Catalog Description
Introduces students to the fundamental concepts in information technology (IT) that provide the technical underpinning for state-of-the-art applications. A perspective on the range of information technology is presented. Historical development and social implications of efforts in information technology form an integral part of the course.

Prerequisites
There are currently no prerequisites for this course.

Rationale
Information technology literacy has become a fundamental requirement for any major. An understanding of the principles underlying digital devices, computer hardware, software, telecommunications, networking and multimedia is an integral part of any IT curriculum. This course provides a sound foundation on the basic theoretical and practical principles behind these technologies and discusses up to date issues surrounding them including social aspects and how they impact everyday life.

Educational Objective
This course has been especially designed to target audiences from multiple disciplines. Students will gain literacy in the underlying principles and vocabulary of Information Technology. The course has three objectives: 1) to explain mathematical principles underlying multimedia information technologies, 2) to provide questions about the social, economic, and political contexts in which IT exists, and 3) to introduce cutting-edge technologies and trends such as those in the areas of wireless multimedia, computer security, digital audio, and high-performance computing.
Major Topics

On successful completion of this course, students will be able to:

- Gain familiarity with the foundations of basic information technologies.
- Be acquainted with topics regarding latest IT developments.
- Gain exposure the social, political and economic implications of IT.
- Perform calculations involving basic IT concepts.
- Understand the difference between analog and digital technologies.
- Understand the hardware infrastructure of computers.
- Gain familiarity with the nature and different types of software.
- Understand how audio and images are digitized.
- Get acquainted with the different types of communication systems and transmission media.
- Understand the fundamentals of optical communication systems.
- Gain familiarity with the technologies behind wireless communications.
- Understand the basics of LAN and WAN technology.
- Learn about the crucial communication protocols used in IT systems.
- Gain exposure to the fundamental architecture and operating principles of the Internet.
- Get acquainted with various security issues and measures taken to ensure secure networks and communication systems.
- Understand the operating principles of landline telephony, cellular telephony and VoIP systems.
- Gain insight into the IT trends and the future of technologies
- Work with teams to discuss IT concepts and arrive at a consensus.
- Write about technology and produce ideas about the impact of technologies.

Textbook

**REQUIRED**

Information Technology in Theory
By: Pelin Aksoy and Laura DeNardis

Publisher: Course Technology
Publication Date: October 15, 2007
Administrative Support

Fairfax campus
Nguyen Engineering Building, Room 5400
Phone: 703-993-3565

Prince William campus
Bull Run Hall, Suite 102
Phone: 703-993-8461

Grading

Grades will be awarded in accordance with the GMU Grading System for undergraduate students. See the university catalog for policies: http://www.gmu.edu/catalog for more information.

The grading scale for this course is:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>97 – 100%</td>
<td>A+ Passing</td>
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<tr>
<td>93 – 96%</td>
<td>A Passing</td>
</tr>
<tr>
<td>90 – 92%</td>
<td>A- Passing</td>
</tr>
<tr>
<td>87 – 89%</td>
<td>B+ Passing</td>
</tr>
<tr>
<td>83 – 86%</td>
<td>B Passing</td>
</tr>
<tr>
<td>80 – 82%</td>
<td>B- Passing</td>
</tr>
<tr>
<td>77 – 79%</td>
<td>C+ Passing</td>
</tr>
<tr>
<td>73 – 76%</td>
<td>C Passing</td>
</tr>
<tr>
<td>60 – 72%</td>
<td>D Passing</td>
</tr>
<tr>
<td>0 – 59%</td>
<td>F Failing</td>
</tr>
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</table>

* A grade of "D" is considered a passing grade for undergraduate courses. However, a minimum grade of "C" is required in the AIT department for any course that is a prerequisite for one or more other courses. For BSAIT students, a grade of “C” or better is required in this course because it is a prerequisite for other courses in the program. For IT minor/undergraduate certificate students, a grade of “D” or better is required in this course for it to count towards the minor, provided that you will not be taking any other courses for which this course is a prerequisite.

Raw scores may be adjusted by the instructor to calculate final grades.
Final grades will be determined based on the following components:

<table>
<thead>
<tr>
<th>Graded Activity</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>Information Sheet</td>
<td>3%</td>
</tr>
<tr>
<td>Face-to-Face Sections: Individual Quizzes (Lowest 1 Dropped)</td>
<td>12%</td>
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<tr>
<td>Online Sections: Discussion Board Participation (Lowest 1 Dropped)</td>
<td></td>
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<tr>
<td>Homework</td>
<td>15%</td>
</tr>
<tr>
<td>IT News Reports (Lowest 1 Dropped)</td>
<td>15%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>25%</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
</tbody>
</table>

There are no extra credit opportunities. Students may not do additional work nor resubmit any graded activity to raise a final grade.

Late submissions will not be accepted for any graded activity for any reason. Any missed assignment or quiz is simply missed, regardless of the reason why (e.g. illness, work, traffic, car trouble, computer problems, death, etc.), and earns a grade of zero. A number of lowest grades (as identified above) will be dropped to handle all of “life’s situations” without the need for any type of instructor permission to be excused or for you to submit documentation. If you choose not to do a number of assignments or attend a number of quizzes, and then later on have to miss an assignment or quiz for a valid reason, you will be out of luck if you have already exhausted the number of grades that have earned zeroes because you did not complete the work. You are strongly encouraged to complete all assignments and attend all quizzes so that you can check that you understand the material and can throw out bad grades, or grades for which you had to miss an assignment or quiz for a valid reason.

The midterm and final exam will be conducted on-campus, in a classroom. The dates/times/locations will be posted on Blackboard as soon as possible.

Exam Rules

- All exams will be written and “closed book, closed notes, closed friends” – no reference materials other than those provided with the exam will be permitted. A standalone, non-graphing, non-scientific calculator is permitted, but calculator sharing will not be permitted during any exam. Calculators that are part of cell phones or contain graphing capabilities will not be permitted. Additionally, if the calculator contains a case, it must be removed and out of view during the exam.
- (Face-to-Face Sections Only) Students are required to bring a Scantron (Form #882-E) to all exams
- Students without proper identification (e.g. GMU ID, Driver’s License, etc.) will not be admitted to any exam
- No student may leave the classroom within the first 30 minutes of any exam
• Exams are retained by the AIT department and will not be returned to students.

Final grades will be posted to PatriotWeb, which is the only vehicle for students to obtain those grades. A student with a "hold" on his/her PatriotWeb account will be unable to access final grades until the hold has been removed by the Registrar.

**Course Content**

<table>
<thead>
<tr>
<th>Module</th>
<th>Content</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction to Information Technology</td>
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<td>2</td>
<td>Understanding the Digital Domain</td>
</tr>
<tr>
<td>3</td>
<td>Representing Numbers and Text in Binary</td>
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<td>4</td>
<td>Computer Hardware</td>
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<td>5</td>
<td>Computer Software</td>
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<td>6</td>
<td>Digital Audio Technology</td>
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<td>7</td>
<td>Digital Images and Video</td>
</tr>
<tr>
<td>8</td>
<td>Midterm Exam Review / Midterm Exam</td>
</tr>
<tr>
<td>9</td>
<td>Fundamentals of Communication</td>
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<td>10</td>
<td>Introduction to Fiber Optics</td>
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<td>11</td>
<td>Wireless Communications</td>
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<td>12</td>
<td>Local Area Networks</td>
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<td>13</td>
<td>Wide Area Networks</td>
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<td>14</td>
<td>Communication Protocols</td>
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<td>15</td>
<td>Internet Architecture</td>
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<td>16</td>
<td>Network Security</td>
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<td>17</td>
<td>The Telephone System</td>
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<td>18</td>
<td>VoIP</td>
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<tr>
<td>19</td>
<td>Wireless Multimedia</td>
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<tr>
<td>20</td>
<td>Final Exam Review / Final Exam</td>
</tr>
</tbody>
</table>

**Important Dates**

Dates for adding, dropping the course, etc. are available via: [http://registrar.gmu.edu](http://registrar.gmu.edu).

**Religious Holidays**

A list of religious holidays is available on the [University Life Calendar page](http://registrar.gmu.edu). Any student whose religious observance conflicts with a scheduled course activity must contact the instructor at least 2 weeks in advance of the conflict date in order to make alternative arrangements.
**Attendance Policy**

Students are expected to attend each class, to complete any required preparatory work (including assigned reading) and to participate actively in lectures, discussions and exercises. As members of the academic community, all students are expected to contribute regardless of their proficiency with the subject matter. The instructor reserves the right to issue pop quizzes if adequate attendance is not maintained.

Students are expected to make prior arrangements with their instructor if they know in advance that they will miss any class and to consult with the instructor as soon as possible if they miss any class without prior notice. Any student who expects to miss more than one class session is strongly advised to drop the course and take it in a later semester when he/she can attend every class.

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Departmental policy requires students to take exams at the scheduled time and place, unless there are truly compelling, severe circumstances supported by appropriate documentation. Except in such circumstances, failure to arrive at the exam site on time for a scheduled exam will result in a score of zero (0) for that exam, in accordance with Mason policy on final exams. Students should not make travel plans or other discretionary arrangements that conflict with scheduled classes and/or exams. If the University is closed due to weather or other unforeseen conditions, final exams may be rescheduled – students are strongly advised not to make plans that would prevent them from attending exams that may be rescheduled during the entire exam period.

**Classroom Conduct**

Whether the course is face-to-face or online, students are expected to conduct themselves in a manner that is conducive to learning, as directed by the instructor. Any student who negatively impacts the opportunity for other students to learn will be warned – if disruptive behavior continues, the student will be removed from the course.

**Communications**

Registered students will be given access to a section of the Blackboard Learning System for this course. Blackboard will used as the primary mechanism (outside of lectures) to disseminate course information, including announcements, lecture slides, assignments, and grades.

Communication with the instructor on issues relating to the individual student should be conducted using Blackboard Mail, GMU email, via telephone, or in person - not in the public forums on Blackboard. GMU Mail is the preferred method – for urgent messages, you should also attempt to contact the instructor via telephone. Federal privacy law and GMU policy require that any
communication with a student related in any way to a student’s status be conducted using secure GMU systems – if you use email to communicate with the instructor you **MUST** send messages from your GMU email account.

All course materials (lecture slides, assignment specifications, etc) are published on Blackboard in Adobe® Portable Document Format (PDF) or in a format for which a free reader is available (such as Microsoft PowerPoint). This allows users of most computing platforms to view and print these files. Microsoft® Word (or a compatible word processing application) is required for preparing assignments – it is available on computers in the Mason open labs.

**Privacy**

Instructors respect and protect the privacy of information related to individual students. As described above, issues relating to an individual student will discussed via email, telephone or in person. Instructors will not discuss issues relating to an individual student with other students (or anyone without a need to know) without prior permission of the student.

Graded work other than exams will be returned to individual students directly by the instructor (or by a faculty or staff member or a teaching assistant designated by the instructor or via another secure method). Under no circumstances will a student's graded work be returned to another student.

Faculty and staff will take care to protect the privacy of each student's scores and grades.

**Disability Accommodations**

The Office of Disability Services (ODS) works with disabled students to arrange for appropriate accommodations to ensure equal access to university services. Any student with a disability of any kind is strongly encouraged to register with ODS as soon as possible and take advantage of the services offered.

Accommodations for disabled students **must** be made in advance – ODS cannot assist students retroactively, and at least one week’s notice is required for special accommodations related to exams. Any student who needs accommodation should contact the instructor during the first week of the semester so the sufficient time is allowed to make arrangements.
**Honor Code**

All members of the Mason community are expected to uphold the principles of scholarly ethics. Similarly, graduating students are bound by the ethical requirements of the professional communities they join. The ethics requirements for some of the communities relevant to Applied IT graduates are available via the following links:

- ACM Code of Ethics and Professional Conduct
- IEEE Code of Ethics
- EC-Council Code of Ethics

On admission to Mason, students agree to comply with the requirements of the GMU Honor System and Code[^1]. The Honor Code will be strictly enforced in this course. Honor Code cases are heard by a panel consisting of students – students who meet the requirements are encouraged to nominate themselves to serve on the Honor Committee. Any use of the words or ideas of another person(s), without explicit attribution that clearly identifies the material used and its source in an appropriate manner, is plagiarism and will not be tolerated. The instructor will use several manual and automated means to detect cheating and/or plagiarism in any work submitted by students for this course, and to direct teaching assistants and/or other faculty and/or staff members to do likewise in support of this course.

**WARNING!** This course has a zero tolerance policy for violations of the Honor Code. There are no second chances. First offenses carry a minimum recommended sanction of: an assignment grade of 0, one letter grade (10%) reduction in the final grade, and a requirement to complete an academic integrity seminar. Second and third offenses (and egregious first offenses, as determined solely by the instructor/course coordinator) carry stiffer minimum recommended sanctions, including but not limited to: F in the course, academic suspension, and expulsion. Please do not even think about violating the Honor Code. There are many ways to receive help. You are strongly encouraged to use these methods if you are struggling, so that you can get the help you need. If you have any questions about what does/does not constitute an Honor Code violation, please contact your instructor.

Additional information on the enforcement of the George Mason University Honor Code policy can be found at: [http://oai.gmu.edu](http://oai.gmu.edu).

For this course, the following additional requirements are specified:

**Note:** “Person”, as mentioned below, includes: current students, former students, tutors, friends, ex-classmates, and anyone else other than the instructor or a current IT 101 GTA.

[^1]: Available at [www.gmu.edu/catalog/apolicies](http://www.gmu.edu/catalog/apolicies) and related GMU Web pages.
• All work submitted for a grade must have been prepared by the individual student. Students are expressly prohibited from sharing any work that has been or will be submitted for a grade, in progress or completed, for this course in any manner with a person other than the instructor and teaching assistant(s) assigned to this course. Specifically, students may not do the following, including but not limited to:

  ▪ Discuss questions, example problems, or example work with another person that leads to a similar solution to work submitted for a grade.

  ▪ Give to, show, or receive from another person (intentionally, or accidentally because the work was not protected) a partial, completed, or graded solution.

  ▪ Ask another person about the completion or correctness of an assignment.

  ▪ Post questions or a partial, completed, or graded solution electronically (e.g. a Web site).

  ▪ Have another person “walk them through” how to solve an assignment.

• All work must be newly created by the individual student for this course for this semester. Any usage of work developed for another course, or for this course in a prior semester, is strictly prohibited without prior approval from the instructor.

• Posting or sharing course content (e.g. instructor provided lecture notes, assignment directions, assignment questions, or anything not created solely by the student), using any non-electronic or electronic medium (e.g. web site, FTP site, any location where it is accessible to someone other than the individual student, instructor and/or teaching assistant(s)) constitutes copyright infringement and is strictly prohibited without prior approval from the instructor.

Peer advisors may not assist a student on any assignment which will be submitted for a grade.

If you have questions on these requirements, please discuss them with your instructor. Any deviation from these requirements is considered a violation of the Honor Code. Non-compliance is a violation of the GMU Honor Code. All suspected violations of the Honor Code are required to be taken seriously and reported!