

INFS-515

Computer Organization Administrative Course Overview

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Department of Computer Science /
Information and Software Engineering
Spring 2009

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Welcome/Introductions

◆ **About the Professor:** J Masiyowski

- Contact Information: jmasiyow@gmu.edu
- Office Hours: email anytime or by appointment in S&T II, Room 335
 - ◆ Allow minimum of 24 hrs for email correspondence reply

◆ **Teaching Assistant:**

- Dalal Ahmed Al-Arayed
- Office Hours:
 - ◆ Wednesday 2-4pm, ST 2, Rm 348 or by appointment
 - ◆ Email: dalaraye@gmu.edu

◆ **Students:**

- Self survey → First class session
- Non-Textbook Homework Assignment → Due 2 Feb 09
 - ◆ Professional Resume or One page Professional Biography

Administrative Items (1)

- ◆ **Course Web Site:** homework assignments, course schedule, announcements and updates will be posted on the INFS 515 Section 1 web site (so check regularly)

<http://mason.gmu.edu/~jmasiyow/S09-INFS515/index.htm>

- ◆ **Course Structure: Revised from Fall 2008**

- Combined Old Graduate Level INFS 515 (Computer Organization and Architecture) and INFS 601 (Operating Systems) – Fall 2007
- Both Hardware and Software concepts are covered

- ◆ **Required Equipment for students:**

- Computer with web access
- GMU email access - <https://mail.gmu.edu/>
 - ◆ Use for all INFS 515 correspondence

No recording devices permitted during class lectures

Administrative Items (2)

Personal Safety and Security

◆ Mason Alert – An Emergency Messaging System

- <https://alert.gmu.edu/>

Mason Alert is an alert system that allows George Mason University to contact you during an emergency by sending text messages to your:

- ◆ Cell phone
 - ◆ E-mail (school, personal, other)
 - ◆ Pager
 - ◆ BlackBerry/Treo
- When an emergency occurs, authorized senders will notify you using Mason Alert. Mason Alert is your personal connection to real-time updates, instructions on where to go, what to do, or what not to do, who to contact and other important information

Mason Alert is a free service offered by George Mason University

Administrative Items (3)

Computer & IT Security

- ◆ GMU Information Technology Security Site – visit often
 - <http://itu.gmu.edu/security/>
- ◆ GMU Computer Security site – visit often
 - <http://itu.gmu.edu/security/desktopsecurity/>
- ◆ Symantec AntiVirus Software available for staff and students
 - <http://itusupport.gmu.edu/downloads/nortonAV.asp>
- ◆ Use Strong passwords and change regularly
 - Microsoft Password checker
<http://www.microsoft.com/protect/yourself/password/checker.aspx>

Regularly scan your computers to prevent critical data loss !

Syllabus Summary Review (1)

<http://mason.gmu.edu/~jmasyow/S09-INFS515/INFS515-schedule.pdf>

◆ **Course Prerequisites**

- Intermediate Algebra
- *INFS590 or equivalent knowledge in structured programming in a high-level language*

◆ **Attendance**

- Not taken for credit; students will need to attend the class sessions
- Please arrive on time. I expect to start at 7:20pm sharp
- Please participate in class! Ask questions if there is something you don't understand
- if daytime employment requires significant travel that a number of course sessions will be missed, re-consider course enrollment → defer to another semester

SCHEDULE: SUBJECT TO REVISION AS COURSE PROGRESSES

Syllabus Summary Review (2)

◆ Required Texts:

The Essentials of Computer Organization and Architecture, Second Edition, Linda Null and Julia Lobur, Jones and Barlett Publishers, ISBN: 0-7637-3769-0, © 2006

Operating Systems, Internals and Design Principles, Sixth Edition, Author: William Stallings, Prentice-Hall, ISBN:0-13-147954-7, © 2009

[Go to the textbook publisher's web sites and obtain the textbook errata sheets](#)

◆ Optional Texts:

[WWW/Internet Resources; Course Web Page - Useful Links](#)

Modern Operating Systems, Andrew S. Tanenbaum

Designing for Performance, Seventh Edition, William Stallings, Prentice-Hall, ISBN: 0-13-185644-8, © 2006

◆ Lecture Slides:

- ECOA-2e slides are not directly available to students
- Taken from textbook web sites and adapted for course for OS-6e

DANGER! We won't always cover every slide/topic during class

Syllabus Summary Review (3)

◆ Weekly Schedule of Reading & Home Assignments and Exams

<http://mason.gmu.edu/~jmasiyow/S09-INFS515/INFS515-schedule.pdf>

◆ Class Environment

- Turn off cell phones ringers (place in silent mode) and personal communication devices

◆ Weekly Homework Assignments

- Graded for completeness & correctness
- Late Homework is NOT accepted

◆ Grading

- Homework: 25%, Quizzes: 20%, Midterm: 25%, Final: 30%

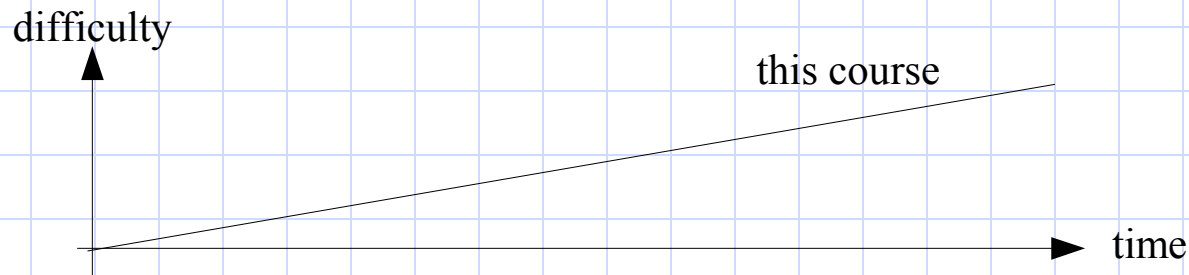
- Scale: A+: 100-97 A: 96-93 A-: 92-90 B+: 89-85 B: 84-80
 B-: 79-76 Cs: 75-60 Fs: <60

No Curve applied (lowest 2 homework and quizzes dropped)

About INFS 515

◆ **This is a Challenging Course**

- This is a class that covers a large amount of material (significant amount of reading and study)
- Students should be familiar with programming data structures
- Students should also be able to read, write, and understand a high level programming language like C or Java



◆ **Plan to spend ~4-9 hours/week outside of class**

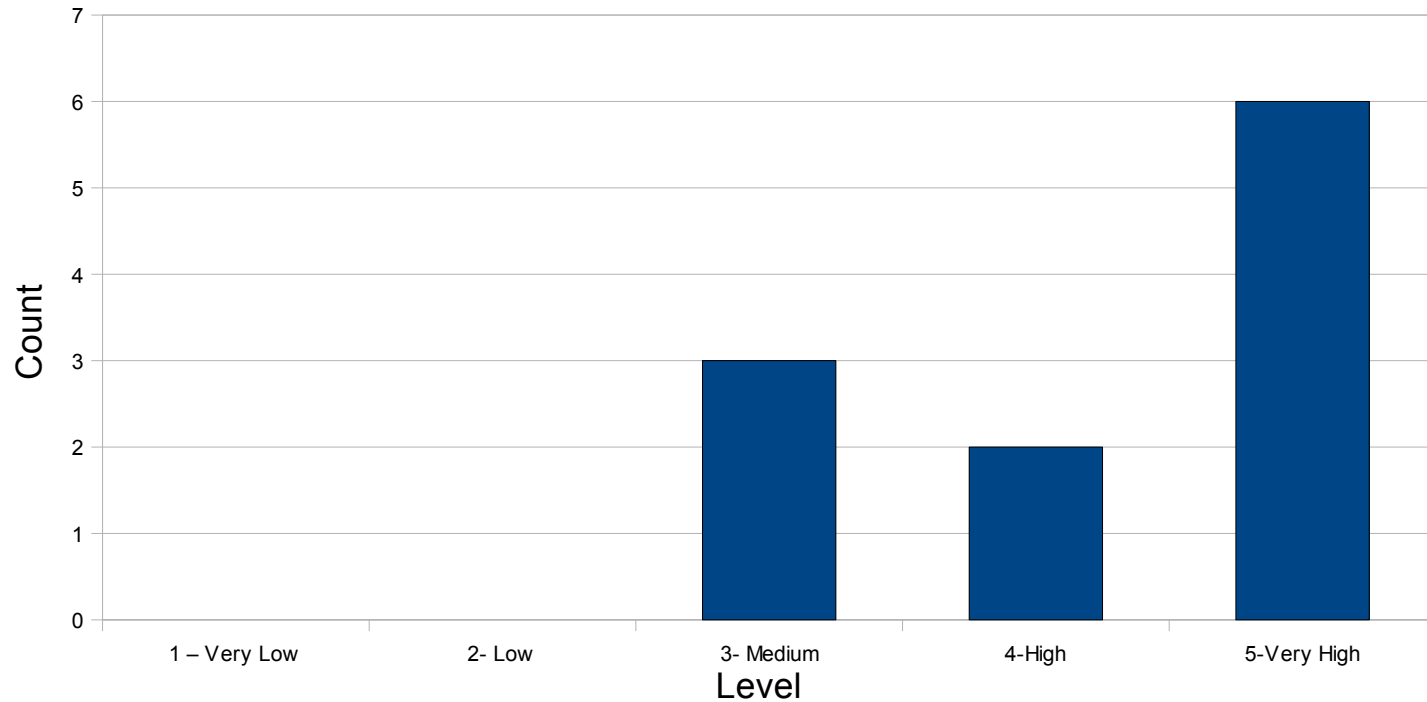
◆ **Highly recommend that other foundation/core courses be not taken simultaneously**

Why is INFS 515 a challenging course?

- ◆ 1st graduate level course for most students
- ◆ Student's academic load
- ◆ Need to “relearn” math and algebra
- ◆ A foundation course
 - A new topic area/material for most students
- ◆ Time to study significant amount of material

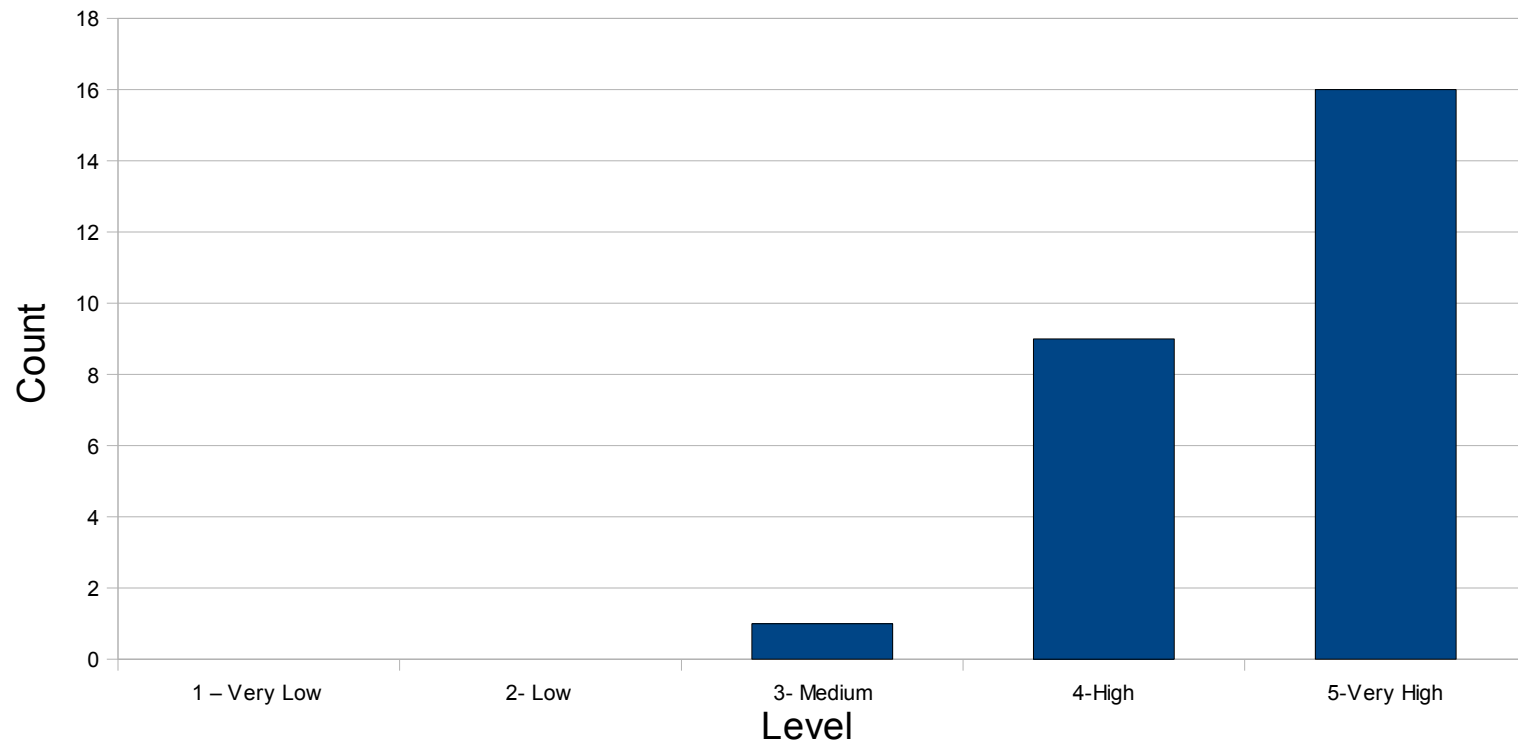
Student Survey

Amount of Work Required for Course
Spring 2008



Student Survey

Amount of Work Required for Course
Fall 2007



Questions and Concerns

- ◆ Students will need to be able to write assembly language code snippets and **high-level** program **segments**. Thus, understanding of high-level language programming, concepts and principles are prerequisites
- ◆ Q: Are the lecture slides enough to prepare for quizzes and exams?
- ◆ A: Absolutely not. They are just a guide. You need to read the textbooks and do the homework exercises and problems

Quiz/Exam Question Example

◆ Example: Write an complete mathematical equation to find the effective access time of a certain application program that is executed on a computer system that contains a single level one direct mapped cache memory system with the following characteristics: access time of main memory = 300nsec, cache access time = 30nsec, cache hit ratio = 98.5%. The computer system is not using any virtual memory management system. Do not compute the final numerical answer.

◆ Solution:

$$\text{EAT} = (\text{access time}_{\text{cache}} * \text{cache hit ratio}) + (\text{access time}_{\text{mm}} * \text{cache miss ratio}) \quad (1)$$

$$\text{EAT} = (30\text{nSec} *(0.985)) + (300\text{nSec} * (1-.985)) \quad (2)$$

Done - Do not reduce or solve further, not requested

Review the math refresher listed on the course useful links page

Why is this course worth taking?

◆ At the end of this course you should be able to:

- Be able to explain the organization and workings of the classical von Neumann machine
- Know the extreme importance and applications of Moore's Law
- How & why computer systems work both at a micro and macro levels
- Know the limitations and vulnerabilities of computer based systems
- Able to perform trade-offs and the performance of different computer system architectures
- Demonstrate knowledge about the role and purpose of the operating systems
- Fundamental understanding of basic operating system concepts & services
- Demonstrate the knowledge about process scheduling and memory management techniques and the impact on the overall performance
- Know the hardware and software composition of computer based systems

◆ Apply knowledge gained to your major area of graduate study

- Gain unique knowledge and practical application that makes you **competitive in the job market**

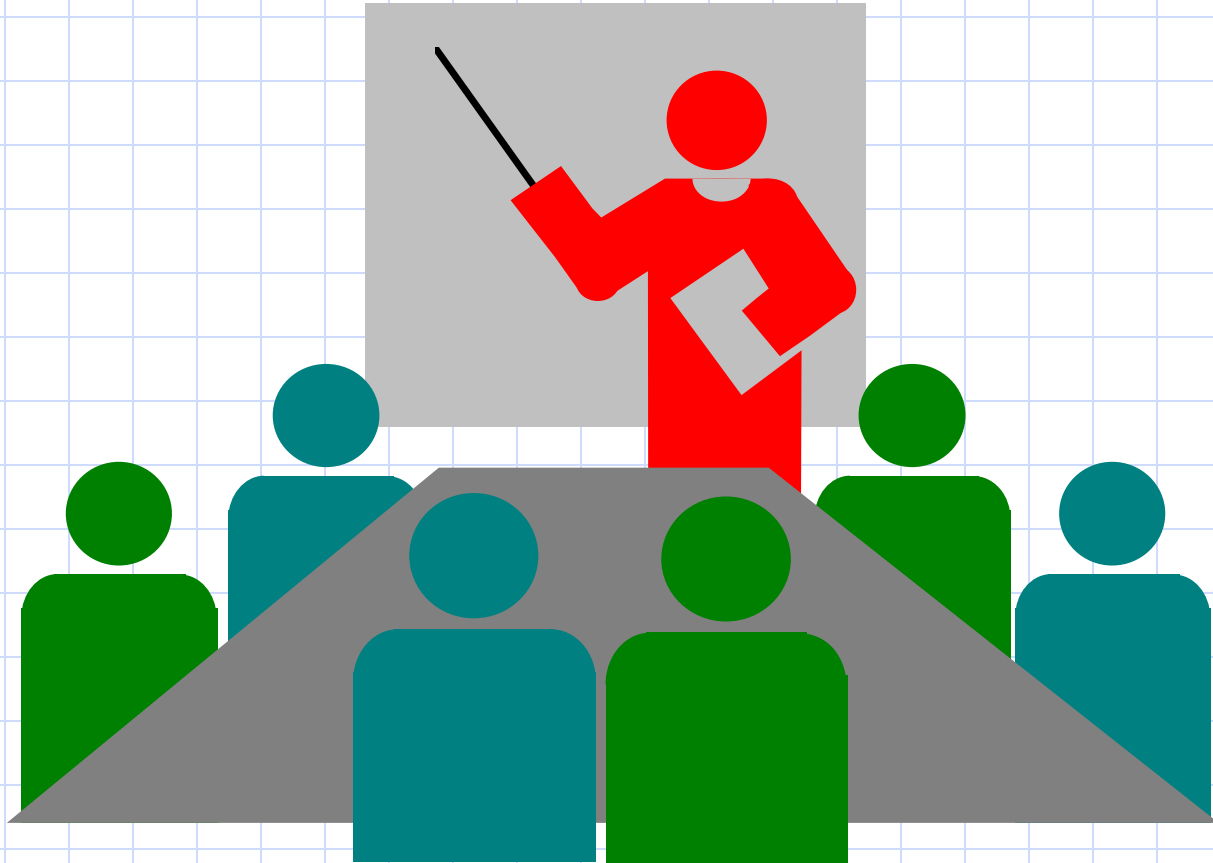
This knowledge will come about through exams, homework and reading assignments

Important Semester Dates (Revised)

First day of classes; last day to submit Domicile Reclassification Application; Payment Due Date	<u>Wednesday, January 21</u>
Last day to drop with no tuition penalty**	February 4
Last day to add classes —all individualized section forms due**	February 3
Last day to drop with a 33% tuition penalty**	February 10
Last day to drop with a 67% tuition penalty**	February 20
Last day to drop**	February 20
Last day Third-Party Billing Authorizations accepted***	February 20
Midterm progress reporting period (100-200 level classes)—grades available via Patriot Web.....	February 16 – March 20
Elective Withdrawal Period (undergraduate students only).....	February 23 – March 27
Spring Break (Saturday classes meet March 7)	March 9 – 15
Semester Payment Plan Deferred Payment due date.....	March 13
Incomplete work from Fall 2008 due to instructor	March 20
Incomplete grade changes from Spring 2008 due to registrar (Records section).....	March 27
Last day of classes.....	Monday, May 4
Tuesday, 20 January; Make-Up Day	<u>May 5</u>
Exam Period (beginning at 7:30 a.m. on Wednesday, May 6).....	May 6-13
Grades available on Patriot Web	Beginning May 6

All other deadlines for the spring 2009 semester remain as originally scheduled. A revised Academic Calendar is available at the Registrar's Office website to reflect all new deadline dates (http://registrar.gmu.edu/calendars/200910_sem_cal_upd.pdf).

Questions?



End of Course Overview



Next Topic

Introduction: General
Computer Organization,
Architecture and
Operating Systems

Never stop thinking!