREDIT=Total Work Load (hour) /(30 hour/ECTS)= 150 / 30 = 5

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Programme and learning outcomes

Learning Outcomes (LO)	Programme Outcomes (PO)																
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13	PO 14	PO 15	PO 16	PO 17
LO1	3								2								
LO2	3		2						3								
LO3	2								3								
LO4	2								3								
LO5	2								5								
LO6	4		3						3	2							

*Contribution Level:
1 very low **2** low **3** medium **4** high **5** very high

CITT Department Programme Outcomes

1. Having adequate level of knowledge and skills in current/new computing and educational technologies.
2. Having sufficient communication and teaching skills in teaching profession.
3. Being able to teach updated computing technologies efficiently in English.
4. Being able to identify information technology problems through using various analysis and synthesis.
5. Being pragmatic to develop and apply persistent information technology solutions to educational and business problems.
6. Being able to use critical and computational thinking skills to produce alternative solutions at every level of project development life-cycle.
7. Being capable to work in disciplinary and interdisciplinary teamwork.
8. Being sensitive, reactive and responsive to professional, social and ethical issues. Having social and ethical awareness in teaching and in providing solutions to problems.
9. Having adequate level of knowledge and skills in current/new computer hardware, operating systems and computer networks.
10. Adequate level of knowledge and skills in current/new programming languages, programming paradigms (procedural and object-oriented) and programming environments (visual, console-based programming).
11. Being able to analyse, plan and manage educational software design and project development.
12. Having the capability of evaluating and criticising educational software design and development.

13. Adequate level of knowledge in using and integrating current/new e-learning and distance education systems such as learning management systems (LMS).
14. Having sufficient skills and knowledge in using instructional technology and material design.
15. Having skills to apply and use special teaching approaches, theories, teaching strategies, methods and techniques (such as to those people with disabilities).

16. Using appropriate measurement and evaluation techniques to assess students' learning and development in addition to supporting them with good level of feedback.

17. Having sufficient knowledge in the process of establishment of Republic of Turkey. Identifying social, cultural, political and economic problems through understanding Ataturk's principles and revolution.