Syllabus

Course Description
This Course critically examines popular concepts of information age computing, including: smart devices, societal implications, history, hardware function, sensors, networks, problem solving, virtualization and software concepts.

Internet technologies, such as: Web2.0, rich Internet applications, streaming communication tools, responsible use of social networking, and cloud computing, are examined. Privacy and security is an underpinning across all topics.

Students will gain practical, lab-based experience with spreadsheets, database systems, HTML design, and various operating systems including Windows, MacOS X, Linux, iOS and Android. Virtual Machine managers such as VirtualBox will be used on student laptops.

Admitted computer science and computer engineering majors should not enroll in this course.

*There are no pre-requisites for this course.

Course Learning Outcomes
By the end of this course, students should be able to:
1. Make well informed purchasing decisions while select hardware and software platforms that best fit your needs.
2. Apply Microsoft Office applications to abstract, real world, problems.
3. Adapt quickly to new operating systems such as Windows, Mac OS-X, Linux, Android and iOS
4. Properly configure networks for both home and small business settings in a secure fashion.
5. Discuss the role of computing devices in our individual fields of study.
6. Be aware of cyber security risks and how to protect one’s self from these risks.
7. Continuously identify new trends in technology and cyber security.

Course Schedule

<table>
<thead>
<tr>
<th>Lectures:</th>
<th>Monday, Wednesday and Friday</th>
<th>3:00pm – 3:50pm</th>
<th>210 NSC</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Labs:</th>
<th>A1: Wednesday</th>
<th>4:00pm – 6:50pm</th>
<th>201 Capen Hall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A2: Tuesday</td>
<td>1:00pm – 3:50pm</td>
<td>201 Capen Hall</td>
</tr>
<tr>
<td></td>
<td>A3: Wednesday</td>
<td>11:00am – 1:50pm</td>
<td>201 Capen Hall</td>
</tr>
</tbody>
</table>

Instructor Information

Kevin Cleary  
354 Davis Hall  
716-645-4767  
kpcleary@buffalo.edu

Office Hours:  
Mondays 11:00-12:50  
Wednesdays 11:00-12:50  
*Also Available by appointment
Teaching Assistant Information

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margaret Arnold</td>
<td><a href="mailto:mharnold@buffalo.edu">mharnold@buffalo.edu</a></td>
<td>A1: Wednesday 4:00pm – 6:50pm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A3: Wednesday 11:00am – 1:50pm</td>
</tr>
<tr>
<td>Christopher Palmer</td>
<td><a href="mailto:cspalmer@buffalo.edu">cspalmer@buffalo.edu</a></td>
<td>A2: Tuesday 1:00pm – 3:50pm</td>
</tr>
<tr>
<td>Sijia Liu</td>
<td><a href="mailto:sijialiu@buffalo.edu">sijialiu@buffalo.edu</a></td>
<td>Grading Teaching Assistant</td>
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Course Evaluation

Final Grade Computation

<table>
<thead>
<tr>
<th>Graded Components</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
<td>Exams (3 total)</td>
<td>40%</td>
</tr>
<tr>
<td>Quizzes (4 total)</td>
<td>15%</td>
</tr>
<tr>
<td>Lab Assignments (8 total)</td>
<td>35%</td>
</tr>
<tr>
<td>Class Participation</td>
<td>10%</td>
</tr>
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</table>

Grading Scale

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Percentage</th>
<th>Grade Point</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>93-100%</td>
<td>4.0</td>
</tr>
<tr>
<td>A-</td>
<td>90-92%</td>
<td>3.7</td>
</tr>
<tr>
<td>B+</td>
<td>87-89%</td>
<td>3.3</td>
</tr>
<tr>
<td>B</td>
<td>83-86%</td>
<td>3.0</td>
</tr>
<tr>
<td>B-</td>
<td>80-82%</td>
<td>2.7</td>
</tr>
<tr>
<td>C+</td>
<td>77-79%</td>
<td>2.3</td>
</tr>
<tr>
<td>C</td>
<td>73-76%</td>
<td>2.0</td>
</tr>
<tr>
<td>C-</td>
<td>70-72%</td>
<td>1.7</td>
</tr>
<tr>
<td>D+</td>
<td>67-69%</td>
<td>1.3</td>
</tr>
<tr>
<td>D</td>
<td>60-66%</td>
<td>1.0</td>
</tr>
<tr>
<td>F</td>
<td>0-59%</td>
<td>0.0</td>
</tr>
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</table>

Letter grades will be assigned only at the end of the semester.

Graded Components

There will be two in-class exams held during lecture time on dates to be announced (see UBlearns).

There is a cumulative final exam that will be held during the University’s final exam period. It is your responsibility to know when your final exams are scheduled. Do not make travel plans until the final exam schedule is released and you know when this exam is scheduled. No makeup exams will be given.

Quizzes will test primarily the lecture material covered in class. Quizzes will be given roughly once every two weeks.

Be on time to exams and quizzes. Materials will not be handed out once someone has completed their quiz/exam.
Attendance to both labs and lectures are mandatory. Labs are the primary way for students to get hands on experience with some of the technologies and concepts that are covered in lecture. Class participation for lecture and lab is determined by the level of a student's involvement in class discussions, and attendance to lecture, lab and office hours for extra help. Attendance will be for Every lab and periodically in lecture. Your attendance directly affects your final grade.

Lab assignments will come from you lab manual (based on the “GO” series books), as well as projects which are meant to display to the instructor your proficiency in using certain areas of the Office suite, web design, and other tools which will be covered in class and lab. Some of the lab assignments will require multiple applications and will require a good deal of creative thinking. Lab assignments will be primarily submitted through UBlearns.

A detailed description of each lab assignment and their due dates is available on UBlearns.

Lab time is the primary time for students to sit and meet with their TAs to receive help and guidance on the assignments.

Lab assignments must be taken seriously in order to do well in this class.

### Course Texts and Reading Material

To save on cost, a custom bundle has been setup with only the chapters required for this class, presented in the order materials will be covered in class. Custom bundles are only available through UB's on campus Follett bookstore:

- Lecture and Lab bundle (includes E text books): 1-269-30067-9, $178 net
- Lecture and Lab E text only: 1-269-62356-7, $108 net

This custom bundle can also be purchased as an E-Book from [http://www.pearsoncustom.com/ny/ny_cse101_ub/](http://www.pearsoncustom.com/ny/ny_cse101_ub/). Students who purchase the custom bundle from the book store are also given access to the E-book. Detailed instructions for purchasing/accessing the Ebooks can be found on UBlearns. Purchase price of the same bundle from Pearson’s direct site retails for $100.00 an $8.00 savings.

If students wish to purchase the full version of these books from an alternate retailer such as Amazon or Pearson ([http://www.mypearsonstore.com](http://www.mypearsonstore.com)), the ISBNs of the full versions are:

- Lecture
- Lab

- These full books are also available as E-books through [http://www.coursesmart.com/](http://www.coursesmart.com/).
  - Search the ISBN numbers (for full versions) above in the “Search field”.
  - The E-book option is cheaper than the markup from the University bookstore, however, access to E-books expire after half a year. E-books cannot be sold back.
  - For more details see: [http://www.coursesmart.com/faqs](http://www.coursesmart.com/faqs)

### Computing Resources

All students are required to have a UBIT account at the University at Buffalo for:

- Access UBlearns
  - Assignments will be submitted through UBlearns.
  - Information such as lecture notes, assignments, projects and announcements will be disseminated via UBlearns.
- UB Email address
- Lab Machine logon in Capen 201
Late policy:

- Late submissions will result in a 20% penalty per day.
- A day is defined as 24 hours after the day/time the assignment is due.
- In addition, no help will be available from the TAs or from the instructor for a project or homework after its scheduled due date.
- After five (4) days, the assignment will no longer be accepted. NO EXCEPTIONS

Re-Grades:

- Homework, projects, quizzes, and exams may be submitted for re-grades no later than one (1) week after they are returned.
- If you don’t pick graded materials up on the day they are returned, this does NOT extend the re-grading deadline.
- Re-grade requests must be clearly written and attached to the assignment.
- All re-grades for homework and projects are to be submitted to the TA.
- If the issue cannot be resolved through the TA, then it should be submitted to the instructor.
- Work done in pencil will not be considered for re-grade.
- When work is submitted for re-grade, the entire work may be re-graded.

Incomplete (I) grades

We will follow the UB Undergraduate Catalog Statement on Incomplete Grades, found in the Undergraduate Catalog.

Generally, incomplete (“I”) grades are not given. However, very rarely, circumstances truly beyond a student’s control prevent him or her from completing work in the course. In such cases the instructor can give a grade of “I”. The student will be given instructions and a deadline for completing the work, usually no more than 30 days past the end of the semester. University and department policy dictate that “I” grades can be given only if the following conditions are met:

- An Incomplete will only be given for missing a small part of the course.
- An Incomplete will only be given when the student misses work due to circumstances beyond his/her control.
- An Incomplete will only be given when the student is passing the course except for the missed material.
- An Incomplete is to be made up with the original course instructor within the time specified by the appropriate University regulation (see appropriate document above), and usually within the following semester.
- An Incomplete will not be given to allow the student to informally retake the entire course, and have that grade count as the grade of the original course.

Incomplete cannot be given as a shelter from poor grades. It is your responsibility to make a timely resignation from the course if you are doing poorly for any reason. The last day to resign the course is Friday, March 30th.

Students with Disabilities

If you have a diagnosed disability (physical, learning, or psychological) that will make it difficult for you to carry out the course work as outlined, or that requires accommodations such as recruiting note-takers, readers, or extended time on exams or assignments, you must consult with the Office of Disability Services (25 Capen Hall, Tel: 645-2608, TTY: 645-2616, Fax: 645-3116, http://www.student-affairs.buffalo.edu/ods/).

You must advise your instructor during the first two weeks of the course so that we may review possible arrangements for reasonable accommodations.
Academic Integrity

Source: [http://undergrad-catalog.buffalo.edu/policies/course/integrity.shtml](http://undergrad-catalog.buffalo.edu/policies/course/integrity.shtml)

Academic integrity is a fundamental university value. Through the honest completion of academic work, students sustain the integrity of the university while facilitating the university’s imperative for the transmission of knowledge and culture based upon the generation of new and innovative ideas.

For this reason, the principles of Academic Integrity have priority over every other consideration in every aspect of our departmental life, and we will defend these principles vigorously. It is essential that every student be fully aware of these principles, what the procedures are by which possible violations are investigated and adjudicated, and what the punishments for these violations are. Wherever they are suspected, potential violations will be investigated and determinations of fact sought. In short, breaches of Academic Integrity will not be tolerated.

All academic work must be your own. Plagiarism, defined as copying or receiving materials from a source or sources and submitting this material as one’s own without acknowledging the particular debts to the source (quotations, paraphrases, basic ideas), or otherwise representing the work of another as one’s own, is never allowed. Collaboration, usually evidenced by unjustifiable similarity, is never permitted in individual assignments. Any submitted academic work may be subject to screening by software programs designed to detect evidence of plagiarism or collaboration. Examples of Academic dishonesty include:

- Submitting previously submitted work in whole or in substantial part—in another course, without prior and expressed consent of the instructor.
- Providing files or parts of an assignment to other students.
- Using templates or sample found on the internet. For CSE 101, assignments will explicitly state when it is okay to you a downloaded template.
- Plagiarism. Copying or receiving material from any source and submitting that material as one’s own, without acknowledging and citing the particular debts to the source (quotations, paraphrases, basic ideas), or in any other manner representing the work of another as one’s own.
- Cheating. Soliciting and/or receiving information from, or providing information to, another student or any other unauthorized source (including electronic sources such as cellular phones and smart devices), with the intent to deceive while completing an examination or individual assignment.
- Falsification of academic materials. Fabricating laboratory materials, notes, reports, or any forms of computer data; forging an instructor’s name or initials; resubmitting an examination or assignment for reevaluation which has been altered without the instructor’s authorization; or submitting a report, paper, materials, computer data, or examination (or any considerable part thereof) prepared by any person other than the student responsible for the assignment.
- Misrepresentation of documents. Forgery, alteration, or misuse of any University or Official document, record, or instrument of identification.
- Confidential academic materials. Procurement, distribution or acceptance of examinations or laboratory results without prior and expressed consent of the instructor.
- Selling academic assignments. No person shall sell or offer for sale to any person enrolled at the University at Buffalo any academic assignment, or any inappropriate assistance in the preparation, research, or writing of any assignment, which the seller knows, or has reason to believe, is intended for submission in fulfillment of any course or academic program requirement.
- Purchasing academic assignments. No person shall purchase an academic assignment intended for submission in fulfillment of any course or academic program requirement.

It is your responsibility to maintain the security of your computer accounts and your written work. Do not share passwords with anyone, nor write your password down where it may be seen by others. Do not change permissions to allow others to read your course directories and files. Do not walk away from a workstation without logging out. These are your responsibilities. In groups that collaborate inappropriately, it may be impossible to determine who has offered work to others in the group, who has received work, and who may have inadvertently made their work available to the others by failure to maintain adequate personal security. In such cases, all will be held equally liable.
Departmental and Course Policy on Violations of Academic Integrity
If, after following the procedures required by the University for investigation of suspected breaches of academic integrity, a student is found guilty, the policy of the department of Computer Science & Engineering is that the student minimally receive a grade of F in the course.

Course Outline

A rough list of topics covered in this course is as follows: Please see the class schedule on UBLearns for specifics on dates topics will be covered along with supporting reading materials.

Lecture:
- Setting up your computer for success a successful academic and professional career
  - UBIT accounts
  - Recommended software
  - Recommended smart device apps (demo)
  - PC Setup
  - Protecting your devices and information on day 1.
    - Backups
    - Physical protections
    - Antivirus software, patching, firewalls
  - Where to get help on campus
  - Navigating UBs documentation pages
- A Taxonomy of Computers in our Lives
  - What is a computer?
    - PCs
    - Laptops
    - Smart Devices / RISC
    - Servers
    - Thin Clients and Zero Clients
    - Grid / Cloud
    - Embedded Systems
  - Paradigm shift to the information age
  - Then (5 years ago) Vs now
  - Professional and personal uses in our everyday lives.
    - Medical
    - Military
    - Law Enforcement / Criminal Justice
    - Entertainments
    - Gaming
    - Agriculture
    - Communication
    - Business
    - Robotics
  - Social and ethical issues surrounding computing
  - The importance of Computer Literacy in our academic and professional lives
- History of computing
  - Early Devices
    - Number and mathematical systems
    - Mechanical
    - Analog devices
    - Calculators
  - 5 generations of computing
• Present Day Computing and Future Trends
  o Current Market Breakdown
  o Overview of current desktop operating systems and their system software tools:
    ▪ Windows 8 interface and system tools (Demo)
    ▪ MacOS Mavericks interface and system tools
    ▪ Ubuntu Linux interface and system tools.
  o Overview of Android and iOS smart device operating systems.
  o Today's trends
    ▪ Uses
    ▪ Hardware
  o Technologies that could define the 6th generation of computing.
    ▪ Moore's law
    ▪ Artificial Intelligence
    ▪ Death of the desktop PC
    ▪ Nano technology
    ▪ Optical technology
    ▪ Sensor
    ▪ Parallel processing
    ▪ Quantum computing
    ▪ Magnetic random access memory.
• Input and Output
  o Standard forms of input such as mice, keyboards and touchpads.
  o Newer forms of input such as multi-touch, web-cams, virtual keyboards and QR codes (demo)
  o Virtual Reality (demo)
  o Augment technologies for the disabled such as eye gaze and speech recognition (demo)
  o Sensors
  o Display technology
    ▪ Smart and digital whiteboards
    ▪ Multi-Touch LED TVs (demo)
    ▪ Screen Sizes and technologies
      ▪ Controlling multi-head arrangement and orientation (demo).
    ▪ Outputting to projectors and LED TVs
  o Printer technology
    ▪ How to purchase a printer
    ▪ How to unjam a laser printer and identify its parts (demo)
    ▪ 3d Printing (demo)
  o Working with projection, LED screen and smart board equipment
    ▪ Using projection equipment when giving a presentation
  o Connecting peripherals
    ▪ Wired
    • USB
• Serial
• Firewire
• Thunderbolt
• More ports
  ▪ Wireless
    • Bluetooth (demo)
    • InfraRed
    • RFID (demo)
  ▪ Displays:
    • VGA
    • HDMI
    • DVI
    • Chromcast (demo)
  ▪ Ergonomics
• Internal hardware parts of a computer
  ▪ Motherboard, CPUs, memory, storage, fans, power supplies, chassis, cards, GPUs
    ▪ Different types of memory and the memory hierarchy
      • Cache
      • ROM
      • RAM
      • Virtual Memory
    ▪ Different types of storage
      • Magnetic
      • Optical
      • Solid State
      • Connection Interfaces
    ▪ Multi-core CPUs
      • Clock speed
      • Over clocking
      • Performance multipliers
• The Inner workings of computing devices
  ▪ Digital vs Analog
  ▪ Input, process, output, store cycle
  ▪ Bits and bytes
    ▪ Representing information
    ▪ Compiling software and applications to form instructions
  ▪ What is a CPU made of?
    ▪ Logic Gates
    ▪ Integrated circuits
  ▪ How the CPU uses instructions
    ▪ Program Counters
    ▪ Fetch, Decode, Execute, Store cycle
    ▪ Pipelining
    ▪ Hyperthreading (demo)
• The Operating system
  ▪ What does an OS do?
    ▪ Hardware management
      ▪ Device Drivers
    ▪ File system management
    ▪ Multitasking (demo)
      ▪ Scheduling
    ▪ User Roles (demo)
• Authentication
  • Authorization
    ▪ Virtual memory management
  o Booting (demo)
  o Overview of the most similarities and differences of MacOS and Windows.
  o Demonstration of Linux (Lab work to accompany)
  o Open Source
  o Advantages and disadvantages of Linux/Unix as compared to MacOS and Windows
  o Virtualization (demo)
    ▪ Demonstration of Desktop Virtualization
  • Students will learn to use UB’s “Virtual Computing Lab”
    ▪ Demonstration of OS/hardware virtualization using Oracle’s Virtual Box.
  o Duo-Booting
  o Duo-Booting Vs Virtualization.
  o Patching
• Smart Operating Systems
  o Market Breakdown
  o Overviews, demonstrations and comparisons of:
    ▪ IOS
    ▪ Android
    ▪ Windows Phone.
  o Application Landscape
  o Access to Data
  o Security best practices (demo)
  o Downloading apps (demo)
    ▪ App development
• Software
  o How software is made
  o Why are there bugs
    ▪ Why are there updates and patches
  o Documentation
  o Licensing
  o Web applications (Demo)
    ▪ Mashups (Demo)
  o Operating system Compatibility (Demo)
  o Open Source alternatives (demo)
  o Distribution methods
  o Piracy
• Productivity Software (Lab work to accompany).
  o Types of productivity software
    ▪ Word Processing
    ▪ Desktop Publishing
    ▪ Statistical Analysis
    ▪ Computer Modeling
    ▪ Visualization
  o Spreadsheet software
    ▪ Components
    ▪ Features
    ▪ Common Tasks
    ▪ Graphs and charts
      ▪ Chart types
      ▪ Design Best Practices
      ▪ Critical Analysis of data
  o How to leverage presentation software to give an effective presentation
• How the Internet has reinvented computing and our lives
  o What is the Internet?
  o The Web Vs the Internet
  o What the heck is the “Cloud”?!?
  o Web 2.0 tools
    ▪ Wikis (Demo)
    ▪ Content and course management systems
  o The Internet as a communication tool
    ▪ Synchronous tools
      • Voip
      • Teleconferencing (Demo)
      • Demonstration of Apple Face time and Google Hangouts
      • MMORPGs
      • Social Networking
    ▪ Asynchronous tools
      • Email
      • Web Forums
        o Google Groups
      • Blogs
  o Rich Internet Applications
    ▪ Demonstration of Google “Docs” (collaborative) and Google “Drive”
  o Multimedia on the Web
    ▪ Webcasts
    ▪ podcasts
  o Plugins / Add-ons
  o Usage statistics
  o Issues surrounding the Internet
    ▪ Tele-commuting
    ▪ MOOCs
    ▪ Cybercrime
      • Cyber bullying
    ▪ Privacy
    ▪ Censorship
    ▪ Net-neutrality
    ▪ The digital divide
    ▪ Addictions
    ▪ Impact on social skills and physical health
• Internet Communication models
  o Client/Server
    ▪ What’s a server
      • Tour of CSE Data Center (in small groups)
  o Peer to Peer
  o Grid
    ▪ Demonstration of the “Open Science Grid”
  o Distributed
  o Utility Computing
    ▪ Demonstration of Amazon’s “Elastic Cloud Compute” service
  o Cloud Computing
• How does the Internet work?
  o Protocols
    ▪ Circuit switched communication
    ▪ Message switched communications
    ▪ The TCP/IP protocol
• What each protocol in the stack does
  o Helper protocols to make the Internet easier (demonstration on how to set these values and test them)
    ▪ Domain name resolution - DNS
    ▪ Dynamic host control protocol - DHCP
  o Routing of packets
    ▪ Local Area Networks
    ▪ Gateways
    ▪ Routers
  o Diagnosis of potential network problems (demo)
• Internet and Networking Hardware
  o Local Area Networks
    ▪ Topologies
    ▪ Physical
      • Cables
      • Switches and Hubs
      • Network interface cards
      • Ethernet
    ▪ Wireless LANs (Demo)
  o Wide Area Networks
    ▪ Physical Transmission Technologies
      • Modem
      • DSL
      • Cable
      • Fiber Optics (Demo)
    ▪ Wireless Transmission Technologies
      • 3g/4g (Demo)
      • Satellite
      • Tethering to a smart device. (demo)
    ▪ Internet Service Providers
      • Bandwidth (Demo)
        o Upstream and Downstream speeds
      • Testing the bandwidth provided by your Internet Service Provider
  o Sharing devices
  o Home Routers delivering Internet connections (demo)
    ▪ What services do home routers provide?
      • Network Address Translation (NAT)
      • Dynamic Host Control Protocol (DHCP)
      • Domain Name System (DNS)
    ▪ Demonstration of a home router setup with all security best practices
      • Host management
      • Router management
      • Firewalling
      • Port forwarding
      • WAN connection types
      • Setting Passwords
      • Updating Firmware
      • Troubleshooting techniques
• The Web and Web Browsers
  o What’s in a uniform resource link – URL
  o They Hypertext Markup Language – HTML (Lab work to accompany)
  o Web Servers
  o The Dynamic Web
• Plugins
• Databases
• Web programming languages
  • Client (browser) side
  • Server Side
  • Asynchronous JavaScript and XML – AJAX
• URL parameters
• Cookies
  • Demonstration of what a cookie is and viewing how they are set in real time
  o Security best practices for locking down your web browser and safe web browsing
  o Search engines
  o Portals
• Email
  o Protocols used (Demo)
    • post office protocol (POP)
    • internet message access control protocol (IMAP)
    • Exchange
    • Simple Mail Transfer Protocol (SMTP)
  o ASCII code Vs HTML (Demo)
  o Spam and Filtering
  o Header Information (Demo)
  o Attachments (Demo)
  o Email Management best practices
  o Netiquette
• Staying safe on the Internet
  o Threats
    • Cybercrime
    • Cyber Terrorism / Cyber Warfare
  o Internet as a crime fighting tool
  o Who are the bad guys
  o What do the bad guys want
  o What tools do the bad guys use
    • Malware, worms, viruses, spyware, Trojans, Macro and XSS viruses
    • The Web
      • Web Jacking
      • Defacement
      • Cross site Scripting (XSS)
    • Networks
      • Packet sniffing
      • Port scanners
    • Denial of service attacks
      • Botnets
    • Social Engineering (phishing)
  o How to stay ahead of the continual escalation of threats long after CSE 101
  o How to stay safe from the bad guys
    • Physical Protections
      • Passwords
    • Network Protections
      • Firewalls
    • Data Protections
      • USB Keys
      • Drive Encryption (Demo)
      • Backups (Demo)
- Software Protections
  - Antivirus protection
  - Separation of accounts (Demo)
  - Patching
  - Using https
- Social Networking (Lab work to accompany)
  - Privacy Concerns
    - Managing Digital Dirt (Demo)
    - The legal system when it comes to cybercrime
- Ecommerce
  - Types of Ecommerce
  - Ecommerce Vs E-Business
  - Brick and Mortar
  - Disaggregation
  - Mobile Commerce
  - The Long Tail
  - Crowdsourcing
  - Enhanced interactive experiences
  - Safe use of Ecommerce sites
    - Use of “https”
    - Digital certificates and certificate authorities
- Databases
  - Where do we find databases
  - What is a database
  - Databases Vs. spreadsheets
    - When to use a database rather than a spreadsheet
    - Data consistency
    - Data normalization
    - Data integrity
  - Building Blocks (Lab work to accompany)
    - Tables, records, fields, primary key, forms, reports, queries
  - Database Management systems
    - File Based such as MS Access
    - Transactional (Client Server) such as MySQL (Demonstration to accompany)
  - Relational Databases
  - Data Mining
  - Database design (Lab work to accompany)
- Artificial Intelligence (AI)
  - What is AI
  - How do we define “intelligence”
  - The Turing Test
  - The human brain Vs. a CPU
    - Neural networks of CPUs
  - Playing Games
  - Natural language communication
  - Knowledge bases and expert systems
  - Pattern Recognition
  - Machines that answer questions
  - Robotics
    - Steel collar workers
  - How long until AI surpasses IQ
Lab:

* We assume going into lab that students already have basic knowledge and experience with the suite of Microsoft Office applications.

- Accessing UB resources:
  - Software
  - “Cloud” storage for file backup and portability
    - Quotas
    - S drive
  - Cisco Virtual Private Network (VPN) client
  - Virtual Computing Lab
  - UB’s “Virtual Computing Lab”
  - Secure Computing survival guide
    - Antivirus installation
    - Office 2010
    - Software updates

- Advanced Word
  - Working with views, rulers and ribbons
  - Setting custom margins
  - Working with bullet points
  - Setting tab stops
  - Working with smart graphics
  - File insertion
  - Text effects
  - Text formatting
  - Advanced image formatting
  - Working with tables
  - Creating headers and footers
  - Working with bulleted lists
  - Working with templates
    - Saving a custom template
    - Finding a pre-made template
  - Auto-Correct option
  - Find and Replace tool
  - Creating PDFs
  - Research and Citation tools.
    - Footnotes and endnotes
    - Bibliographies
  - Multiple column documents
  - Creating a resume

- Unix and Linx
  - Logging in with an SSH client such as putty or MacOS terminal program
  - Navigating directories
  - Listing, creating and removing files
  - Text editing utilities
  - Network utilities
  - Piping commands together

- Virtualization
  - Use of Oracle VirtualBox to virtualize Windows and Linux.
    - Ubuntu Linux

- Excel
  - Entering of data
  - Mail merge with Word
  - Functions such as AVERAGE, MEAN, MEDIAN, MIN, MAX, SUM, date and time If and Countif
Referencing other formulas or worksheets
Defining variables
Replicating of formulas.
Auto recalculation of formulas
Relative Vs. absolute referencing.
Text Formatting
  ▪ Rotation, merging, conditional formatting
Creation of charts and graphs
  ▪ Spark lines
  ▪ Column charts
  ▪ Pie charts
  ▪ Line charts
  ▪ Column charts
  ▪ Adjusting axis and legend values
  ▪ Using chart layout tools
Sorting and filtering data
Advanced custom formulas with:
  ▪ Orders of operation
  ▪ Absolute referencing
  ▪ String Concatenation
  ▪ V lookups
  ▪ What if
  ▪ Goal-seek
Power Point
  ▪ Using themes
  ▪ Inserting new pre-configured slides
  ▪ Headers and footers
  ▪ Printing
  ▪ Outline View
  ▪ Text formatting
  ▪ Applying transitions
  ▪ Creating animations
  ▪ Using Notes
  ▪ Working with pictures
  ▪ Working with graphics
  ▪ Inserting images
  ▪ Inserting text boxes
  ▪ Inserting shapes
  ▪ Inserting Videos
  ▪ Aligning and distributing objects
  ▪ Packing presentations
Social Networking
  ▪ Creating accounts and locking down security for:
    ▪ Facebook
    ▪ LinkedIn
    ▪ Twitter
    ▪ Google+
    ▪ Klout
HTML
  ▪ How to create a .html file and save it to your web mapped space
  ▪ Learn to create html objects such as lists, tables, paragraphs, links and lists.
  ▪ Using <HTML> and <BODY> tags to create an HTML document
  ▪ Inserting images
  ▪ Formatting text
- Use of HTML validators to catch errors
- Demonstration of how cascading style sheets (CSS) can change the look and feel of a page/site

- Access
  - Create a database
  - Use the various navigations panes and views
  - Designing a table
  - Eliminating redundant data
  - Good database design
  - Import data from excel
  - Create a query
  - Create a form
    - How to use the record selectors
  - Create a report

**The instructor of this class reserves the right to make changes to the aforementioned guidelines, policies and procedures on an as needed basis. Any changes will be accompanied by a formal electronic message to students explicitly stating the changes.**