

**UNIVERSITY of MARYLAND**  
UNIVERSITY COLLEGE - *Asian Division*

## IFSM 310: Software and Hardware Concepts

Credits: 3

Monday through Thursday 11:40 to 12:55, Iwakuni MCAS, Japan

Prerequisites: IFSM 201 and MATH 012, or equivalent

**Instructor: Robert Laurie**

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Web Site: <http://www.islandman.org>

**Textbook:** *The Architecture of Computer Hardware and Systems Software*, Englander, Irv, ISBN#0-471-07325-3, 3<sup>rd</sup> Edition 2003

### Description:

An in-depth investigation of computer systems. Emphasis is on the interrelationships of hardware architecture, system software, and application software. The architectures of processors and storage systems are explored. Implications for system software design are covered. The effects of the design of hardware and system software on the development of application programs in a business environment are discussed. Students may receive credit for only one of the following courses: CMIS 310, CMSC 311, IFSM 310, or (former course) CMIS 270.

### Objectives:

1. Explain relationships between critical hardware components and systems software.
2. Demonstrate competence in working with a computer's numbering systems, including binary and hexadecimal, and explain their significance for data representation with the computer.
3. Describe the central processing unit (CPU) components and functions, differentiate between current types of CPU designs and organization, and compare computer performance as affected by various processors, motherboards, and motherboard components
4. Identify and define both the internal and peripheral input, output, and storage processes, devices, and technology utilized in today's computers
5. Explain the basics of networking and performance implications of the LAN technologies
6. Differentiate between and compare the functions and types of various operating systems
7. Identify and define the components of file management
8. Describe the operation, organization, and instruction set of a simple computer and demonstrate the application of this simple instruction set in performing operations

### Grades:

The grade in the course will be based on exams and assignments:

Items	Scores	Percent
Weekly Exams and Assignments	300	25%
Final Exam	100	37.5%
Total	400	100%

Grade	Score	Percent
A	400 to 360	100.0 to 90.0%
B	359 to 320	89.9 to 80.0%
C	319 to 280	79.9 to 70.0%
D	279 to 240	69.9 to 60.0%
F	< 240	Less than 60%

**Exams:**

Weekly exams will be given on the first day of each week covering material from the previous week. The final exam is the last class. Only students with officially excused absences will be able to make up the exams, others will receive a grade of zero. You must contact me via email, for me to authorize a makeup exam time prior to the scheduled exam time. You need to provide me with documentation verifying the excused absence. Failure to comply with these requirements will result in a score of zero on the exam.

**Assignments:**

Project assignments of various point values will be given throughout the term. Completed project reports must be submitted on the due dates. Late assignments will be reduced 25% of the total point value for each class period late. No projects will be accepted after the final exam time.

Grading will be 80% objective (results, explanations, conclusions) and 20% subjective (neatness, clarity, conciseness, extra work). A project report that minimally meets all specifications will receive a score of 80% of the total points. If any portion of a project is plagiarized, the entire project will receive a score of zero.

**Attendance:**

Class attendance is mandatory. If you miss a class meeting, it remains your responsibility to obtain information concerning the material covered and upcoming assignments. Excessive absences may result in your being assigned a grade of *F(n)*! *Failure due to non-attendance.*

**IFSM310 Course Schedule (Tentative \*)**

Date:	Topics:	Read Before Class:
Week 1	Computer Systems Number Systems	Chapter 1 Chapter 2.0-2.6
Week 2	Data Formats Integer Data	Chapter 3.0-3.3 Chapter 4.0-4.6
Week 3	Floating Point Data Basic Computer Architecture	Chapter 5.0-5.3, 5.6 Chapter 6
Week 4	Computer Architecture, Central Processing Units CPU and Memory: Design and Implementation	Chapter 7 Chapter 8.0-8.1, 8.3-8.4
Week 5	Input/Output Operating System Overviews	Chapter 9 Chapter 13
Week 6	User View of Operating Systems Internal View of Operating Systems	Chapter 14 Chapter 15
Week 7	Programming Tools Windows and UNIX	Chapter 17.0 Chapters 18.0-2
Week 8	Class Presentations <b>FINAL EXAM (Second Class)</b>	

\* This syllabus is tentative and is subject to change.