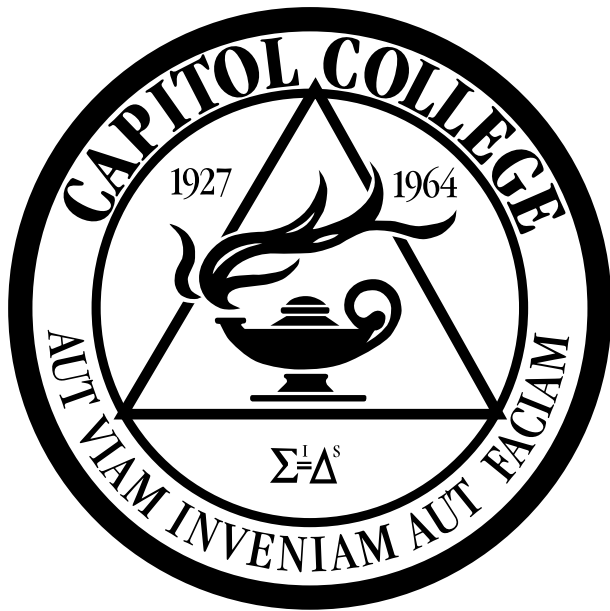




CAPITOL COLLEGE

Engineering • Computer Sciences • Information Technologies • Business

2005–2006 catalog



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General Information Directory

Capitol College

11301 Springfield Road
Laurel, MD 20708-9758

Main Telephone Numbers

301-369-2800
888-522-7486

Undergraduate Admissions

Washington, DC	301-953-3200
Baltimore	410-792-8800
Outside DC/Baltimore	800-950-1992
Fax	301-953-1442
Email	admissions@capitol-college.edu

Graduate Admissions

Washington, DC	301-953-3200 ext. 3026
Outside DC	800-950-1992 ext. 3026
Fax	301-953-3876
Email	gradprograms@capitol-college.edu

Website

www.capitol-college.edu

Office Hours

The following offices are open Monday through Friday, 8:30 a.m. - 5 p.m. (EST).

President
 Vice President for Academic Affairs
 Vice President for Finance and Administration
 Vice President for Information and Outcomes Assessment
 Vice President for Institutional Relations
 Administration and Human Resources
 Career Services*
 Communications
 Development and Alumni Services
 Graduate Admissions
 Professional Development

*Evening appointments are available.

The following offices are open as indicated (EST).

Undergraduate Admissions

M,F	9 a.m.- 5 p.m.
T-Th	9 a.m.- 7 p.m.

Saturday appointments are available.

Business Office

M,F	9 a.m.- 5 p.m.
T-Th	9 a.m.- 7 p.m.

Financial Aid

M,F	9 a.m.-5 p.m.
T-Th	9 a.m.- 7 p.m.

Registration and Records

M,F	9 a.m.- 5 p.m.
T-Th	9 a.m.- 7 p.m.

Dean of Students

M-F	9 a.m.- 5 p.m.
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Emergency Closing

In the event of severe weather or other emergencies, any possible cancellations or late openings will be announced to area radio and television broadcasts and posted on the college website.

The college maintains a recorded message at 301-369-2800, 888-522-7486, 800-950-1992 and 301-953-3200 and posts a weather advisory on the website when possible. Due to power outages and other circumstances that occur during adverse weather, it is not always possible to update this information. It is the responsibility of students to tune in to the radio or television for announcements.

The television channels and radio stations notified by the college are listed in the student handbook and on the college website.

Accreditation

Capitol College is authorized by the state of Maryland (Maryland Higher Education Commission, 839 Bestgate Road, Suite 400, Annapolis, MD 21401, 410-260-4500) to confer Bachelor of Science (BS) degrees in astronautical engineering, business administration, computer engineering, computer science, electrical engineering, management of information technology, network security, software engineering and software and Internet applications. The college is authorized to confer BS and Associate in Applied Science (AAS) degrees in computer engineering technology, electronics engineering technology, and telecommunications engineering technology and an AAS degree in optoelectronics engineering technology. The BS programs in business administration and management of information technology are initially accredited by the International Assembly for Collegiate Business Education (IACBE, PO Box 25217, Overland Park, KS 66225).

The college is authorized by the state of Maryland to confer Master of Science (MS) degrees in computer science, electrical engineering, information architecture, information and telecommunications systems management and network security. The college is authorized by the state of Maryland to confer a Master of Business Administration (MBA) degree. The MBA and information and telecommunications systems management programs are initially accredited by the International Assembly for Collegiate Business Education (IACBE, PO Box 25217, Overland Park, KS 66225).

The college is accredited by the Commission on Higher Education of the Middle States Association of Colleges and Schools (Commission on Higher Education, Middle States Association of Colleges and Schools, 3624 Market Street, Philadelphia, PA 19104, 215-662-5606). The BS degree program in electrical engineering is also accredited by the Engineering Accreditation Commission of Accreditation Board for Engineering and Technology. The associate and baccalaureate degree programs in computer engineering technology and

electronics engineering technology and the baccalaureate degree program in telecommunications engineering technology (Laurel campus only) are also accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology (111 Market Place, Suite 1050, Baltimore, MD 21202, 410-347-7700). Capitol College is approved for veterans' education by the Maryland Higher Education Commission.

Equal Opportunities

Capitol College actively subscribes to a policy of equal educational and employment opportunity and, in accordance with Title IX of the education amendments of 1972, does not discriminate on the basis of race, color, sex, handicap, religion, national or ethnic origin in admission, treatment of students or employment.

Changes in Catalog Information

Capitol College reserves the right to make changes in policies, procedures, degree requirements, schedules, course offerings and other college standards or announcements to meet circumstances that may arise after publication.

The provisions of this publication are not to be regarded as an irrevocable contract between the student and Capitol College. The college reserves the right to change any provision or requirement in any college publication without notice at any time during the student's term of attendance.

Capitol College reserves the right to require a student to withdraw, or to refuse to grant a degree or certificate if, in the judgment of the administration of the college, the student fails to meet the college's requirements satisfactorily. The college reserves the right to change tuition and fees at any time at the discretion of the Board of Trustees.

Student Records

The procedures and guidelines adopted by Capitol College regarding student records comply fully with the Family Educational Rights and Privacy Act of 1974. This federal law establishes the rights of students to inspect and review their records, to have the privacy of their educational records maintained and to provide guidelines for the correction of inaccurate or misleading data.

Educational records are defined as records, files, documents, and other materials containing information related to a student that are maintained by Capitol College. Included in this category are records maintained by faculty advisors, Office of Admissions, Office of Financial Aid, Business Office, Office of Career Services, Office of the Dean of Students and Office of Registration and Records.

Students who wish to gain access to a particular record should contact the office responsible for maintaining that record. Under college policy, records will be produced within a maximum period of three weeks, although in most instances the student will be shown the record upon request.

Certain documents, including financial records of parents and records being withheld for unpaid financial obligations, are not available to students. Students may waive access to their academic, employment and financial aid records.

Students discovering an error in their records should bring it to the attention of the official in charge of the record. Disagreements will be resolved by the appropriate Executive Council member.

Access to individual academic and financial records is denied to parents of students over the age of 18, unless the student signs a consent form. College personnel with a need to know may have access to student records.

The college may disclose directory information (name, address, date and place of birth, telephone number, attendance dates, previous institutions attended, class, major field of study, awards, honors and degrees) without the student's consent.

Students may restrict the release of directory information, except to school officials with legitimate educational interests. To do so, a student must make the request in writing to the Office of Registration and Records. Once filed, this request becomes a permanent part of the student's record until the student instructs the college, in writing, to have the request removed.

Students have the right to receive copies of their Capitol College academic and financial records. Reproduction of academic transcripts costs \$5 per copy. There is no charge for copies of financial aid transcripts.

Alleged failure by the college to comply with the Family Educational Rights and Privacy Act may be directed, in writing, to the Family Educational Rights and Privacy Act office by the student. Questions about this act may be referred to the appropriate Executive Council member.

The Capitol College Commitment

Capitol College guarantees its qualified bachelor's degree graduates placement in a high-technology or information-technology job with a competitive salary within 90 days of graduation, or Capitol College will provide up to 36 additional undergraduate credits tuition free while students continue their job search.

The Capitol College Commitment is a written job guarantee between the student and Capitol College. The commitment is open to all full-time undergraduate students (U.S. citizens or permanent residents).

Contact the Office of Career Services for more information.

Locations

Laurel Campus

Capitol College occupies the grounds of the former Beltsville Speedway. Located just off the Baltimore-Washington Parkway, the campus is minutes away from NASA Goddard Space Flight Center, the Beltsville Agricultural Research Center, the laboratory headquarters of the U.S. Food and Drug Administration, and the Patuxent Wildlife Research Center.

The tree-ringed suburban campus features gentle slopes and a small pond. The sleek white forms of M/A-COM Hall, MCI Hall and Telecommunications Hall are connected by glass-enclosed pedestrian walkways. The new William G. McGowan Academic Center houses state-of-the-art classrooms, laboratories and the Space Operations Institute. The buildings have high ceilings, skylights and exterior reflective glass walls overlooking the woods. Apartment-style student housing is available for 90 to 120 students.

All courses (day, evening and Saturday) necessary to complete the college's academic programs are available at the Laurel campus, with the exception of the graduate degree programs, which are available exclusively online. Courses online mirror the traditional classroom experience and provide the convenience of distance learning with the quality of real-time, two-way audio interaction.

Southern Maryland

Selected courses leading to degrees in electrical engineering, computer science and (soon, pending state approval) business administration are offered in classrooms at the Southern Maryland Higher Education Center in California, Maryland, near the Patuxent River Naval Air Station.

St. Mary's County

Selected courses leading to a BS degree in electrical engineering are offered by a consortium including Capitol College, the College of Southern Maryland, and St. Mary's College at sites in Leonardtown, Maryland.

Online Learning

Capitol College offers all graduate degrees and certificates entirely online. Students enrolled in Capitol's online programs meet in virtual classrooms, allowing them to complete courses from a distance. The curriculum is supported by a web-based application that enables live delivery of interactive classes, and a course management system for the delivery of course materials, homework and discussion threads.

Online students participate in at least eight real-time class sessions each term or semester. Live audio lectures are transmitted over the Internet using Voice over Internet Protocol (VoIP). During the live lectures, students view lecture slides while listening to their professor speak in real-time. Student interactivity is encouraged and is made possible through chat and audio discussions. Similar to a traditional classroom, students can raise their hands using interface icons, and ask questions using a PC microphone or headset. Outside of the live classroom, the knowledge exchange continues as students download and view asynchronous course material, transmit homework assignments, post to discussion boards and collaborate with other classmates.

A typical online course consists of 16 class sessions, alternating between synchronous ("live") lectures and asynchronous sessions. The asynchronous sessions supplement topics discussed during the live lecture.

To participate in Capitol's online courses, students must have access to a PC with the following minimum requirements:

- Pentium III (350 MHz or more) with 128 MB RAM
- Microsoft 2000 or XP
- Internet Explorer 5.x or 6.x or Netscape 4.5x, 4.7x, or 7x
- Internet connection with a 56K modem or faster
- A full-duplex sound card (Sound Blaster compatible) with microphone and speakers or a headset

Technical assistance and support is available by phone or at helpdesk@capitol-college.edu.

History

Since its start more than 75 years ago, Capitol College has remained true to its mission – preparing students for careers in a quickly changing world. With a tradition of academic excellence and practical learning, Capitol College has equipped its alumni with the knowledge and skills to evolve with the advanced sophistication of technology.

Capitol College was founded as the Capitol Radio Engineering Institute in 1927 by Eugene H. Rietzke. A Navy veteran and radio operator, Rietzke foresaw the need for an advanced school that could produce talented radio and electronics technicians. CREI began as a correspondence school, but its popularity led to the 1932 opening of a residence division in Washington, DC, allowing students to work hands on in laboratories. As radio technology improved, new training programs and courses were quickly added. Following the end of World War II, CREI became one of the first three technical institutes accredited by the Engineers' Council for Professional Development.

The institute entered a new era in the mid-1950s when it began awarding two-year degrees. The school expanded its reach to new programs in applied engineering and electronics. To reflect this evolution, the institute changed its name to Capitol Institute of Technology in 1964. It awarded its first bachelor of science degrees in 1966 to four graduates of its electronics engineering technology program. Anticipating the need for more room, Capitol relocated in 1969 to a leased building in Kensington, Maryland.

During the following decade, enrollment increased and so did the program offerings. In 1976 the Middle States Association of Colleges and Secondary Schools granted accreditation to Capitol, and the National Science Foundation provided funding for new instructional scientific equipment. Quickly outgrowing its space, Capitol's leaders realized a need for permanent home and began searching for a new campus.

In 1980 the college found its home in Laurel, Maryland. Within three years, Capitol purchased 52 acres that was site of the defunct Beltsville Speedway, built new academic facilities and opened its doors. Enrollment swelled and the college added two more engineering technology degrees. Within the next decade a capital campaign and funding from the state of Maryland raised millions for buildings, equipment and a scholarship endowment. The campus expanded with Telecommunications Hall and the 340-seat Avrum Gudelsky Memorial Auditorium.

In the late 1980s, Capitol's leadership again recognized the transformation in the institution. The technical-based curriculum had become broader, with an increasing incorporation of humanities and social science courses. With a spacious campus and four-year degrees, the school had shed its skin as a technical institute. Preferring a title and an environment that would better suit its presence, the Board of Trustees changed the school's name to Capitol College. Along with the name change came a plan to offer more degrees in engineering and management, build on-campus housing and move from a quarterly academic calendar to a semester system.

Master's degrees were introduced in the 1990s as distance learning became more accessible. The college began several outreach efforts and business partnerships, such as the NASA PREP summer program for minority students and the Maryland Distance Learning Network. As the 20th century drew to a close, the college expanded the John G. and Beverly A. Puente Library, creating a spacious state-of-the-art facility with a multimedia teaching center.

Today Capitol is the only independent college in Maryland dedicated to providing a quality education in engineering and related fields. It takes pride in its proven record of placing graduates in competitive careers with salaries that are higher than the industry average. As a respected regional leader, Capitol continues attracting the attention of government agencies and corporate partners. Through a partnership with NASA, Capitol offers academic programs in astronautical engineering and practical training at its Space Operations

Institute. The National Security Agency has designated Capitol a Center of Academic Excellence in Information Assurance Education, and the Institute of Electrical and Electronics Engineers has named Capitol College one of its eight educational partners. While new innovations spur new developments and industries, the foundations that are taught at Capitol College – thinking critically, actively and creatively – will remain. The recent opening of the William G. McGowan Academic Center has marked the next era for the college. Equipped with wireless technology, the academic center hosts an expanded computer science department and the Space Operations Institute. As it looks to the future, Capitol College remains committed to providing students with an exceptional education and the practical experience to excel in a changing world.

Mission and Philosophy

Mission

The mission of Capitol College is to provide a practical education in engineering, computer science, information technologies and business that provides people with the opportunities to achieve career aspirations in business and government, and to adapt to changing workforce needs.

Vision

Capitol College will be esteemed as a premier provider of higher education and training in engineering, computer science, innovative technologies and business. Capitol will provide convenient and affordable access to quality learning outcomes for success as professionals and leaders.

With dedicated faculty and staff, modern facilities, supportive alumni and friends, and qualified students, Capitol College will be a preferred place to learn and work in the Middle Atlantic United States. We will be regarded as a worldwide leader in the creative use of technology for education.

Values

- Quality – always striving for continuous improvement
- Growth – expanding and changing to meet new needs of society
- Leadership – offering creative, supportive and shared leadership
- Balance – maintaining a balance between competing needs
- Integrity – being honest, ethical and open
- Teamwork – exercising collective effort to support students and staff
- Communications – providing timely and useful information
- Flexibility – discovering and seizing opportunities
- Safety – maintaining awareness and prevention of accidents and threats

Institutional Delineation

Throughout the United States, only eight nonprofit institutions share Capitol College's educational niche. Programs of academic clusters, senior technology practica, synchronous distance learning, open access to laboratories, and intensive career services make Capitol College a unique institution. Capitol College is a specialized, independent, nonprofit, nonsectarian educational institution that focuses on undergraduate, graduate and professional career education in engineering, information technology, engineering technology and business.

Educational Philosophy

Four principles define the educational philosophy of Capitol College. Academic programs must be:

- Grounded in theory in order to prepare students for professional careers
- Fundamentally hands on and practice oriented to provide the technical skills for students to be immediately employable upon graduation
- Tied to the contemporary needs of industry so that curriculum reform and development are pragmatic
- Enriched by courses in the liberal arts to provide every graduate with an enhanced sense of self, society, history and aesthetics.

Students

Capitol College's student body mirrors the 21st century diversity of American higher education. Academically well-prepared high school graduates come to Capitol College to complete educational experiences that will open career opportunities for them. Working adults, veterans and transfer students come to Capitol College to complete undergraduate programs of study that will open or enhance career opportunities for them. Established professionals come to Capitol College to expand their skills by earning master's degrees or completing short-term learning experiences. In its admissions policies, Capitol College values academic preparation and student motivation. In its retention practice, Capitol College values sustained academic performance.

Faculty

Each full-time faculty member at Capitol College is responsible for teaching at least four courses per semester, preparing course syllabi, advising students on academic matters, serving on college committees, maintaining a minimum of eight office hours per week and assisting the appropriate department chair in student evaluation procedures.

Adjunct faculty members are assigned a college email account. In addition, each course syllabus should contain contact information. Adjunct faculty members are available to meet with students by appointment, over the phone or in a virtual classroom.

Outcomes

Capitol College seeks to prepare graduates who demonstrate four characteristics:

- **Employability:** The ability to enter technical and managerial careers, appropriate to their level and area of study, immediately upon graduation.
- **Communications:** Mastery of traditional and technological techniques of communicating ideas.
- **Preparation of the Mind:** The broad intellectual grounding in technical and general subjects required to embrace future technical and managerial opportunities with success.
- **Professionalism:** Commitment to lifelong learning, ethical practice and participation in professional societies.

Partnerships

The college's academic offerings are strengthened by its partnerships with government agencies, professional societies and private industry.

Graduate School, USDA

Capitol College and the Graduate School, USDA jointly offer online, noncredit courses in information assurance and network security designed to meet the training needs of federal employees.

Institute of Electrical and Electronics Engineers

Capitol College is one of only eight institutions that have entered into the university partnership program with the Institute of Electrical and Electronics Engineers. The program offers a discount to IEEE members who are interested in taking specified courses that the college offers at the graduate and continuing education levels.

National Defense University

Capitol College is one of numerous institutions that have partnered with the National Defense University (NDU) to better serve the professional interests of active duty military members and veterans. This arrangement provides an opportunity for military students who have completed selected NDU programs to transfer up to 15 credits in lieu of Capitol College graduate coursework.

National Security Agency

The National Security Agency (NSA) has designated Capitol College as a Center of Academic Excellence in Information Assurance Education and designated its programs, including the master of science degree in network security, as meeting the standards established by the Information Assurance Courseware Evaluation Process.

The Center of Academic Excellence in Information Assurance Education Program is an outreach effort designed and operated by NSA. The program goal is to reduce vulnerability in the national information infrastructure by promoting higher education in information assurance, and producing a growing number of professionals with information assurance expertise in various disciplines. Capitol College joins a group of 50 universities that have received this designation.

NSA has established a set of five standards that specify the minimum training and education necessary for information system security professionals. The Information Assurance Courseware Evaluation Process assesses the degree to which the curriculum of various institutions, colleges and universities satisfies these standards. This process certifies institutions are meeting all the elements of a specific standard with a designated set of coursework. Capitol College is one of a few institutions whose curriculum meets all five standards.

Partner Institutions

Capitol College has partnered with several Maryland colleges to provide transfer/articulation agreements. These colleges include Anne Arundel Community College, Prince George's Community College and WorWic Community College. These agreements allow students to easily transfer from participating colleges to Capitol College without loss of credit.

Space Operations Institute

The Space Operations Institute was established at Capitol College in 2002 with a grant from the National Aeronautics and Space Administration. It is a consortium of NASA, industry, government and education partners.

SOI combines the infrastructure necessary to manage satellite operations with an educational program that prepares students for careers in all aspects of space mission operations. SOI builds upon Capitol's established engineering foundation and takes advantage of its close proximity to NASA.

Students in the college's aeronautical engineering program may apply for a one-year internship at NASA Goddard Space Flight Center or one of its contractors. The internship includes tuition for up to six courses in the aeronautical engineering field and pays students for assisting in satellite operations control. It may also include academic credit for work completed at Goddard during the internship.

SOI became fully operational when it took control of the TOMS/EP (Total Ozone Mapping Spectrometer/Earth Probe), UARS (Upper Atmosphere Research Satellite), and ERBS (Earth Radiation Budget Satellite) spacecraft in October 2002. SOI is advising NASA on system administration and network security issues related to TOMS/EP. Capitol College also has a control room for earth science missions that is housed in the William G. McGowan Academic Center and operated by faculty, students and industry partners.

Professional Development

Rapid changes in technology have created a demand for career-long education. Capitol College offers career training to the general public. Through hands-on training and practical applications, participants acquire up-to-date skills in personal computing, technical management, computer programming and computer networking.

Capitol College brings to business, industry, military and government agencies more than 50 years of experience in technical education and training. The Office of Professional Development works closely with individuals and organizations in developing and delivering technical courses and seminars. Emphasis is placed on the practical and most immediately useful aspects of both basic and advanced technologies. Courses and seminars are conducted at the work place, at the Laurel campus and online.

Full days of instruction in a friendly atmosphere with state-of-the-art equipment and expert instructors facilitate rapid learning of the most current applications used in business and industry today. Educational programs are conducted with state-of-the-art equipment and systems and reflect the most recent developments in technology. Limited class size and the dedicated use of a PC ensures that each participant will receive quality training with personal attention.

Short Courses and Seminars

The Office of Professional Development offers seminars and short courses related to the engineering technologies of the information age. Topics include:

Computers/Programming

- C Programming
- C++ Programming
- Object-Oriented Programming
- Computer Security
- Internet Security
- Database Management
- Java Programming
- Visual BASIC
- Oracle

Personal Computing

Beginning and advanced courses in:
Personal Computing
Windows 2000 and NT
Unix
Internet Research
Creating Homepages
Advanced HTML
Microsoft Office 2000 (Word, Excel, Access, PowerPoint)

Technical

ATM
Communications Systems
Data Communications and Networks
Digital Signal Processing
Fiber Optics Communications
Frame Relay X25
Network Architecture and Protocols
TCP/IP

Telecommunications

Telecommunications for the Non-technical
Telecommunications Management and Administration

Past Clients

Many of the best known and most successful companies in the United States have turned to Capitol College for specialized training for their employees. Clients have included:

- Cingular Wireless
- Computer Sciences Corporation (CSC)
- Honeywell International, Inc.
- Lockheed Martin Corporation
- MCI WorldCom
- Motorola, Inc.
- National Aeronautics and Space Administration (NASA)
- National Institutes of Health (NIH)
- National Oceanic and Atmospheric Administration (NOAA)
- Northrop Grumman
Litton Advanced Systems
- Patuxent River Naval Air Test Station
- Potomac Electric Power Company (PEPCO)
- Prince George's Workforce Services Corporation
- United States Telecommunications Training Institute
- USA Today
- U.S. Department of Agriculture (USDA)
- U.S. Department of Defense
- The Washington Post

Academic Policies and Procedures

Program Advisors

Degree-seeking students are assigned academic advisors prior to registration. Students are encouraged to work closely with advisors in developing their programs of study. Academic advisors are available for guidance, but each student must assume final responsibility for conforming to college regulations and curriculum requirements.

Registration Procedures

Detailed registration information is provided prior to the beginning of each semester. Registration dates are listed in the college calendar beginning on page 112 and at www.capitol-college.edu. Students must be in good financial standing with the college to be eligible for registration services.

Registration forms can be obtained and submitted at all campus locations (Laurel only for undergraduate students) or online at www.capitol-college.edu.

Late registration occurs during the first two weeks of the semester for all semester-length courses, or between the first and second class meeting for all term-length courses (both undergraduate and graduate). No term-length course registrations will be accepted after the second class meeting. The last day to add or drop a class is listed in the college calendar beginning on page 112 and at www.capitol-college.edu.

Audited Courses

Students who register to audit a course are charged the same tuition as those who register for credit. The grade of X is awarded at the end of the semester and is not used in computing the cumulative grade point average. Half-time financial aid students that change to audit will have part or all of their aid returned to the federal government. Once registered for audit, students are not permitted to change to credit after the first two weeks of the semester. The last day to change from credit to audit is listed in the college calendar beginning on page 112 and at www.capitol-college.edu.

Independent Study

Independent study in a course will be granted in only the most extraordinary circumstances. The professors who administer the independent study must give their permission for the course. When permission is given, the professor organizes the course requirements, including exams, homework, lab assignments, research and position papers, to compensate for the absence of classroom participation. Undergraduate students must have a minimum CGPA of 2.5 to petition for independent study. Students interested in independent studies should consult with the appropriate department chair and submit all appropriate documentation to the Office of Registration and Records.

Change of Degree Program

Students who want to change degree programs must fill out a change of degree program form, which may be obtained in the Office of Registration and Records or at www.capitol-college.edu. The department chair must approve all changes of degree programs. Students who change their degree program are required to meet all requirements of the new programs that are in effect at the time of the change and completed documentation must be submitted to the Office of Registration and Records after department chair approval. Change of degree forms are available in the Office of Registration and Records or online at www.capitol-college.edu.

Double Degree Requirements

Undergraduate students who are currently enrolled and want to pursue two degrees (AAS or BS) must have a CGPA of 2.5 or higher. For a second BS degree, the student must complete a minimum of 150 credits, with a minimum of 18 credits distinction between majors, of which at least 12 must be upper-level credits. For a second AAS degree, the student must complete a minimum of 75 credits, with a minimum of nine credits distinction between majors, of which at least six must be 200-level or above.

Graduate students who want to obtain two degrees may overlap two to three courses, depending on the degree pro-

gram, but must otherwise complete all the requirements for both degrees. Double-degree-seeking graduate students are encouraged to consult their department chair for advisement.

All students choosing to declare a second degree must have department chair approval and complete the change of degree program form. This may be obtained in the Office of Registration and Records or at www.capitol-college.edu.

Course Drop/Withdrawal

There is a difference between drop and withdrawal. A drop takes place during the tuition refund period, and students are thus entitled to a percentage refund as outlined in the refund schedule. A course withdrawal takes place after the tuition refund period has elapsed, and results in a mark of W on the student's transcript. A W does not affect students' cumulative GPA. Failure to attend class does not constitute withdrawal and does not eliminate a student's academic or financial responsibilities.

Deadline dates for dropping a course and withdrawing from a course are listed in the college calendar on page 112 and at www.capitol-college.edu.

Withdrawal from the College

Students who want to withdraw from the college must complete a withdrawal form in the Dean of Students Office or at www.capitol-college.edu. Failure to attend classes does not constitute withdrawal and does not eliminate students' academic or financial responsibilities incurred at registration. Students cannot withdraw during the week of final exams.

Withdrawal from the college may affect financial aid awards. Anyone receiving financial aid should see a financial aid administrator before withdrawing. Consult the college calendar for specific withdrawal dates.

Readmission

Students who withdraw from the college are eligible for readmission at any time, unless they have been in violation of the college's academic regulations, or have been dismissed for disciplinary reasons. Students who have been admitted to

the college and interrupt their attendance for more than one academic year (three consecutive semesters) must resubmit an application for admission. In this case, a readmitted student must meet the degree requirements in place at the time of readmission in order to qualify for graduation. Arrangements for payment of outstanding tuition balances must be made with the Business Office before readmission is approved.

Course Cancellation

The college can cancel a course for which an insufficient number of students are enrolled. Students will be notified of a cancellation by the first class session and any payments made will be refunded.

Course Prerequisites

When planning schedules for upcoming semesters, students should pay special attention to the course prerequisites. Students must obtain a grade of C or better in prerequisites for degree required courses. Those students not meeting the course criteria will not be allowed to register without approval from the appropriate department chair.

Completion of English Courses

Students seeking bachelor's degrees at Capitol College must complete EN-101 and EN-102 before being permitted to register for junior-level classes. Transfer students must have equivalent transfer credits for EN-101 and EN-102 before being permitted to register for junior-level classes. Transfer students of junior status who do not have equivalent transfer credits for EN-101 and EN-102 must meet with the chair of the Management, Business and General Studies Department before registering.

Class Attendance

Regulations regarding class attendance at Capitol College are established by each professor. Regular class and laboratory attendance is necessary to achieve maximum success in college work. Students receiving financial aid who do not attend classes could lose their aid.

Transcripts

Student academic records are maintained exclusively by the Office of Registration and Records. These records are considered privileged documents between the student and the college and will be released only upon a signed, written request from the student, except as may be required by law.

Transcripts will be issued when a signed request form is submitted by the student and the student's financial account is current. A \$5 transcript fee is assessed for each issuance. Transcript request forms are available in the Office of Registration and Records and on the Capitol College website.

Capitol College will neither issue a transcript that reflects only part of a student's record nor make copies of transcripts on file from other colleges or universities. Federal guidelines prohibit the faxing or emailing of grades and transcripts.

Summer Session

The undergraduate on-campus summer semester is comprised of 8- and 11-week sessions with a week for final examinations. All summer sessions will contain the same amount of material normally covered during a semester. Class schedules will be modified to accommodate the shortened time period. Please refer to the college calendar beginning on page 112 for the summer session schedule.

Graduate courses and undergraduate online courses offered in the summer session maintain the 8-week accelerated term and 16-week semester.

Identification Cards

All enrolled undergraduate students will receive a Capitol College identification card. ID cards are required to check out laboratory equipment or library materials.

The cost of the original ID card is covered by the student activity fee. At the beginning of each semester, information about obtaining an ID card is posted on campus and online.

Graduate students may request an ID card from the Office of Graduate Admissions.

Scholastic Standing

Grading System

The quality of a student's academic performance is evaluated by letter grades that are assigned quality points as follows:

Grade	Standard	Quality Points
A	Excellent	4
B	Good	3
C	Average*	2
D	Below average*	1
F	Failing	0
I	Incomplete	0
NG	No grade	0
P	Pass	0
R	Repeat	0
S	Satisfactory	0
U	Unsatisfactory	0
V	Validation credit	0
W	Withdrawn (officially)	0
X	Audit	0
T	Transfer credit	0

* A grade of C shows minimum expectations have been met at the graduate level. Grades of D will not apply toward graduate program requirements.

Grade Point Average

At the end of each semester, averages are computed for each student's record to indicate the general level of his or her academic standing. The first is the scholarship level for the semester. The second is the cumulative grade point average, indicating the scholarship level for all work taken at the college to date.

In cases where a student retakes a course, only the highest grade is used in computing the CGPA. The previous grade remains on record as information only. To graduate, undergraduate students must have a CGPA of at least 2.0 and at least a 2.0 in the degree program. Graduate students must have at least a 3.0 CGPA and at least a 3.0 in their current degree program.

Credit

A semester credit hour is the amount of credit given for one hour per week of classroom time or two hours per week of laboratory time during a 16-week semester.

Incomplete Grades

An incomplete (I) grade will not be given except in the case of a true emergency that can be documented by medical records, death certificates, etc. Even if a true emergency exists, a student will not be allowed an extension (an I grade) unless that student has been attending classes and has kept up with the work prior to the emergency.

When an I grade is submitted, the professor will complete an incomplete grade form in the Office of Registration and Records explaining the reasons for the I grade and listing the student's grades in the course. The student must then complete the work by the end of the fourth week of the next term, or the I will be converted to an F (unless the professor has specified that the I be converted to a C or D). After six months, changes in grades must be approved by the Academic Affairs Council.

No Grade Mark

When it is not appropriate to award a grade, a mark of NG will be given. NG grades are not calculated in the student's term or CGPA.

Grade Reports

Grade reports are mailed to students each semester within three weeks after the last day of final examinations. Students who want to have grades sent to sponsors must complete the proper request form available in the Office of Registration and Records or at www.capitol-college.edu. Federal regulations prohibit the use of phone, email or fax for official grade distribution.

Grade Appeal

Students who believe their posted grade is incorrect should speak directly to the professor. If the student and professor cannot resolve the issue in a satisfactory manner, the student may write a letter clearly explaining the situation to the appropriate department chair. If the department chair and student are unable to resolve the issue in a satisfactory manner, the student may appeal in writing to the chief academic officer. The chief academic officer will review the situation and may seek the advice of the Academic Affairs Council. The decision of the chief academic officer is final and no further review will be granted. All appeals must be filed by the fourth week of the next term.

Grade Changes

Occasionally, a grade must be changed as errors do occur. However, grade changes will not be accepted later than six months after a term has ended; therefore, if a student truly feels that a mistake has been made, he or she must investigate as soon as possible after the grade is issued.

Dean's List

Full-time undergraduate students who have GPAs of 3.5 or higher, and no failing grades for the semester, qualify for the dean's list. Dean's list designation is included on the student's permanent record.

Dean's List for Part-time Students

Part-time undergraduate students taking at least six semester credits, who have GPAs of 3.5 or higher and no failing grades for the semester, qualify for the dean's list for part-time students.

Academic Performance

Academic Standing

Students seeking a BS or AAS degree are in good academic standing if they have a cumulative grade point average of at least 2.0 in their degree program and are not on academic suspension. Students seeking a master's degree are in good academic standing if they have a CGPA of at least 3.0 and are not on academic suspension.

Repeating a Class

A specific course may be repeated once in order to improve a grade or replace a W. Therefore, a student may take a specific course only twice during their academic career. The higher grade is used in computing the CGPA and the lower grade is omitted from this computation. All grades are recorded on the student transcript. During a student's academic career they may repeat no more than five different courses.

Any student who has taken a course required for their degree program twice and not achieved a satisfactory grade will be dismissed from that degree program.

Academic Probation

Academic probation alerts students that they are in academic trouble and will be suspended from the college if their GPA and CGPA are not brought up to good academic standing (see above).

Undergraduate students are placed on academic probation under the following conditions:

- If a student registers for MA-005 or EN-001 and does not complete the course with a P
- If the CGPA of an undergraduate student with fewer than 30 attempted credits falls below 1.7
- If the CGPA of an undergraduate student with more than 30 attempted credits falls below 2.0.

Undergraduate students on academic probation must have a mandatory meeting with their advisor prior to registration and may not register for more than 12 semester credits, or no more than four courses.

Graduate students whose CGPA falls below 3.0 are placed on last warning and will be allowed to enroll in two additional courses in an effort to raise their CGPA to the minimum standard of 3.0. Students must consult with their advisor on the best course options.

Academic Suspension

Undergraduate students who have not completed the prerequisites for MA-110 or MA-114 and EN-101 through placement testing, or successful completion of MA-005 and EN-001 after attempting 24 credit hours, will be suspended from the college until it is demonstrated to the faculty that they can achieve and maintain good academic standing at the college level.

Undergraduate students whose CGPA has been below 2.0 for three consecutive semesters will be suspended from the college for one academic semester after which they may return to the college. Upon return, students will remain on probation and must achieve and maintain good academic standing or will be suspended from the college until it is demonstrated to the faculty that they can achieve and maintain good academic standing at the college level.

To demonstrate to the faculty that a student can achieve and maintain good academic standing at the college level, he or she must complete at least six academic courses (a minimum of 18 credits) with grades of a C or better at another accredited college or university. Before a student is readmitted to Capitol College, an admissions committee or the faculty senate will evaluate his or her performance.

Academic Dismissal

After a second suspension, undergraduate students who have been readmitted to Capitol College after completing 18 credits at another institution must earn a 2.0 GPA each semester. If their GPA falls below 2.0 at any time, they will be dismissed and not permitted to return to Capitol College.

Graduate students who fail to reach the 3.0 requirement in the allowed time period will be automatically dismissed and not permitted to return to Capitol College.

The U.S. Department of Veterans Affairs regional office will be notified if students receiving VA educational benefits are suspended or terminated. The academic department chair will consider re-entry requests on an individual basis from students who have been dismissed for unsatisfactory progress.

The Office of Registration and Records, as well as each campus, will maintain a record of each VA student's grades in accordance with VA regulations. A student can request official transcripts from the Office of Registration and Records as long as his or her financial accounts are current.

Disciplinary Dismissal

The continued enrollment of any student is dependent upon proper conduct. Failure to comply with the college's regulations, or conduct deemed by the faculty as inconsistent with general good order, is regarded as sufficient cause for irreversible dismissal. The college reserves the right to terminate a student's enrollment at any time for cause.

Matriculation

Classification of Undergraduate Students

Freshman	29 semester credits or fewer
Sophomore	30-65 semester credits
Junior	66-95 semester credits
Senior	96 semester credits or more

Residency Requirements

A minimum of 30 semester credits, including 15 semester credits in the student's degree program, must be completed at Capitol College in order to receive an associate degree. A minimum of 40 semester credits, including 20 semester credits in the student's degree program, must be completed at Capitol College in order to receive a bachelor's degree. The last 15 semester credits required for a degree must be earned through courses conducted by Capitol College.

For all BS degrees, at least 39 credits must be 300-level or above to qualify for graduation.

Students who want to take College Level Examination Program (CLEP) examinations must do so during the first two semesters of study at Capitol College. Students who want to take courses at another institution for possible transfer after enrolling at Capitol College must get prior written permission from the appropriate department chair. Transfer credit approval forms are available at the Office of Registration and Records and at www.capitol-college.edu.

Graduate degrees must be completed in their entirety at Capitol College, with the exception of students transferring courses in accordance with the transfer credit policy on page 21 of this catalog.

Students pursuing a Capitol College certificate must complete all required coursework through Capitol College.

Enrollment Status

Undergraduate

- 6-8 credits is considered half time
- 9-11 credits is considered three-quarter time
- 12+ credits is considered full time

Graduate

- 3 or more credits taken during an 8-week term session is considered full time
- 3 or more credits taken during a 16-week semester is considered greater than one-quarter but less than half time
- 6 or more credits taken during a 16-week semester is considered full time

Graduation Requirements

Capitol College conducts the annual commencement ceremony in May at the main campus in Laurel. Transcripts always reflect the exact semester the degree program is completed, but the date degree conferred information on transcripts and diplomas is the month and year of the appropriate commencement ceremony.

Undergraduate Graduation Requirements

To be recommended by the faculty for award of degrees, undergraduate students must have satisfactorily completed the curriculum requirements for their degree program with a CGPA and degree program CGPA of at least 2.0 and must have satisfied the Capitol College residency requirements as listed.

Undergraduate student who complete all degree requirements by the end of the summer session are permitted to take part in the commencement ceremonies as degree candidates. This includes undergraduate students who have up to the maximum of six credits remaining and are enrolled for the summer session. If a student is not enrolled by the final day of summer registration, permission to participate as a degree candidate will not be granted.

Undergraduate students must file an application for graduation with the Office of Registration and Records no later than six

months prior to the semester of completion. The student's file is reviewed and forwarded to the appropriate department chair for final approval. Students are subsequently notified of approval and status. Applications for graduation are available in the Office of Registration and Records and at www.capitol-college.edu. The graduation fee, due by April 15, cannot be waived.

Undergraduate students are considered degree candidates only when the above procedures have been completed. Students who change their plans for graduation must notify the Office of Registration and Records in writing.

Graduate Graduation Requirements

Graduate students must have a minimum of a 3.0 CGPA. Grades of D will not apply towards graduate program requirements. Graduate students must submit an application for graduation no later than the end of January to be considered and included in the May commencement ceremony. The graduation fee, due by April 15, cannot be waived. The form is available at www.capitol-college.edu and in the Office of Records and Registration and is required so that orders for diplomas and commencement regalia can be placed before commencement. Diplomas will be released only after graduation fees are paid.

Graduate students who complete all degree requirements by the end of the summer (term I, term II or in summer semester classes) are permitted to take part in commencement ceremonies as degree candidates. This includes graduate students who have up to the maximum of nine credits remaining and are enrolled for the summer session. If a student is not enrolled by the final day of summer registration, permission to participate as a degree candidate will not be granted.

Time Limit for Degree Completion

Graduate students are required to maintain satisfactory progress toward the completion of degree requirements, which must be completed within seven years. The seven-year time frame begins when the oldest course applied to the degree was completed. This includes any transfer credits from other institutions.

Graduation Clearance

In the final weeks of their last semester of study, students should check with the Business Office, the Office of Financial Aid, Office of Residence Life and the Puente Library to be certain that they have no outstanding obligations. Diplomas and transcripts will not be issued for students who have outstanding library books or fines, outstanding balances in the Business Office, or for financial aid recipients who have not had exit interviews with the Office of Financial Aid.

Academic Honors

Honors are awarded and noted on the degree to undergraduate students who achieve the following CGPAs:

3.9 - 4.0	summa cum laude
3.75 - 3.89	magna cum laude
3.5 - 3.749	cum laude

Graduate students who complete the MS degree requirements with a 4.0 CGPA within their degree program will graduate with honors.

Honor Societies

Alpha Chi National Honor Society

The Maryland Beta Chapter represents the Alpha Chi National Honor Society at Capitol College. Membership is based on demonstrated service to the college community, good reputation and character, as well as high academic standing. Juniors and seniors enrolled in one of the bachelor's degree programs at Capitol College for at least one year and who rank among the top 10 percent of their class are eligible for election to the chapter by the faculty.

Alpha Chi offers opportunities for public performance at conventions; publication in the Alpha Chi Recorder; leadership through National Council membership; financial assistance through National Benedict Fellowships, Nolle Scholarships and several regional scholarships; and participation in local chapter projects and activities.

Tau Alpha Pi National Honor Society

The Kappa Alpha Chapter represents the Tau Alpha Pi National Honor Society at Capitol College. Membership requirements include successful completion of at least 55 semester credit hours and at least 24 semester credit hours at Capitol College, enrollment in one of the degree programs, a CGPA of at least 3.5 for two consecutive semesters and a willingness to lead and serve in capacities beneficial to the college community. Members are elected for life. The chapter holds dinner meetings to recognize new members and encourages alumni participation.

Eta Kappa Nu National Honor Society

The Kappa Mu Chapter of Eta Kappa Nu at Capitol College is a national honor society for electrical engineers. HKN was founded in 1904 and enjoys a membership of over 175,000, representing 198 chapters. This prestigious organization is the only honor society solely devoted to electrical engineering. A successful candidate possesses proven character, perseverance and the ability to excel. This organization extends membership to the top juniors and seniors in the fall and spring semesters. Officers are elected in the fall.

Transfer Credits

Undergraduate Transfer Policies

Unofficial transfer credit evaluations are completed during the admissions process in consultation with the academic departments. Once the transfer student is enrolled at Capitol College, an official evaluation is conducted by a transfer specialist in consultation with the academic departments and approved by the director of registration and records. The approved transfer credits are then added to the student's permanent academic record and the student will receive written notification of the official transfer evaluation from the Office of Registration and Records. Once students matriculate at Capitol College, they must meet the academic standards for their degree program.

Capitol College will consider credit for transfer from coursework completed at a regionally accredited institution, ABET-accredited program, or, in special cases, other qualified institutions acceptable to the standards of Capitol College. Capitol College will consider transfer credit for courses taken at an unaccredited institution on a probationary status, in which the student must complete a minimum of 24 credits at Capitol College with a CGPA of 2.0 before the credits will transfer.

Course work must also meet the following requirements:

- Courses must be relevant to the Capitol College curriculum
- Only a passing grade of C or higher will be considered for transfer (courses are evaluated and transferred individually)
- Capitol College credit requirements are based on the semester-credit system. Transfer credits from other institutions operating on other academic calendar systems will be converted to semester credits
- The grade of D will not be accepted for credit even when it is part of a degree.

For all transfers, a minimum of 30 semester credits (15 in the student's degree program) must be completed at Capitol College to receive an associate's degree. A minimum of 40 semester credits

(20 in the student's degree program) must be completed at Capitol College to receive a bachelor's degree. (See Residency Requirements, page 17.)

Capitol College will transfer a maximum of 70 semester-credit hours from any combination of the following:

- community or junior colleges
- proprietary or technical schools
- the military
- College Level Examination Program (CLEP)
- Advanced Placement (AP)

Military Credits

Capitol College will award credit for military courses based on the American Council on Education's Guide to the Evaluation for Educational Experiences in the Armed Forces and program relevancy. Applicants must present a certificate of completion and/or an official DD214 or DD295 to the Capitol College Office of Registration and Records.

Two-year Programs

No junior- or senior-level courses in technical areas, such as computers, electronics, or telecommunications, will transfer from two-year programs. Capitol College may grant a waiver for upper-level courses, but these must be replaced with other upper-level courses in the same subject area. Contact the transfer specialist in the Office of Records and Registration for specific course transfer information from community colleges.

Industrial Courses

Capitol College will not accept credits for courses taken at an industrial site unless the course has been approved by the American Council on Education. Students who have taken industrial courses may elect to take validation exams (see page 21).

Continuing Education Units and Certification Exams

Capitol College will not accept continuing education units (CEU) for transfer. Students may obtain credit by taking validation exams. Results from a certification exam, including Microsoft and Cisco, may not be used for transfer.

CLEP Tests

Students who want to take CLEP exams should do so before their junior year. The official results of all CLEP exams must be submitted to the Office of Registration and Records no later than one semester prior to semester of completion or graduation but preferably sooner.

Work/Life Experience and Validation Credit

Students who can demonstrate competence in a subject without having completed the specific coursework, due to relevant work or life experience, may take a specially arranged validation examination. Not every course, however, lends itself to the validation process, and the appropriate department chair and academic dean must grant permission for the examination to be given. Validation examinations are thorough and cannot be taken a second time.

After paying the proper fee in the Business Office, interested students may register for a validation exam in the Office of Registration and Records, where forms and procedures are available. Students who pass the validation examination receive a V on their transcript and the appropriate number of semester credits. No quality points are awarded with validation credit.

Waived/Substituted Courses

In some circumstances, transfer credits may count toward a waived or substituted course. If a Capitol College course is waived, the student must complete the equivalent number of credits in a related subject area to fulfill the requirements of the degree. If a course is substituted, the credit is transferred and the requirement is therefore considered complete. Waivers and substitutions are conducted by the transfer specialist and approved in writing by the appropriate department chair.

Engineering Programs

Students transferring credits into the engineering programs must follow additional guidelines.

Credits for military, vocational or technical training may be used to satisfy some electronics- and technology-based freshman and sophomore level EL courses.

Such courses do not fulfill the objectives of engineering, engineering science, or social science courses, nor may they be used as engineering electives in the engineering programs.

Graduate Transfer Policies

Unofficial transfer credit evaluations are completed during the admissions process in consultation with the academic departments. Once the student is enrolled at Capitol College, an official evaluation is conducted by a transfer specialist in consultation with the academic departments and approved by the director of registration and records. The approved transfer credits are then added to the student's permanent academic record and the student will receive written notification of the official transfer evaluation from the Office of Registration and Records.

Depending on the program, a maximum of six to nine semester credits of comparable accredited coursework taken elsewhere may be applied toward a graduate degree. Only courses with a B or better will be accepted for transfer. Capitol College will not accept continuing education units (CEUs) for transfer. Results from a certification exam may not be used for transfer. Validation exams for credit are not available at the graduate level. In some cases, military training and ACE-accredited government courses may be transferred. Official transcripts of such coursework may be submitted for evaluation of transfer credit. These materials should be submitted to the Office of Registration and Records for evaluation. The graduate programs will not award transfer credit for any course identified as correspondence. Credit that is part of a completed graduate degree may be used as transfer credit. Transfer credits are limited to six credits in 30-credit programs and nine credits in programs containing more than 30 credits. Once the student enrolls at Capitol College, all remaining credits must be completed at Capitol College.

Tuition and Fees

The following rates are in effect for the 2005-2006 academic year beginning fall 2005 and continuing through summer 2006. Tuition rates are subject to change without notice.

Undergraduate Tuition

Full-time tuition, per semester (12-18 credits)	\$8,844
Full-time credits above 18 (per credit)	737
Part-time 1-11 credits (per credit)	566
Cisco	566
CompTIA A+/Network+ (includes \$200 nonrefundable tuition)	2,880
Audited courses (per credit)	566

Graduate Tuition

Online (per credit)	438
Independent study (per credit)	500

Fees

Admissions

Undergraduate application	25
Graduate application	40
Online application	free
Processing fee for international students	300

Registration

Late registration for continuing students	40
Drop/add (each form)	10
Deferred payment plan	30
Late payment	25
Returned check	30
Check stop payment request	30

Student Services, per semester

Resident students	60
Full-time commuter students (12+ credits)	36
Part-time commuter students (1-11 credits)	10

Undergraduate Information Technology, per semester

Full-time (flat fee, 12+ credits)	250
Part-time (per credit, 1-11 credits)	10

Academic Services

Transcripts (each)	5
Certificates (each)	25
Replacement of Diploma	50

Graduation (non-refundable)	
AAS degree programs	42
BS, MS, MBA degree programs	150
Validation exam	250

Residence Halls

Single room (per semester)	2,366
Double room (per semester)	2,042
Triple room (per semester)	1,604
Room reservation deposit	
Continuing students	50
Security deposit (refundable)	200

Full-time Student Tuition

Lock

Capitol College offers a tuition-lock program for undergraduate students registered full time. Tuition is locked in from the students' first full-time semester and remains unchanged for up to five years. To remain eligible for the tuition-lock rate, students must adhere to the following terms and conditions:

- Maintain continuous full-time enrollment during the academic year (minimum 12 credits per semester).
- Keep all financial accounts up to date. (Consult the academic calendar on page 112 for due dates.)
- Remain in good academic standing. (See page 16 for academic performance.)

If these terms are not met, the student will no longer be eligible for the tuition lock and will be subject to the prevailing tuition rate.

Payment Options

- Full payment at time of registration
- Deferred payment plan
- Financial aid (see page 26)
- Employer sponsorship (see page 23)

Deferred Payment Plan

The college offers a deferred payment plan that allows students to defer a portion of their tuition. The cost of the deferred payment plan is \$30.

Students who abuse the deferred payment plan will not be allowed to defer their tuition in the future. Failure to adhere to the arrangements of the deferred payment plan

may result in immediate dismissal from the college. Students on academic last warning are not eligible to use the deferred payment plan and must pay their tuition in full at registration.

Undergraduate

The deferred payment plan allows semester students to pay their tuition in three installments: one-third at registration, one-third on or before the end of the fourth week of classes, and one-third on or before the end of the eighth week. Students taking 8-week classes may also pay their tuition in three installments: one-third at registration, one-third on or before the second week of classes, and one-third on or before the sixth week of classes. The cost of the deferred payment plan is \$30, which is due with the first installment. Nonpayment of tuition deposits may result in registration cancellation.

Graduate

All students are required to pay a 50 percent tuition deposit upon registration. The balance of tuition is due four weeks after classes begin. Nonpayment of tuition deposits may result in registration cancellation.

In addition to the cost of tuition, graduate students should expect to pay, on average, \$120 per course for books and related lab expenses. In some cases, such as software license agreements, these fees are paid directly to the college.

Financial Aid

Students who receive financial aid are required to pay the remaining balance in full or follow the appropriate deferred payment plan. If funds have not been received by the college from a particular financial aid source, that amount will not be credited to the student's account and cannot be provided to the student, even if notification of the award has been received.

Book Vouchers

Students receiving financial aid in excess of tuition, fees and on-campus housing charges may be considered for a book voucher. The Business Office must

receive all financial aid proceeds, including federal and private loans, for students to receive a book voucher.

Employer Sponsorship

If students are sponsored by an employer or other appropriate third parties, they must include authorization forms with their registration and Capitol College will bill the employer directly.

If students are reimbursed by an employer, then students must pay in full or follow the deferred payment plan. The cost of the deferred payment plan is \$30.

Obligation for Payment

Tuition and fees for all students becomes an obligation in accordance with the provisions of the refund schedule in this section. Failure to pay any debt to the college when due is considered sufficient cause to bar the student from classes or examinations or to withhold diploma, scholastic certificate or transcript of record. Students with outstanding accounts will be sent to collections. Collection or litigation expenses associated with this account are the responsibility of the student. Students whose accounts are past due one semester will be notified that their accounts are in jeopardy of being referred to a collection agency.

Refund Policy

Dropping or Withdrawing from Classes

It is the students' responsibility to officially drop any class in which they are enrolled. This includes situations in which the students never attended the first class meeting. Never attending or ceasing to attend classes does not constitute an official withdrawal or relieve students of their financial obligation to Capitol College.

Full tuition refunds are available only to students who officially drop a class before the first day of classes. After the first day of classes, any student who drops or withdraws from class will be subject to the tuition refund schedule, outlined below. Refunds are effective on the date the drop or withdrawal is submitted to the Office of Registration and Records.

Refunds are computed according to the following schedule and are percentage based on the full tuition amount for each course. The percentage listed equates to the student refund in the event the balance was paid in full prior to the start of class. Students on company contract may be personally responsible for the balance of their tuition, in the event their company only pays for completed courses.

Please refer to the published semester and term calendars beginning on page 112 of this catalog or at www.capitol-college.edu for specific dates of refunds.

Tuition Refund Schedules

8-week Term Courses

- 100% Student drops before the first day of classes
- 75% Student drops during the first week of classes
- 50% Student drops during the second week of classes
- 25% Student drops during the third week of classes
- 0% Student drops after the third week of classes

16-week Semester Courses

- 100% Student drops before the first day of classes
- 75% Student drops during the first or second week of classes
- 50% Student drops during the third week of classes
- 25% Student drops during the fourth week of classes
- 0% Student drops after the fourth week of classes

Federal Return of Funds Policy

The Financial Aid Office is required by federal statute to recalculate federal financial aid eligibility for students who withdraw, drop out, are dismissed, or take a leave of absence prior to completing 60% of a payment period or term. The federal Title IV financial aid programs must be recalculated in these situations.

If a student leaves Capitol College prior to completing 60% of a payment period or term, the financial aid office recalculates eligibility for Title IV funds. Recalculation is based on the percentage of earned aid using the following Federal Return of Title IV funds formula:

Percentage of payment period or term completed = the number of days completed up to the withdrawal date divided by the total days in the payment period or term. (Any break of five days or more is not counted as part of the days in the term.) This percentage is also the percentage of earned aid.

Funds are returned to the appropriate federal program based on the percentage of unearned aid using the following formula:

Aid to be returned = (100% of the aid that could be disbursed minus the percentage of earned aid) multiplied by the total amount of aid that could have been disbursed during the payment period or term.

If a student earned less aid than was disbursed, the institution would be required to return a portion of the funds and the student would be required to return a portion of the funds. Keep in mind that when Title IV funds are returned, the student borrower may owe a debit balance to the institution.

If a student earned more aid than was disbursed to him/her, the institution would owe the student a post-withdrawal disbursement which must be paid within 120 days of the student's withdrawal.

Refunds are allocated in the following order:

- Unsubsidized Federal Stafford Loans
- Subsidized Federal Stafford Loans
- Unsubsidized Direct Stafford Loans (other than PLUS loans)
- Subsidized Direct Stafford Loans
- Federal Perkins Loans
- Federal Parent (PLUS) Loans
- Direct PLUS Loans
- Federal Pell Grants for which a Return of funds is required
- Federal Supplemental Opportunity Grants for which a Return of funds is required
- Other assistance under this Title for which a Return of funds is required (e.g., LEAP)

According to federal regulation, a financial aid student who receives all Fs during a period of enrollment is considered not to have attended any of his or her classes; therefore, all financial aid received for that period of enrollment must be returned to the Department of Education. Financial aid will not have to be returned to the federal government if at least one of the student's professors verifies that the student has been in class and really deserves the failing grade.

Credit Hours

This chart shows the minimum number of semester-credit hours and years of study students must have achieved to remain in good academic standing to receive financial aid. See Maximum Time Frame to Complete Courses of Study on page 29.

Half-time Students												
Year	1	2	3	4	5	6	7	8	9	10	11	12
Credits (5.5 credits per semester)	11	12	33	44	55	66	77	88	99	110	121	132
Three-quarter-time Students												
Year	1	2	3	4	5	6	7	8	9	X	X	X
Credits (7.5 credits per semester)	15	30	45	60	75	90	105	120	132	X	X	X
Full-time Students												
Year	1	2	3	4	5	6	X	X	X	X	X	X
Credits (11 credits per semester)	22	44	66	88	110	132	X	X	X	X	X	X

Financial Aid

Capitol College understands that paying for college is a major hurdle for parents and students. To help families meet tuition and living expenses, the college offers a variety of financial assistance programs including loans, work-study, scholarships and grants to help cover tuition and living expenses. Regardless of income level, all degree-seeking students are encouraged to apply for assistance.

Financial aid is available to both full- and part-time undergraduate students who are U.S. citizens or eligible non-citizens. Audited courses, some repeated courses, and credit by examination are not counted as meeting enrollment requirements. A student may receive aid for only one repeat of a course. Students who receive financial aid must demonstrate satisfactory progress toward degree completion.

Loans and federal work-study employment are available to eligible graduate students.

The Capitol College student handbook contains additional information about financial aid at Capitol College.

Application Procedures

One of the most important aspects of the financial aid process is to apply for assistance as early as possible. The application due dates are priority deadlines. If you meet the priority deadlines, you will enjoy the security of having your award authorization ready in time for class registration.

1. Complete and submit the Free Application for Federal Student Aid (FAFSA) by March 1 or as far in advance of your starting term as possible. The FAFSA can be obtained from the Office of Financial Aid or you can apply online at www.fafsa.ed.gov. Be sure that you list Capitol College on the FAFSA, School Code 001436. By doing so, your FAFSA information will be electronically forwarded to the college.
2. Complete and submit the Financial Aid Data Sheet, available in the Office of Financial Aid or at www.capitol-college.edu.

3. After reviewing your processed FAFSA data and the Financial Aid Data Sheet, the Office of Financial Aid will send you an award letter listing the awards for which you are eligible.
4. Sign and return one copy of the award letter to the Office of Financial Aid by the return date. Failure to return a signed copy of the award letter will result in cancellation of the financial aid award.

Renewal of Financial Aid

Financial aid is not automatically renewed, except as may be noted. The entire financial aid application process must be completed every year in order for your request for federal, state and institutional aid to be considered.

Continuing Eligibility

The Office of Financial Aid reserves the right to review or modify financial aid commitments at any time on the basis of information affecting eligibility. This includes the availability of funds, changes in financial status, and changes in enrollment status.

Return of Federal Funds

Students who have received financial aid awards and withdraw from classes (officially or unofficially) may be required to return a portion of the federal funds. See the federal return of funds policy on page 24.

Types of Financial Aid

The financial aid program at Capitol College consists of grants, scholarships, loans and work-study employment. Detailed information about each aid program is available from the Office of Financial Aid.

Scholarships

The scholarship program at Capitol College is designed to reward students for their academic accomplishments, leadership qualities or other special talents. The scholarships come from a variety of sources and donors, and each scholarship has its own set of criteria and annual value, ranging from \$2,000 to full tuition. Scholarships are available to full-time undergraduate students enrolled for 12 credits or more per semester. Scholarships do not have to be repaid.

Institutional Scholarships

Each full-time undergraduate degree applicant is automatically considered for an institutional scholarship when applying for admission to the college. Initial institutional scholarship notification is sent by the Office of Undergraduate Admissions and is based on prior academic performance, SAT scores or both. For eligibility requirements, contact the Office of Undergraduate Admissions. All of the scholarships are annually renewable to recipients who maintain at least a 2.8 GPA and complete 24 credits each year.

Richard J. Heiman Scholarship

Awards range from \$8,000 to \$12,000. Named in honor of a dedicated member of the Capitol College Board of Trustees, this scholarship is the highest offered by the college to new students.

Presidential Scholarship

Awards range from \$4,400 to \$6,800.

Board of Trustee Scholarship

Awards range from \$2,500 to \$4,000. The scholarship is named to recognize the service and support of the college Board of Trustees members.

Community College Scholarships

These scholarships – ranging from \$2,500 to \$12,000 – are offered to qualifying community college students who are transferring to Capitol College.

Corporate and Foundation Scholarships

A number of corporations and foundations have invested funds with the college to be awarded annually to students meeting criteria specified by the donors, such as academic merit or financial need. Students continuing to meet the awarding criteria will be considered for subsequent scholarship awards. However, corporate and foundation scholarships are not automatically renewed.

Interested students must submit a completed scholarship application with a typed essay on an assigned topic, no later than April 1 prior to the academic year they want to be considered for a corporate and foundation scholarship. Applications

can be obtained in the Office of Development. For a complete listing of corporate and foundation scholarships and eligibility criteria, please consult the student handbook or visit the financial aid section at www.capitol-college.edu.

Maryland State Scholarships

Maryland students seeking Maryland state scholarships (Educational Assistance Grant, Guaranteed Access Grant, Senatorial and Delegate) should complete the FAFSA by the March 1 filing deadline.

Students who are residents of other states should check with their state scholarship agencies for available scholarships, proper application procedures and deadline dates.

Grants

Grants are available to undergraduate students. Grants do not have to be repaid.

Richard A. Wainwright Grant

This grant provides support for students who have academic ability and demonstrate financial need. The Richard A. Wainwright Grant is the highest level of institutional grant offered to the most qualified students.

Pell Grant and Federal Supplemental Educational Opportunity Grant (SEOG)

These grants are funded by the Department of Education, and are awarded by the Office of Financial Aid to eligible students based on financial need as determined by the U.S. Department of Education.

Maryland Part-time Grant

These grants are funded by the state of Maryland and are awarded to Maryland residents enrolled on a part-time basis. Interested students enrolled on a part-time basis should complete the FAFSA by March 1.

Maryland Campus-based Grant

These grant program funds are awarded to full-time Pell Grant eligible students who filed their FAFSA after the state's March 1 deadline. Funds are limited.

Loans

Loans are a serious financial obligation that must be repaid. Both undergraduate and graduate students can apply for loans. Students must be enrolled at least half time (six credits each semester) and cannot borrow more than their cost of attendance minus other financial aid received. Loans are obtained from lenders selected by applicants. The Federal Family Education Loan Program (FFELP) includes the Federal Stafford loans for students and the Federal PLUS loan for parents. You can apply for loans online at www.capitol-college.edu.

Federal Subsidized Stafford Loans

Awarded to undergraduate and graduate students with financial need. Interest on the loan is paid by the federal government while the student is enrolled in school at least half time, during grace periods and authorized periods of deferment. Eligibility is determined by completing the FAFSA.

Federal Unsubsidized Stafford Loans

Awarded to undergraduate and graduate students who do not demonstrate financial need or who are unable to borrow their yearly limit under the subsidized Stafford program. Eligibility for a subsidized Stafford loan must be determined prior to application for an unsubsidized Stafford loan.

Federal Parent Loan for Undergraduate Students (PLUS)

The Parent Loan for Undergraduate Students (PLUS) is made to parents of dependent undergraduate students to help pay for the student's education regardless of financial need. Parents with good credit history may borrow up to the cost of attendance minus any other financial aid for which the student qualifies. Applications must be submitted to the college for processing. Interest accrues upon disbursement, and repayment begins immediately after the final disbursement for the academic year.

Federal Perkins Loan

The Federal Carl Perkins Loan program is for undergraduate and graduate students with exceptional financial need. Eligibility is determined by completing the FAFSA.

Alternative Loan Programs

These loans are available if additional funds are needed over and above what you receive under the federal, state, and institutional financial aid programs.

Work-Study Employment

On-campus jobs are available to both undergraduate and graduate students under the Federal College Work-Study and Capitol College Work-Study programs. These work programs offer students the opportunity to earn money to meet educational and personal expenses during the year and to get on-the-job work experience.

Federal Work-Study

Federal Work-Study is funded by the U.S. Department of Education and awarded by the Office of Financial Aid to eligible students who have filed the FAFSA. During fall and spring sessions, students cannot work more than 20 hours each week.

Capitol College Work-Study

Students not awarded Federal Work-Study can consider employment under the Capitol College Work-Study Program. Funding for this program is provided by various campus departments. Admitted students can contact the Office of Financial Aid for more information. The employer decides the maximum hours students may work each week.

Other Aid Programs

Private Organizations

In addition to federal, state and institutional financial aid programs, there are private organizations that offer financial aid funds for a college education.

Many local clubs, religious organizations and other groups provide scholarships for deserving students. Students should visit their public library to research these possible sources or contact organizations such as the American Legion, 4-H clubs,

Kiwanis, Jaycees, Chamber of Commerce, Girl Scouts and Boy Scouts. Do not overlook organizations connected with family, friends, and field of interest, such as the American Society of Professional Engineers or the Society of Women Engineers.

Veterans Benefits

To qualify for financial aid, veterans' benefits or both students must be enrolled in a degree program and submit all necessary transcripts. Non-degree students are not eligible for veterans' benefits or federal financial aid. Certification and certificate courses are not eligible for veterans' benefits or federal financial aid, unless they are taken as part of an approved degree program. A veteran will not receive educational benefits for an audited course. Private loan programs can be used for these programs.

A counselor is available to assist veterans, active duty personnel and spouses, and children of deceased veterans who may be eligible for educational assistance through the VA. The counselor is located in the Office of Financial Aid.

Vocational Rehabilitation

Assistance is available to individuals with physical and/or mental disabilities. For further information, contact the Vocational Rehabilitation Service nearest you.

Satisfactory Progress

Undergraduate students receiving federal aid must meet the following satisfactory academic progress (SAP) standards to receive federal, state and institutional financial aid.

A minimum cumulative GPA of 1.7 for undergraduate students who have attempted fewer than 30 semester-credit hours; 2.0 for undergraduate students who have attempted 30 semester-credit hours or more or have completed their second academic year, whichever comes first.

Graduate students must maintain a 3.0 GPA during each term.

Undergraduate and graduate students who do not meet these standards will be given one semester of financial aid probation. Students who fail to meet one or both

standards after the probationary period will not be permitted to participate in any financial aid program. Students barred from participation in federal financial aid programs due to unsatisfactory academic progress may regain eligibility if these standards are met at a future time. Students remain on probationary status for two consecutive semesters after regaining financial aid eligibility.

Maximum Time Frame to Complete Course of Study

Students must complete their educational program within a time frame no longer than 150 percent of the published length of the educational program, as measured by credits attempted and including transfer credits. For example, a student must complete the program after attempting a maximum of 198 credits for a 132 credit hour program. Half-time students must earn 5.5 credits per semester; three-quarter-time students must earn 7.5 credits per semester; full-time students must earn 11 credits per semester. See chart on page 25.

Additional Information

- Course withdrawals (W) after the drop/add period are considered a non-completion of attempted credit hours.
- An audit grade is not considered attempted coursework.
- Incomplete grades are not included in the GPA calculation nor are they counted as attempted coursework. When the course is completed and a permanent grade is assigned the Office of Financial Aid will reevaluate the student's academic progress.
- Students can receive financial aid for only one repeat of a course.
- Students will not receive financial aid for audited courses.

Undergraduate Program Offerings

Bachelor of Science (BS) Degrees

- Astronautical Engineering
- Business Administration
- Computer Engineering
- Computer Engineering Technology
- Computer Science
- Electrical Engineering
- Electronics Engineering Technology
- Management of Information Technology
- Network Security
- Software Engineering
- Software and Internet Applications
- Telecommunications Engineering Technology

Associate in Applied Science (AAS) Degrees

- Computer Engineering Technology
- Electronics Engineering Technology
- Management of Telecommunications Systems
- Telecommunications Engineering Technology

Undergraduate Certificates

Lower Division

- Financial Management
- Object-Oriented Programming
- Operations Management
- Programming and Data Management
- Web Programming

Upper Division

- Computer and Network Security
- Personnel Management
- Software Engineering
- Space Missions and Operations Specialist
- Website Development

Non-Degree Certifications

- CompTIA A+/Network+
- Cisco Certified Network Associate (CCNA)
- Check Point Certified Security Administrator (CCSA)
- Check Point Certified Security Expert (CCSE)

Undergraduate Admissions

Degree-seeking Students

First-Time, Full-Time Freshman

A first-time, full-time freshman is defined as any applicant who has graduated from high school within one year of the proposed entrance term and is entering Capitol College on a full-time basis. A full-time student must carry 12 or more credits per semester.

Application Requirements

1. File a formal application for admission as far in advance of the proposed entrance date as possible. An application for admission can be obtained from the Office of Admissions or at www.capitol-college.edu.
2. Enclose a \$25 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.)
3. Forward the official high school transcripts to the Office of Admissions.
4. Submit SAT or American College Test (ACT) scores to the Office of Admissions.

Admissions Requirements

All applicants receive a comprehensive evaluation of their previous school records. Admissions decisions are based on the applicant's course preparation, high school grade point average (GPA), class rank and standardized test scores. Scholarship consideration is given on the basis of the admissions essay, letters of recommendation and a personal interview.

High school course preparation should include a minimum of four units of English, three units of mathematics (including plane geometry and Algebra II), two units of lab science and two units of social sciences.

Students whose GPA, course preparation and/or test scores do not meet the general admissions requirements may be further considered if they submit an admissions essay, letters of recommendation, placement tests and visit the campus for a personal interview.

The minimum GPA required for admission to Capitol College is 2.2 on a 4.0 scale. The minimum SAT score is 800 composite. The minimum ACT score is 17 composite.

Engineering Applicants

Applicants to the engineering programs must have an additional unit of mathematics for entry into college calculus, an additional unit of laboratory science (physics or chemistry), an overall high school GPA of at least 2.8, and a minimum SAT score of 900 with at least a 500 on the Math section (or an ACT score of at least 19).

Engineering applicants who do not meet these additional criteria, but meet the general admissions criteria, will be accepted into an engineering technology program for their freshman year. After successful completion of the freshman year, students may transfer into the engineering program with department chair approval.

Tuition Deposit

Upon acceptance, all full-time applicants are required to pay a nonrefundable \$200 tuition deposit to the college. This deposit is credited to the applicant's first-semester tuition.

Programs of Study

Capitol College's programs of study for associate in applied science and bachelor of science degrees are outlined beginning on page 36.

Full-Time Transfer Students

A full-time transfer student is defined as any applicant who is eligible to transfer 15 or more semester credits from an accredited higher education institution to Capitol College and will attend on a full-time basis. A full-time student must carry 12 or more credits per semester.

Application Requirements

1. File a formal application for admission as far in advance of the proposed entrance date as possible. An application for admission can be obtained from the Office of Admissions or at www.capitol-college.edu.
2. Enclose a \$25 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.)
3. Forward all official transcripts to the Office of Admissions. Applicants who are completing, or who have already earned, an associate or bachelor's degree from a regionally accredited college need only forward college transcripts. Applicants who have less than a degree or no college credits must forward an official high school transcript denoting graduation date or General Equivalency Diploma (GED) record and college transcripts, if applicable.
4. For transfer credit policies, see page 20 of this catalog.

Admissions Requirements

Full-time transfer applicants who have successfully completed an associate or bachelor's degree are generally accepted into Capitol College once their application file is complete. Admissions requirements for all other students are based on previous academic coursework (including high school, college, proprietary institutions, the military or appropriate work experience), with an emphasis on postsecondary achievement. Students must be in good standing at all previous institutions. Students not in good standing are subject to further review.

If applicants are not eligible to transfer credits for MA-114 or EN-101, completion of a skills assessment test may be required.

Programs of Study

Capitol College's programs of study for associate in applied science and bachelor of science degrees are outlined beginning on page 36.

Part-time Degree-seeking Students

A part-time degree-seeking student is defined as any student pursuing an undergraduate degree at Capitol College on a part-time basis. A part-time student may carry 1-11 credits per semester.

Application Requirements

1. File a formal application for admission as far in advance of the proposed entrance date as possible. An application for admission may be obtained from the Office of Admissions or at www.capitol-college.edu.
2. Enclose a \$25 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.)
3. Forward all official transcripts to the Office of Admissions. Applicants who are completing, or who have already earned, an associate or bachelor's degree from a regionally accredited college need only forward college transcripts. Applicants who have less than a degree or no college credits must forward an official high school transcript denoting graduation date or General Equivalency Diploma (GED) record and college transcripts, if applicable.
4. For transfer credit policies, see page 20 of this catalog.

Admissions Requirements

Part-time applicants who have successfully completed an associate or bachelor's degree are generally accepted into Capitol College once their application file is complete. Admissions requirements for all other students are based on previous academic course work (including high school, college, proprietary institutions, the military or appropriate work experience). Students must be in good standing at all previous institutions. Students not in good standing are subject to further review.

If applicants are not eligible to transfer credits for MA-114 or EN-101, completion of a skills assessment test may be required.

Programs of Study

Capitol College's programs of study for associate in applied science and bachelor of science degrees are outlined beginning on page 36.

Concurrent, Readmit and Other Types of Students

Concurrent Enrollment

Concurrent students are any qualified high school juniors or seniors who want to enroll in a limited number of courses at Capitol College while completing their high school graduation requirements.

Application Requirements

1. File a formal application for admission as far in advance of the proposed entrance date as possible. An application for admission may be obtained from the Office of Admissions or at www.capitol-college.edu.
2. Enclose a \$25 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.)
3. Forward an up-to-date official high school transcript to the Office of Admissions.
4. Forward a letter of recommendation from the high school principal or guidance counselor.
5. Meet with an admissions counselor at Capitol College for a personal interview.

Admissions Requirements

Once the application requirements have been completed, the applicant will be eligible for concurrent enrollment. Concurrent students are required to complete all necessary prerequisites for courses in which they intend to enroll. Concurrent enrollment is considered a non-degree-seeking status, so the student will not be accepted into a specific degree program. If the student

wants to apply for degree-seeking status after high school graduation, the student must complete the application requirements for a first-time, full-time freshman, outlined on page 31 of this catalog, and should do so as far in advance of the proposed start term as possible.

Concurrent students who want to enroll in MA-114 or EN-101 may be required to complete a skills assessment test.

Readmission

A readmit applicant is defined as any applicant who has previously completed any amount of coursework at Capitol College, has not attended Capitol College in at least one full academic year and wants to resume study. Students who were at any time in violation of the college's academic, financial or disciplinary regulations may be denied readmission. Readmitted students may be required to submit or resubmit required documents, such as official transcripts. Readmitted students will enter Capitol College's degree program under the current course-tracking sheet and will be subject to current policies and procedures. A course audit will be completed to determine what coursework must be fulfilled for graduation. Readmission is contingent upon an application for admission, which may be obtained from the Office of Admissions or at www.capitol-college.edu, and review by the admissions staff.

Other Types of Students

Applicants who do not match any of the undergraduate types discussed herein should contact the Office of Admissions to determine the application and admissions requirements that apply. To reach the Office of Admissions, call 800-950-1992 or send email to admissions@capitol-college.edu.

Programs of Study

Capitol College's programs of study for associate in applied science and bachelor of science degrees are outlined beginning on page 36.

Certificate Students

An undergraduate certificate student is any student pursuing one or more of Capitol College's state-approved undergraduate certificates, maintaining less than 12 credits per semester and not pursuing a degree. Undergraduate certificate students are not eligible for financial aid.

Application Requirements

1. File a formal application for admission as far in advance of the proposed entrance date as possible. An application for admission can be obtained from the Office of Admissions or at www.capitol-college.edu.
2. Enclose a \$25 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.)
3. Forward all official transcripts to the Office of Admissions. Applicants who are completing, or who have already earned, an associate or bachelor's degree from a regionally accredited college need forward only college transcripts. Applicants who have less than a degree or no college credits must forward an official high school transcript denoting graduation date or General Equivalency Diploma (GED) record and college transcripts, if applicable.

Admissions Requirements

Undergraduate certificate applicants who have successfully completed an associate or bachelor's degree are generally eligible to register for classes once their application file is complete. Admissions requirements for all other students are based on previous academic coursework (including high school, college, proprietary institutions, the military or appropriate work experience). Students must be in good standing at all previous institutions. Students not in good standing are subject to further review.

All certificates require that students have completed MA-110, MA-114 or have equivalent experience. All coursework must be completed through Capitol College. Students must complete the specific courses listed for the certificate; no substitutions are permitted. Once the course requirements are completed, students must apply for the certificate in the Office of Registration and Records. A \$25 processing fee is due with the certificate request. A student must have a minimum cumulative GPA of 2.0 in all certificate coursework to be awarded the certificate.

Non-degree-seeking Students

A non-degree-seeking student is any student pursuing a non-degree certification program or taking individual courses not applying to a degree. Non-degree study is not eligible for financial aid.

Application Requirements

1. File a formal application for admission as far in advance of the proposed entrance date as possible. An application for admission can be obtained from the Office of Admissions or at www.capitol-college.edu.
2. Enclose a \$25 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.)

Admissions Requirements

Once the application and processing fee are received, applicants are notified of their acceptance and may register for classes during the appropriate registration period. Information about registration is continually updated at www.capitol-college.edu.

After successful completion of 15 semester credits at Capitol College, non-degree students must complete the admissions procedure for degree-seeking status, or receive approval for continued non-degree status from the appropriate department chair.

International Students

An international student is defined as any applicant from a country other than the United States who will be pursuing an undergraduate degree program on a student visa. Eligibility requirements, listed below, must be met for acceptance. International students are not eligible for institutional scholarships or federal financial aid.

Application Requirements

1. File a formal application for admission as far in advance of the proposed entrance date as possible. An application for admission can be obtained from the Office of Admissions or at www.capitol-college.edu.
2. Enclose a \$300 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.)
3. Verify that you meet the academic and financial requirements stated below.

Academic Requirements

- Submit certified transcripts (with English translations) of secondary school and/or college records, or examination results when periodic grades are not used for measurement purposes.
- Applicants should have two years of college preparatory mathematics, such as algebra, geometry and trigonometry.
- English proficiency for direct admission into a degree program:
 - TOEFL paper-based test score of 500 or computer-based test score of 173, or
 - proof of completing a specified level of proficiency at an English language school, or
 - satisfactory completion of English courses at an accredited university or college within the United States.

Financial Requirements

International students must submit evidence of sufficient financial resources for living and educational expenses. Support documents must be dated within the last six months. Proof of financial support can be in one of the following forms:

- A letter of sponsorship or scholarship from a government agency or corporation. This letter of sponsorship must be an original and outline specific billing procedures.
- Complete the declaration and certification of finances form. This form must be accompanied by supporting bank statements or employment verification. Include signatures or original letters of support from each sponsor.

Students who have not provided valid evidence of sponsorship from a government agency or corporation must make a tuition deposit of \$500 prior to formal acceptance and issuance of I-20.

Applicants can expect an answer from the college three to five weeks after receipt of all necessary documents. All international students must join the college health insurance program, unless adequate coverage is proven.

Programs of Study

Capitol College's programs of study for associate in applied science and bachelor of science degrees are outlined beginning on page 36.

Undergraduate Programs of Study

Astronautical Engineering

The astronautical engineering (AE) program is structured to prepare students for engineering careers the space industry, primarily with NASA Goddard Space Flight Center. Students learn to work as mission specialists with an engineering understanding of the spacecraft, terrestrial systems and space-based platforms required to support a mission; create software applications that can be integrated into space operations to support missions; and design electrical and electronic systems for space mission applications. AE majors study the fundamentals of space operations and technology, flight dynamics and spacecraft design, as well as earth science and NASA missions devoted to the study of the planet. All engineering majors must take courses in humanities and social science to broaden their understanding of professional and ethical responsibilities and the impact of their engineering solutions in a global context. All students complete a capstone course in which they propose, design, test and deliver a space operations or hardware project that meets specifications.

Course Requirements

Bachelor of Science **133/134 Credits**
Course Credits

Computer Sciences 7 Credits
CS-130 Computer Science Fundamentals I 4
CS-230 Computer Science Fundamentals II 3

Engineering 42 Credits
AE-150 Introduction to Space 3
AE-311 Spacecraft Systems 3
AE-351 Dynamics of Aerospace Systems 3
AE-361 Remote Sensing 3
AE-401 Computational Dynamics 3
AE-454 Spacecraft Dynamics and Control 3
AE-455 Satellite Communications 3
AE-458 Senior Project in Space Science 3
EE-309 Circuit Design and Simulation 3
EE-453 Control I 3
EE-463 Control II 3
Astronautical Engineering electives (3)* 9

English Communications 9 Credits
EN-101 English Communications I 3
EN-102 English Communications II 3
EN-408 Writing Seminar in Technical
Research 3

Humanities and Social Sciences 19 Credits
FS-100 Freshman Seminar 1
HU-331 or HU-332 Arts and Ideas 3
SS-351 Ethics 3
Humanities electives (2)* 6
Social Sciences electives (2)* 6

Mathematics and Sciences 36 Credits
CH-120 Chemistry 3
MA-261 Calculus I 4
MA-262 Calculus II 4
MA-263 Calculus III 4
MA-340 Ordinary Differential Equations 3
MA-360 Laplace and Fourier Analysis 3
PH-261 Engineering Physics I 4
PH-262 Engineering Physics II 4
PH-263 Engineering Physics III 4
PH-281 Thermodynamics 3

Technical Courses 21 Credits
EE-159 Circuit Theory 4
EL-200 Electronic Devices and Circuits 4
EL-204 Digital Electronics 3
EL-250 Advanced Analog Circuits 4
EL-261 Introduction to Communications
Circuits and Systems 3
EL-262 Microprocessors and Microassembly 3

*See appropriate department for approved list.

All bachelor of science degrees require a minimum of 39 credits at the 300-level or above. For descriptions of required courses, see courses beginning on page 70.

Business Administration

A major objective of the business administration (BA) curriculum is to provide students with the ability to integrate business, analytical and decision-making skills in a culturally, politically, socially and demographically diverse environment. Graduates will bring to the job market the ability to effectively apply the acquired skills and knowledge (theory, tools and models) to everyday work situations of current or future employers. The goals of the program are to give students an understanding of how for-profit and nonprofit organizations function effectively and efficiently. Students will gain a clear picture of how the functional business areas work together to make a successful organization. The required courses build a solid business foundation that include management, marketing, accounting, finance, information technology and human resource management. The combined required and elective courses provide the type of education that is highly in demand in the job market.

Course Requirements

Bachelor of Science **120/121 Credits**
 Course Credits

Business Administration	30 Credits
BA-270 Financial Accounting I	3
BA-271 Financial Accounting II	3
BA-280 Macroeconomics	3
BA-281 Microeconomics	3
BA-300 Business Communications	3
MIT-276 Marketing Principles	3
MIT-378 Legal Environment of Business	3
MIT-386 Organizational Theory and Behavior	3
MIT-458 Senior Project	3
MIT-483 Problems Seminar in MIT	3

Business Fundamentals	21 Credits
MIT-173 Business Fundamentals	3
MIT-278 Principles of Management	3
MIT-283 Managerial Accounting	3
MIT-372 Financial Management	3
MIT-375 Human Resource Management	3
MIT-384 Production and Operations Management	3
SS-351 Ethics	3

English Communications	9 Credits
EN-101 English Communications I	3
EN-102 English Communications II	3
EN-408 Writing Seminar in Technical Research	3

General Electives	15 Credits
General electives (5)*	15

Humanities and Social Sciences	16 Credits
FS-100 Freshman Seminar	1
HU-331 or HU-332 Arts and Ideas	3
Humanities electives (2)*	6
Social Sciences electives (2)*	6

Information Technology	12 Credits
CS-220 Database Management	3
CT-115 Introduction to Programming	3
MIT-362 Information Systems for Managers	3
SE-321 Human-Computer Interaction	3

Mathematics and Sciences	12 Credits
MA-110 College Math with Business Applications	3
MA-128 Introduction to Statistics	3
MA-210 Calculus with Business Applications	3
Science elective	3

Telecommunications	6 Credits
TC-110 Introduction to Telecommunications	3
TM-330 Business Telecommunications	3

* Any course may be taken to satisfy the general elective requirement.

All bachelor of science degrees require a minimum of 39 credits at the 300-level or above. For descriptions of required courses, see courses beginning on page 70.

Computer Engineering

The computer engineering (CE) program is structured to teach students to design and program computers and computer-based systems, including the latest embedded technology. Students are trained to analyze and determine the needs of a system and apply engineering principles to create hardware and software solutions. The main objective of the program is to produce practical design engineers. CE majors study digital systems, computer organization and architecture, software design and testing, operating systems and programming languages, micro-controller systems, and the latest programmable chip technology. All engineering majors must take courses in humanities and social science to broaden their understanding of professional and ethical responsibilities and the impact of their engineering solutions in a global context. All students complete a capstone course in which they propose, design, build, test and deliver a computer-based system.

Course Requirements

Bachelor of Science **130/131 Credits**

Course Credits

Computers and Programming 19 Credits

CS-130 Computer Science Fundamentals I 4

CS-220 Database Management 3

CS-230 Computer Science Fundamentals II 3

CS-418 Operating Systems 3

CT-152 Introduction to Unix 3

EE-458 Senior Project 3

Engineering 33 Credits

EE-304 Digital Design I 3

EE-354 Digital Design II 3

EE-362 Microcontroller System Design 3

EE-364 Computer Architecture 3

EE-404 Large-Scale Digital Design 3

EE-452 Advanced Microcontroller System

Design 3

EL-452 Automated Test Systems 3

Computer or Engineering electives (4)* 12

English Communications 9 Credits

EN-101 English Communications I 3

EN-102 English Communications II 3

EN-408 Writing Seminar in

Technical Research 3

Humanities and Social Sciences 19 Credits

FS-100 Freshman Seminar 1

HU-331 or HU-332 Arts and Ideas 3

SS-351 Ethics 3

Humanities electives (2)* 6

Social Science elective (2)* 6

Mathematics and Sciences 37 Credits

CH-120 Chemistry 3

MA-124 Discrete Mathematics 3

MA-261 Calculus I 4

MA-262 Calculus II 4

MA-330 Linear Algebra 3

MA-340 Ordinary Differential Equations 3

MA-345 Probability and Statistics

for Engineers 3

MA-355 Numerical Analysis 3

PH-261 Engineering Physics I 4

PH-262 Engineering Physics II 4

Physics or science elective 3

Technical Courses 14 Credits

EE-159 Circuit Theory 4

EL-200 Electronic Devices and Circuits 4

EL-204 Digital Electronics 3

EL-262 Microprocessors and Microassembly 3

* See appropriate department for approved list.

All bachelor of science degrees require a minimum of 39 credits at the 300-level or above. For descriptions of required courses, see courses beginning on page 70.

Computer Engineering Technology

The Computer Engineering Technology (CET) program is structured to teach students to work at the interface between hardware and software linking digital technology to computer applications. Students are trained to work in a wide range of technical jobs in the information technology industry. The main objective of the program is to produce technologists who support industry in areas ranging from telecommunications and manufacturing to computer programming. CET majors study software design and testing, operating systems programming languages, computer graphics, digital systems, computer organization and architecture, micro-controller systems, and the latest programmable chip technology. All bachelor of science students complete a capstone course in which they propose, design, build, test and deliver a computer-based system.

Associate in Applied Science Degree

The AAS degree program is designed to prepare graduates to work in technical positions of the computer technology industry. The program also provides further education for people who seek to broaden their base of knowledge and update their skills.

Bachelor of Science Degree

The BS degree program is designed to educate students for computer technology fields by providing a comprehensive understanding of computers. Academic instruction is augmented by requiring students to design and write programs, and through carefully planned laboratory exercises during which students build, interconnect, test, service and operate computer devices and systems.

Course Requirements

Associate in Applied Science		64/65 Credits
Course		Credits
English Communications		6 Credits
EN-101	English Communications I	3
EN-102	English Communications II	3
Humanities and Social Sciences		7 Credits
FS-100	Freshman Seminar	1
	History/Humanities/Philosophy elective (1)*	3
	Social Sciences elective (1)*	3
Mathematics and Sciences		20 Credits
MA-114	Algebra and Trigonometry	4
MA-124	Discrete Mathematics	3
MA-128	Introduction to Statistics	3
MA-261	Calculus I	4
PH-201	General Physics I	3
PH-202	General Physics II	3
Technical Courses		32 Credits
CS-130	Computer Science Fundamentals I	4
CS-220	Database Management	3
CS-230	Computer Science Fundamentals II	3
CT-115	Introduction to Programming	3
CT-152	Introduction to Unix	3
EL-100	Introductory DC/AC Circuits	3
EL-200	Electronic Devices and Circuits	4
EL-204	Digital Electronics	3
EL-262	Microprocessors/Microassembly	3
TC-110	Introduction to Telecommunications	3

Course Requirements

Bachelor of Science **131/132 Credits**

All requirements for the associate in applied science degree, plus the following:

Course	Credits
English Communications	3 Credits
EN-408 Writing Seminar in Technical Research	3
Humanities and Social Sciences	12 Credits
HU-331 or HU-332 Arts and Ideas	3
SS-351 Ethics	3
History/Humanities/Philosophy elective (1)*	3
Social Science elective (1)*	3
Mathematics and Sciences	13 Credits
CH-120 Chemistry	3
MA-262 Calculus II	4
MA-330 Linear Algebra	3
MA-355 Numerical Analysis	3
Technical Courses	39 Credits
CS-418 Operating Systems	3
CS-432 Computer Graphics	3
CT-240 Network Routers and Switches	3
EE-304 Digital Design I	3
EE-354 Digital Design II	3
EE-362 Microcontroller System Design	3
EL-452 Automated Test Systems	3
SE-301 Software Engineering I	3
SE-458 Senior Project	3
Technical elective (1)	3
Technical elective (1) (2xx or above)	3
Technical electives (2) (3xx or above)	6

* See appropriate department for approved list.

All bachelor of science degrees require a minimum of 39 credits at the 300-level or above. For descriptions of required courses, see courses beginning on page 70.

Computer Science

The computer science (CS) program is structured to teach students to design and program computers and computer-based systems to meet the needs of all areas of society. Students are trained to work in a wide variety of careers in the computer field, from software programming to system design to network security and administration. The main objective of the program is to encourage critical thinking and thoughtful ethical behavior and to foster professional programming practices and promote sound planning and design techniques. CS majors study programming languages, computational science, algorithms and complexity, the architecture and organization of computers, software engineering, human-computer interaction, intelligent systems, computer graphics, net-centric computing, information management, and the social and professional issues associated with the practice of computer science. All students complete a capstone course in which they propose, design, build, test and deliver a computer-based system.

Course Requirements

Bachelor of Science **126/127 Credits**
Course Credits

English Communications	9 Credits
EN-101 English Communications I	3
EN-102 English Communications II	3
EN-408 Writing Seminar in Technical Research	3

Computers	40 Credits
CS-130 Computer Science Fundamentals I	4
CS-220 Database Management	3
CS-230 Computer Science Fundamentals II	3
CS-310 Computer Algorithms	3
CS-316 Intelligent Systems	3
CS-325 Advanced Data Structures	3
CS-418 Operating Systems	3
CT-115 Introduction to Programming*	3
CT-152 Introduction to Unix	3
CT-251 Intermediate Java Programming	3
NS-352 Unix Administration and Security	3
NS-401 Network Security Theory and Algorithms	3
SE-458 Senior Project	3

Computer Science Electives	12 Credits
Computer Science electives (4)**	12

Humanities and Social Sciences	31 Credits
FS-100 Freshman Seminar	1
HU-331 or HU-332 Arts and Ideas	3
SS-272 Group Dynamics	3
SS-351 Ethics	3
History/Humanities/Philosophy elective (2)***	6
Social Science elective (1)***	3
Social Science/Management elective (1)***	3

Mathematics and Sciences	29 Credits
CH-120 Chemistry	3
EL-100 Introductory DC/AC Circuits	3
MA-124 Discrete Mathematics	3
MA-128 Introduction to Statistics	3
MA-261 Calculus I	4
MA-262 Calculus II	4
PH-201 General Physics I	3
PH-202 General Physics II	3
Math elective****	3

Software Engineering	6 Credits
SE-301 Software Engineering I	3
SE-321 Human-Computer Interaction	3

Technical Courses	9 Credits
EL-204 Digital Electronics	3
EL-262 Microprocessors/Microassembly	3
TC-110 Introduction to Telecommunications	3

* Students who validate CT-115 or who place into Calculus I may replace this course with any technical course not already required for the CS degree.

** Students who do not test into Calculus I may use MA-114 here. CT-240 is recommended for students interested in additional networking courses. CT-102 and CS-356 are recommended for students interested in constructing websites with dynamic webpages. CS-432 is recommended for students interested in taking CS-513 in the MSCS program.

*** See appropriate department for approved list.

**** MA-330, MA-340, or MA-355. MA-330 is required for CS-432, which may be taken as a computer science elective.

All bachelor of science degrees require a minimum of 39 credits at the 300-level or above. For descriptions of required courses, see courses beginning on page 70.

Electrical Engineering

The electrical engineering (EE) program is structured to teach students a blend of theory and practice directed at engineering design, rather than research. The main objective of the program is to produce practical design engineers. Students start in the program with basic circuit theory with laboratory projects that provides them a practical background. The students are then taught to use increasingly sophisticated design and testing techniques to conduct experiments, and interpret data. As student progress through the program they are taught more theoretical methods of circuit modeling and computer-aided circuit simulation tools that enables them to design, build, test and analyze sophisticated circuits and systems. There are elective courses that allow for specialization in communications systems, micro-controller system design, signals and systems, digital signal processing, microwave engineering, VHDL and telecommunications. All engineering majors must take courses in humanities and social science to broaden their understanding of professional and ethical responsibilities and the impact of their engineering solutions in a global context. All students complete a capstone course in which they propose, design, build, test, analyze and deliver a working prototype circuit to meet engineering standards and realistic constraints.

Course Requirements

Bachelor of Science	137/138 Credits
Course	Credits
Electrical Engineering	51 Credits
EE-304 Digital Design I	3
EE-309 Circuit Design and Simulation	3
EE-362 Microcontroller System Design	3
EE-401 Introduction to Communication Theory	3
EE-406 Signals and Systems	3
EE-409 Network Analysis and Synthesis	3
EE-419 Electrostatics	3
EE-451 Advanced Communication Theory	3
EE-453 Control I	3
EE-456 Digital Signal Processing	3
EE-458 Senior Project	3
EE-459 Electromagnetic Field Theory	3
EE-463 Control II	3
Computer elective (1)*	3
Engineering elective (3)*	9

English Communications	9 Credits
EN-101 English Communications I	3
EN-102 English Communications II	3
EN-408 Writing Seminar in Technical Research	3

Humanities and Social Sciences	19 Credits
FS-100 Freshman Seminar	1
HU-331 or HU-332 Arts and Ideas	3
SS-351 Ethics	3
Humanities electives (2)*	6
Social Science electives (2)*	6

Mathematics and Sciences	38 Credits
CH-120 Chemistry	3
MA-261 Calculus I	4
MA-262 Calculus II	4
MA-330 Linear Algebra	3
MA-340 Ordinary Differential Equations	3
MA-345 Probability and Statistics for Engineers	3
MA-360 Laplace and Fourier Analysis	3
PH-261 Engineering Physics I	4
PH-262 Engineering Physics II	4
PH-263 Engineering Physics III	4
PH-281 Thermodynamics	3

Technical Courses	21 Credits
EE-159 Circuit Theory	4
EL-200 Electronic Devices and Circuits	4
EL-204 Digital Electronics	3
EL-250 Advanced Analog Circuits	4
EL-261 Introduction to Communications Circuits and Systems	3
EL-262 Microprocessors and Microassembly	3

* See appropriate department for approved list.

All bachelor of science degrees require a minimum of 39 credits at the 300-level or above. For descriptions of required courses, see courses beginning on page 70.

Electronics Engineering Technology

The electronics engineering technology (EET) program is structured to teach students a basic foundation in electronics technology with a strong emphasis on laboratory work and further the students' knowledge with more advanced studies in theoretical analysis and design. Students are trained to work in a wide range of practical electronics jobs as well as do design and theory work in the electronics field. The main objective of the program is to produce technologists who support industry in areas ranging from circuit analysis to digital design to control and robotics. EET majors study circuit design and simulation, network analysis and synthesis, transmission lines, micro-system design and fiber-optic communications with options for specialization in areas such as communications, computer design, control theory, micro-controllers and telecommunications. All bachelor of science students complete a capstone course in which they propose, design, build, test and deliver a working electronic project.

Associate in Applied Science Degree

The AAS degree program is designed to provide students a basic foundation in electronics technology with a strong emphasis on laboratory work and to prepare graduates to work in technical positions of the electronics technology industry. Some theoretical courses are included to prepare students who are continuing with the bachelor's degree.

Bachelor of Science Degree

The BS degree program is designed to build on the AAS program with more advanced studies in theoretical analysis and design. Courses in design, modeling, and simulation provide students with the necessary background to do design work in the electronics field and to pursue continued studies in order to avoid technical obsolescence.

Course Requirements

Associate in Applied Science		65/66 Credits
Course		Credits
English Communications		6 Credits
EN-101	English Communications I	3
EN-102	English Communications II	3
Humanities and Social Sciences		7 Credits
FS-100	Freshman Seminar	1
	Humanities elective (1)*	3
	Social Science elective (1)*	3
Mathematics and Sciences		18 Credits
MA-114	Algebra and Trigonometry	4
MA-261	Calculus I	4
MA-262	Calculus II **	4
PH-201	General Physics I	3
PH-202	General Physics II	3
Technical Courses		35 Credits
CT-115	Introduction to Programming***	3
EL-100	Introductory DC/AC Circuits	3
EL-150	DC/AC Circuit Analysis	3
EL-200	Electronic Devices and Circuits	4
EL-204	Digital Electronics	3
EL-212	Transmission Lines	3
EL-250	Advanced Analog Circuits	4
EL-255	Control and Robotics	3
EL-261	Introduction to Communications Circuits and Systems	3
EL-262	Microprocessors/Microassembly	3
	Technical elective*	3

* See appropriate department for approved list.

** Students who intend to stop at the associate degree may replace Calculus II with another math course.

*** Students with some computer background should take CS-130.

Course Requirements

Bachelor of Science 131/132 Credits

All requirements for the associate in applied science degree, plus the following:

Course	Credits
English Communications	3 Credits
EN-408 Writing Seminar in Technical Research	3
General Electives	6 Credits
General electives (2)*	6
Humanities/Social Sciences	12 Credits
HU-331 or HU-332 Arts and Ideas	3
SS-351 Ethics	3
Humanities elective (1)**	3
Social Science elective (1)**	3
Mathematics and Sciences	9 Credits
CH-120 Chemistry	3
MA-340 Ordinary Differential Equations	3
MA-360 Laplace and Fourier Analysis	3
Technical Courses	39 Credits
EE-304 Digital Design I	3
EL-307 Noise and Shielding	3
EE-309 Circuit Design and Simulation	3
EE-354 Digital Design II	3
EE-362 Microcontroller System Design	3
EE-409 Network Analysis and Synthesis	3
EE-453 Control I	3
EE-458 Senior Project	3
EL-301 Advanced Communications Circuits and Systems	3
EL-452 Automated Test Systems	3
OP-301 Fiber Optic Communications	3
Computer elective (1)**	3
Technical elective (1)**	3

* Any course may be taken to satisfy the general elective requirement.

** See appropriate department for approved list.

All bachelor of science degrees require a minimum of 39 credits at the 300-level or above. For descriptions of required courses, see courses beginning on page 70.

Management of Information Technology

The management of information technology (MIT) program is structured to prepare students for entry-level management positions in the information industry or in businesses that rely on the use of sophisticated information sources and tools.

Students are trained to understand the demands of technical jobs and to facilitate from a managerial standpoint an effective and efficient working environment for employees. The main objective of the program is to produce systems thinkers with both management expertise and technical competence. MIT majors study principles of management, organizational behavior, production and operations management, business telecommunications analysis, marketing and personnel management with options for specialization in areas such as entrepreneurship, electronic commerce, computer programming, website design and administration, or liberal studies. All students complete a capstone course in which they propose, design, test and deliver a management project.

Course Requirements

Bachelor of Science	120/121 Credits
Course	Credits
Business Foundations	36 Credits
Substitution of courses allowed with permission	
BA-270 Financial Accounting I	3
BA-280 Macroeconomics	3
MIT-173 Business Fundamentals	3
MIT-276 Marketing Principles	3
MIT-278 Principles of Management	3
MIT-372 Financial Management	3
MIT-375 Human Resource Management	3
MIT-378 Legal Environment of Business	3
MIT-384 Production and Operations Management	3
MIT-386 Organizational Theory and Behavior or SS-272 Group Dynamics	3
MIT-483 Problems Seminar in MIT	3
MIT-458 Senior Project	3

English Communications	9 Credits
EN-101 English Communications I	3
EN-102 English Communications II	3
EN-408 Writing Seminar in Technical Research	3

General Electives	21 Credits
Must contain 12-credit option in any field.	
General electives (7)*	21

Humanities and Social Sciences	19 Credits
FS-100 Freshman Seminar	1
HU-331 or HU-332 Arts and Ideas	3
SS-351 Ethics	3
History/Humanities/Philosophy electives (2)*	6
Social Sciences electives (2)*	6

Information Technology	18 Credits
CT-102 Introduction to Internet Applications	3
CT-115 Introduction to Programming	3
CT-152 Introduction to Unix	3
MIT-208 Internet and Law	3
MIT-362 Information Systems for Managers	3
CT-352 Unix Administration	3

Mathematics and Sciences	12 Credits
MA-110 College Mathematics with Business Applications	3
MA-128 Introduction to Statistics	3
MA-210 Calculus with Business Applications	3
Science elective (1)*	3

Telecommunications	6 Credits
TC-110 Introduction to Telecommunications	3
TM-330 Business Telecommunications	3

* See appropriate department for approved list.

All bachelor of science degrees require a minimum of 39 credits at the 300-level or above. For descriptions of required courses, see courses beginning on page 70.

Network Security

The network security (NS) program provides students with the skills necessary for the efficient use and protection of today's complex computer systems and networks. Students are trained as information-science professionals with a solid background in the areas of computer and network security. The course of study includes not only computer programming, operating systems and e-commerce, but also cryptography and network security protocols. By the time students graduate, they are able to obtain a position in any industry that requires secure systems.

Course Requirements

Bachelor of Science **127/128 Credits**
 Course Credits

Computers and Programming 25 Credits

CS-130	Computer Science Fundamentals I	4
CS-220	Database Management	3
CS-230	Computer Science Fundamentals II	3
CT-115	Introduction to Programming	3
CT-152	Introduction to Unix	3
CT-301	Website Construction	3
SE-301	Software Engineering	3
SE-458	Senior Project	3

Computer Security 18 Credits

CS-356	Web/CGI Programming Using Perl	3
CS-418	Operating Systems Security	3
NS-201	Network Security Protocols and Administration	3
NS-351	Secure Website Administration*	3
NS-352	Unix Administration and Security**	3
NS-401	Network Security Theory and Algorithms	3

English Communications		9 Credits
EN-101	English Communications I	3
EN-102	English Communications II	3
EN-408	Writing Seminar in Technical Research	3

Humanities and Social Sciences		19 Credits
FS-100	Freshman Seminar	1
HU-331 or HU-332	Arts and Ideas	3
SS-351	Ethics	3
History/Humanities/Philosophy electives (2)***		6
Social Sciences electives (2)***		6

Management		6 Credits
MIT-278	Principles of Management	3
MIT-208	Internet and the Law	3

Mathematics and Sciences		21 Credits
MA-114	Algebra and Trigonometry	3
MA-124	Discrete Mathematics	3
MA-128	Introduction to Statistics	3
MA-261	Calculus I	4
MA-262	Calculus II	4
Science elective (1)***		3

Technical Courses		24 Credits
Technical electives (6)***		18
Technical electives (2) (300 level or above)***		6

Telecommunications and Networking		6 Credits
CT-240	Internetworking with Routers and Switches	3
TC-110	Introduction to Telecommunications	3

* Formerly CT-351

** Formerly CT-352

*** See appropriate department for approved list.

All bachelor of science degrees require a minimum of 39 credits at the 300-level or above. For descriptions of required courses, see courses beginning on page 70.

Software Engineering

The software engineering (SE) program is structured to teach students to design and program computers and computer-based systems to meet the needs of all areas of society. Students are trained to analyze and determine the needs of a system and apply engineering principles to create software and hardware solutions. The main objective of the program is to produce practical design engineers. SE majors study modern programming languages and applications, algorithm development, and software design and testing in the software component, computer organization and architecture, micro-controller system design and the latest programmable chip technology in the hardware portion, and modern approaches to knowledge acquisition using UML in both individual and team environments. All engineering majors must take courses in humanities and social science to broaden their understanding of professional and ethical responsibilities and the impact of their engineering solutions in a global context. All students complete a capstone course in which they propose, design, build, test and deliver a working software application.

Course Requirements

Bachelor of Science **131/132 Credits**
Course Credits

Computers and Software	31 Credits
CS-130 Computer Science Fundamentals I	4
CS-220 Database Management	3
CS-230 Computer Science Fundamentals II	3
CS-325 Advanced Data Structures	3
CS-418 Operating Systems	3
CS-432 Computer Graphics	3
CT-152 Introduction to Unix	3
CT-251 Intermediate Java Programming	3
NS-352 Unix Administration and Security	3
SE-458 Senior Design Project	3

Engineering	27 Credits
EE-304 Digital Design I	3
EE-362 Microcontroller System Design	3
EE-364 Computer Architecture	3
SE-301 Software Engineering	3
SE-321 Human Computer Interaction	3
Software or Engineering electives (4)*	12

English Communications	9 Credits
EN-101 English Communications I	3
EN-102 English Communications II	3
EN-408 Writing Seminar in Technical Research	3

General Electives	6 Credits
General electives (2)**	6

Humanities and Social Sciences	19 Credits
FS-100 Freshman Seminar	1
HU-331 or HU-332 Arts and Ideas	3
SS-351 Ethics	3
Humanities electives (2)*	6
Social Sciences electives (2)*	6

Mathematics and Sciences	34 Credits
CH-120 Chemistry	3
MA-124 Discrete Mathematics	3
MA-261 Calculus I	4
MA-262 Calculus II	4
MA-330 Linear Algebra	3
MA-345 Probability and Statistics for Engineers	3
MA-355 Numerical Analysis	3
PH-261 Engineering Physics I	4
PH-262 Engineering Physics II	4
Physics or Science elective (1)*	3

Technical Courses	6 Credits
EL-204 Digital Electronics	3
EL-262 Microprocessors and Microassembly	3

* See appropriate department for approved list.

** Any course may be taken to satisfy the general elective requirement.

All bachelor of science degrees require a minimum of 39 credits at the 300-level or above. For descriptions of required courses, see courses beginning on page 70.

Software and Internet Applications

The software and Internet applications (SIA) program is structured to prepare students to be Internet specialists. Students are trained in computer and web programming as well as networking and server administration so that they understand and can effectively respond to the entire spectrum of Internet issues. The main objective of the program is to produce well-rounded Internet experts with a strong foundation in computer technology and networking. SIA majors study web pages, websites, computer graphics, Unix/Linux, website security, network security, firewalls, XML, CGI programming, database management, C++, and Java with options for specialization in areas such as data communications and networking, computer programming, digital electronics, management, Cisco or Microsoft certifications, and/or liberal studies. All students complete a capstone course in which they propose, design, test and deliver a web-based project.

Course Requirements

Bachelor of Science **124/125 Credits**
 Course Credits

Computers	43 Credits
CS-130 Computer Science Fundamentals I	4
CS-220 Database Management	3
CS-230 Computer Science Fundamentals II	3
CS-356 Web/CGI Programming Using Perl	3
CT-102 Introduction to Internet Applications	3
CT-115 Introduction to Programming*	3
CT-152 Introduction to Unix	3
CT-201 Multimedia Applications	3
CT-251 Intermediate Java Programming	3
CT-301 Website Construction	3
NS-351 Secure Website Administration	3
NS-352 Unix Administration and Security	3
NS-401 Network Security Theory and Algorithms	3
SE-458 Senior Design Project	3
English Communications	9 Credits
EN-101 English Communications I	3
EN-102 English Communications II	3
EN-408 Writing Seminar in Technical Research	3

General Electives	18 Credits
General electives (6)**	18

Humanities and Social Sciences	19 Credits
FS-100 Freshman Seminar in Computers	1
HU-331 or HU-332 Arts and Ideas	3
SS-351 Ethics	3
History/Humanities/Philosophy electives (2)**	6
Social Sciences/Management electives (2)**	6

Mathematics and Sciences	12 Credits
MA-110 College Math with Business Applications***	3
MA-124 Discrete Mathematics	3
MA-128 Introduction to Statistics	3
Science elective (1)**	3

Option 12 Credits
 The option consists of four related courses: Four telecommunications, four management, four math courses, etc. Consult an advisor about these courses. Poorly selected options may make it difficult for you to fill the twelve credits of Technical/Science/Business electives with 300-level or above courses.

Technical/Science/Business Electives	12 Credits
Technical/Science/Business electives (4)(300-level or above)**	12

* Students who validate CT-115 or place into Calculus I may replace this course with any technical course not already required for the SIA degree.

** See appropriate department for approved list.
 *** Students planning to go on to a master's degree program should take MA-114 instead of MA-110. They should also take MA-261, MA-262 and either MA-330 or MA-340 as electives.

All bachelor of science degrees require a minimum of 39 credits at the 300-level or above. For descriptions of required courses, see courses beginning on page 70.

Telecommunications Engineering Technology

The telecommunications engineering technology (TET) program is structured to teach students to design, build, maintain, troubleshoot and expand networks of all types. Students are trained to work in a wide range of telecommunications and computer networking jobs on both the technical and the design sides. The main objective of the program is to produce technologists who support industry in areas ranging from data communications and networking to routers and switches to network modeling and design. TET majors study digital electronics, noise and shielding, fiber-optic communications, microprocessors and micro assembly, and may specialize in either data communications and networking or RF and satellite communications. All bachelor of science students complete a capstone course in which they propose, design, build, test and deliver a working telecommunications project.

Associate in Applied Science Degree

The AAS degree program is designed to teach students about the design and construction of networks by giving them a broad foundational background in the field of telecommunications. Students at the AAS level will be able to construct and test telecommunications circuits and networks using many different types of test equipment. Some theoretical courses are included to prepare students who are continuing with the bachelor's degree.

Bachelor of Science Degree

The BS degree program is designed to build on the AAS program with more advanced studies in simulation, analysis and modeling of communications circuits and networks. Courses in optical communications, data communications and networking and Internet networks provide students with the necessary background to do network design and administration work and to pursue continued studies in engineering, engineering technology or information technology.

Course Requirements

Associate in Applied Science		62/63 Credits
Course		Credits
English Communications		6 Credits
EN-101	English Communications I	3
EN-102	English Communications II	3
Humanities and Social Sciences		7 Credits
FS-100	Freshman Seminar	1
	Humanities elective (1)*	3
	Social Sciences or MIT elective (1)*	3
Mathematics and Sciences		17 Credits
MA-114	Algebra and Trigonometry	4
MA-128	Introduction to Statistics	3
MA-261	Calculus I	4
PH-201	General Physics I	3
PH-202	General Physics II	3
Technical Courses		33 Credits
CS-220	Database Management	3
CT-102	Introduction to Internet Applications	3
CT-115	Introduction to Programming**	3
CT-152	Introduction to Unix	3
CT-240	Internetworking with Routers and Switches	3
EL-100	Introductory DC/AC Circuits	3
EL-204	Digital Electronics	3
NS-201	Network Security Protocols and Administration	3
TC-110	Introduction to Telecommunications	3
TC-212	Data Communications I	3
TC-252	Data Communications II	3

* See appropriate department for approved list.

** Students with some computer background should take CS-130.

Course Requirements

Bachelor of Science 129/130 Credits

All requirements for the associate in applied science degree, plus the following:

Course	Credits
English Communications	3 Credits
EN-408 Writing Seminar in Technical Research	3
General Electives	6 Credits
General electives (2)*	6
Humanities/Social Sciences	12 Credits
HU-331 or HU-332 Arts and Ideas	3
SS-351 Ethics	3
Humanities elective (1)**	3
Social Science elective (1)**	3
Mathematics and Sciences	10 Credits
CH-120 Chemistry	3
MA-262 Calculus II	4
MA-340 Ordinary Differential Equations	3
Technical Courses	21 Credits
EL-261 Introduction to Communications Circuits and Systems	3
EL-307 Noise and Shielding	3
NS-352 Unix Administration and Security	3
OP-301 Fiber Optic Communications	3
TC-309 Network Simulation	3
TC-458 Senior Design Project	3
Technical elective (1)**	3

Option I

Data Communications and Networking	12 Credits
CT-301 Website Construction	3
NS-351 Secure Website Administration	3
TC-421 Computer Communications and Protocols	3
TC-451 Computer Networking	3

Option II

RF and Satellite	12 Credits
AE-455 Satellite Communications	3
EE-401 Introduction to Communications Theory	3
MA-360 Laplace and Fourier Analysis	3
MA-345 Probability and Statistics for Engineers	3

* Any course may be taken to satisfy the general elective requirement.

** See appropriate department for approved list.

All bachelor of science degrees require a minimum of 39 credits at the 300-level or above. For descriptions of required courses, see courses beginning on page 70.

Option I or II

Students must select one of the following options. Consult an academic advisor for guidance.

Certificates

The undergraduate certificates are targeted at specialized jobs in distinct information technology and management fields. The courses required for these certificates are offered in a standard 16-week format. Consult the schedule of classes for more information. Students seeking an undergraduate certificate must complete all coursework at Capitol College.

Computer and Network Security (13 credits)

This upper-level certificate provides students with a fundamental knowledge of general network security concepts, which can then be applied to an advanced training program in specific security software and platforms. Students learn the basics of practical and theoretical network and computer security. The first course introduces students to introductory computer programming to support the advanced courses. Two courses in the Unix operating system help to reinforce the need for network security, touching on such issues as fine-tuning a Unix platform to enhance computer security and authorization and authentication. The final course provides students with an understanding of computer and network security issues, including encryption, SSL, privacy issues, directory services protocols such as LDAP, intrusion detection, viruses, firewalls and network management.

Required Courses

CS-130	Computer Science Fundamentals I	4
NS-201	Network Security Protocols and Administration	3
NS-352	Unix Administration and Security	3
NS-401	Network Security Theory and Algorithms	3

For descriptions of required courses, see courses beginning on page 70.

Financial Management (12 credits)

This lower-level certificate provides students with a background in accounting and finance administration in the framework of resource management and wealth maximization. Students learn the fundamentals of business and accounting in a project-oriented environment with emphasis on the use of accounting information to plan and redirect allocations to support business decisions. The financial management course helps to reinforce the concepts of finances administration by focusing on capital management, fixed-asset investment, long-term finance, mergers, leasing and multinational finance. An alternate course in economics serves to introduce the principles of economics and their application to domestic and foreign conditions and to focus on resource allocations and the influences thereof.

Required Courses (choose any four)

BA-270	Financial Accounting I	3
BA-280	Macroeconomics	3
MIT-173	Business Fundamentals	3
MIT-283	Managerial Accounting	3
MIT-372	Financial Management	3

For descriptions of required courses, see courses beginning on page 70.

Object-Oriented Programming (13 credits)

This lower-level certificate provides a solid grounding in object-oriented programming to students with no prior programming experience. Students learn to analyze and design programs from the object-oriented perspective. Implementing object-oriented solutions to problems in two languages, C++ and Java, helps to reinforce an understanding of object-oriented concepts from coupling and cohesion to inheritance and polymorphism. In addition, Java provides students with the tool necessary to implement graphical user interfaces as well as a variety of features and classes useful in web page and Internet programming. C++ requires students to develop a good understanding of structures, such as lists, queues and trees, and to implement them using the classes defined in the C++ Standard Template Library.

Required Courses

CS-130	Computer Science Fundamentals I	4
CS-230	Computer Science Fundamentals II	3
CT-115	Introduction to Programming: Java	3
CT-251	Intermediate Java Programming	3

For descriptions of required courses, see courses beginning on page 70.

Operations Management (12 credits)

This lower-level certificate provides students with a foundation in business and management with a concentrated emphasis on productivity in a world economy. Students learn the fundamentals of business and management in a project-oriented environment with an emphasis on the needs and concerns of the consumer. Coursework allows students a choice to explore the financial aspects of business management with principles of accounting or the legal policies and regulations that effect business with legal environment of business. The production and operations management course stresses the decisions that managers make in increasing productivity by considering the strategies, techniques and problems in meeting customer needs, in forecasting and scheduling, and in quality management. An alternate course in marketing principles emphasizes the relationships among consumers, business and government in regard to product, promotion, pricing and distribution strategies.

Required Courses (choose any four)

BA-270	Financial Accounting I	3
MIT-173	Business Fundamentals	3
MIT-276	Marketing Principles	3
MIT-278	Principles of Management	3
MIT-378	Legal Environment of Business	3
MIT-384	Production and Operations Management	3

For descriptions of required courses, see courses beginning on page 70.

Personnel Management (12 credits)

This upper-level certificate provides students with a basic foundation in the development of employer-employee relations in both the private and public sectors in order to facilitate organization productivity. Students learn the fundamentals of business and management in a project-oriented environment with an emphasis on human business interaction. Courses in the principles of management and personnel management focus on the aspects of supervision and human resource management, with concentration on administration, recruiting and selection, evaluation and training. The organizational theory course combines behavioral sciences with management theory to reinforce concepts of organizational development, organizational structure and processes, and organizational conflict and change. An alternate course in group dynamics focuses on organizational climate and culture and their relationship to and impact on individuals and groups in high-tech organizations.

Required Courses (choose any four)

MIT-173	Business Fundamentals	3
MIT-278	Principles of Management	3
MIT-375	Human Resource Management	3
MIT-386	Organizational Theory and Behavior	3
SS-272	Group Dynamics	3

For descriptions of required courses, see courses beginning on page 70.

Programming and Data Management (13 credits)

This lower-level certificate provides a good understanding of how programmers store and manage computer data. Students learn the fundamental aspects of the storage and management of computer data. Courses in C++ and Java introduce the student to the object-oriented paradigm and the underlying principles of the structures and methods associated with data management. In addition, Oracle is used in the database management course, which introduces students to relational databases and the techniques for analyzing and designing database solutions. Finally, a course in advanced data structures teaches students the theory and underlying techniques used to store, search, sort and access computer data.

Required Courses

CS-130	Computer Science Fundamentals I	4
CS-220	Database Management	3
CS-325	Advanced Data Structures	3
CT-251	Intermediate Java Programming	3

For descriptions of required courses, see courses beginning on page 70.

Software Engineering (13 credits)

This upper-level certificate introduces students to relational databases software design, and user interaction with technology. Students learn the practical aspects of programming and database management, as well as the theoretical issues involved in analyzing, designing, and implementing computer applications that are accessible, reliable and maintainable. The software engineering course allows students to apply basic engineering principles to help them understand software performance, modularity, portability and reliability. A course in human-computer interaction investigates the relationship between the functionality and usability of computer systems in order to maximize their efficiency by selecting appropriate input-output devices and interaction styles.

Required Courses

CS-130	Computer Science Fundamentals I	4
CS-220	Database Management	3
SE-301	Software Engineering	3
SE-321	Human-Computer Interaction	3

For descriptions of required courses, see courses beginning on page 70.

Space Missions and Operations Specialist (12 credits)

This upper-level certificate provides students with a general overview of satellites, including simple physics of satellite orbits and the history of NASA and scientific mission operations. Students will learn satellite design with emphasis on power management, heating and cooling considerations, telemetry and communications and control systems. Coursework includes the study of orbital mechanics and the physics of the instruments used to monitor and analyze the earth and atmosphere. Prerequisites for the certificate include an understanding of math through differential equations with basic engineering physics.

Required Courses

AE-150	Introduction to Space	3
AE-311	Spacecraft Systems	3
AE-351	Dynamics of Aerospace Systems	3
AE-361	Remote Sensing	3

For descriptions of required courses, see courses beginning on page 70.

Web Programming (12 Credits)

This lower-level certificate provides students the foundation to write programs that support transactions conducted over the Internet. Students learn about the web and the basic tools used for web page construction, including HTML, DHTML, scripting, CSS and an overview of XML. The database management course provides students with an understanding of relational databases, how they are designed, how data is stored in them, and how that data can be accessed. The final two courses, Intermediate Java Programming and Web/CGI Programming Using Perl, provide students with the programming techniques and tools needed to create truly dynamic web pages.

Required Courses

CT-102	Introduction to Internet Applications	3
CT-251	Intermediate Java Programming	3
CS-220	Database Management	3
CS-356	Web/CGI Programming Using Perl	3

Prerequisite: CT-115, CS-130 or equivalent.

For descriptions of required courses, see courses beginning on page 70.

Website Development (12 credits)

This upper-level certificate is designed for students interested in building websites. Students learn a variety of tools and applications such as HTML, Java Script, ASP, PHP, Microsoft FrontPage and Macromedia Director used to build web pages and add multimedia content to them. The website construction course deals with website and browser requirements, platform selection issues, web server functions, client and server side applications, cookies and other topics. In the website administration course, students learn concepts in the use of software to monitor and optimize website operations, alternatives to CGI such as ASP and website security.

Required Courses

CT-102	Introduction to Internet Applications	3
CT-201	Multimedia Applications	3
CT-301	Website Construction	3
NS-351	Secure Website Administration	3

Prerequisite: CT-115, CS-130 or equivalent.

For descriptions of required courses, see courses beginning on page 70.

Non-degree Programs

CompTIA A+/Network+

Sponsored by the Computing Technology Industry Association, Inc., A+/Network+ Certification is a testing program that certifies the competency of entry-level service technicians (CompTIA A+) and the knowledge of networking professionals with the equivalent of 18 to 24 months in the IT industry (CompTIA Network+).

Required Course

TC-191 Computer Architecture and Networking (8-week term course)

For descriptions of required courses, see courses beginning on page 70.

Cisco Certification Programs

Developed by Cisco Systems, Inc. as a vendor-specific training program, certification is offered in three levels from associate to professional to expert, available in various tracks and designations. Cisco certification ensures high standards of technical expertise in installation, configuration, design and troubleshooting of routed and switched networks.

Cisco Certified Network Associate (CCNA)

A CCNA possesses foundation knowledge of networking for the small office/home office. A CCNA installs, configures, and operates LAN, WAN and dial access services for small networks (100 nodes or fewer).

Required Course

CRT-270 Routers and Switches in the Enterprise (8-week term course)

For descriptions of required courses, see courses beginning on page 70.

Graduate Program Offerings

Master of Business Administration (MBA) Degree

Master of Science (MS) Degrees

- Computer Science
- Electrical Engineering
- Information and Telecommunications Systems Management
- Information Architecture
- Network Security

Post-baccalaureate Certificates

- Client/Server and Wireless Devices
- Component Technologies and Online Collaboration
- Global Telecommunications Systems
- Information Technology
- Network Protection
- Security Management

All graduate degrees and certificates are taught online in real time in a combination of accelerated 8-week terms and 16-week semesters. See p. 4 for more information regarding online delivery.

Graduate Admissions

A graduate student is any student who, at the time of enrollment, has completed a bachelor's degree or the equivalent, and is pursuing a master's degree or an approved post-baccalaureate certificate.

Graduate applications are accepted at any time and are processed and reviewed upon receipt of all necessary documents. Completed application packages are reviewed on a case-by-case basis.

Students who want to apply for admission for an MS degree should refer to additional admissions requirements (see p. 59) for enrollment qualifications.

Certificate students must complete the specific courses listed for the certificate; no substitutions are permitted. Once the course requirements are completed, students must apply for the certificate through the Office of Registration and Records. A \$25 processing fee is due with the certificate request. A student must have a minimum cumulative GPA of 3.0 in all certificate coursework to be awarded the certificate.

Master of Business Administration Degree Students

Admission Requirements – for full acceptance, students must:

- Have a bachelor's degree from a regionally accredited institution.
- Complete a Capitol College application package.
- Have the computer skills necessary to participate in online classes.
- Have a working knowledge of statistics, economics, finance and accounting.
- Have demonstrated satisfactory performance in at least one of the following:
 - a. Graduate Management Admission Test (GMAT) with minimum cumulative score of 450, or
 - b. Graduate Record Examination (GRE) with minimum cumulative score of 1000, or
 - c. A 3.0 cumulative GPA on a 4.0

- scale during the junior and senior years of the baccalaureate degree.
- d. Special consideration may be given to applicants who show graduate potential and have a minimum of five years of professional or business experience.

Decision-Pending Status

Students whose application packages are incomplete will be classified as decision-pending. A decision-pending student's status is changed once the application package review is complete. In order to enroll, these students must submit a supplemental acceptance package:

Supplemental Acceptance Package

- Resume of relevant work experience
- Letter of recommendation
- Essay about the importance of the MBA program and how it will impact the student's scholarly and professional plans.

Decision-pending students approved to register for any classes are limited to two courses of enrollment until their application package is complete.

Provisional Acceptance

Students in this category have not met the 3.0 undergraduate GPA requirement. These students must submit a supplemental acceptance package and are limited to three courses of enrollment. Provisional students must maintain a 3.0 GPA in their first three graduate courses. A provisional student's status is changed once the application package review is complete. The status changes to one of the following:

- Full acceptance, if the admission criteria are met, and Capitol College graduate GPA is 3.0 or higher.
- Denied admission, if the above admission criteria are not met, or the Capitol College GPA is below 3.0.

Application Procedure

1. File an online application for admission via Capitol's website at www.capitol-college.edu. (Applications remain active for one year.)
2. Request that the degree-granting undergraduate institution forward an official transcript to the Office of Graduate Admissions.

Program of Study

Capitol College's program of study for the master of business administration degree is outlined beginning on page 61 of this catalog.

Master of Science Degree Students

Admission Requirements – for full acceptance, students must:

- Have a bachelor's degree from a regionally accredited institution.
- Complete a Capitol College application package.
- Have the computer skills necessary to participate in online classes.
- Have a 3.0 CGPA on a 4.0 scale.

Decision Pending Status

Students whose application packages are incomplete will be classified as decision pending. Decision-pending students' status is changed once the application package review is complete. Students in this status are permitted to register for a maximum of two classes (eight credits) while the application decision remains pending. Students must maintain a minimum GPA of 3.0 for all Capitol College courses. Once the application package is complete and all documents are received and reviewed, decision-pending students will be considered for admission. Decision-pending students whose Capitol College CGPA falls below 3.0 will be denied admission to the college.

Decision-pending students will be blocked from further registration after two courses if the official undergraduate transcripts are not received by the Office of Registration and Records.

Provisional Acceptance

The provisional status is designed for students whose undergraduate CGPA is between 2.5 and 3.0, who lack sufficient professional work experience or who have the prerequisite knowledge but lack the specific bachelor's degree. Special consideration may be given to applicants who show graduate potential and have a minimum of five years of professional experience in their chosen discipline of study.

Provisional students are limited to 9 credit hours of enrollment at Capitol College. Upon completion of nine credit hours of graduate coursework with a CGPA of 3.0 or better, provisional students will be reconsidered for full acceptance. If provisional students do not meet the 3.0 CGPA requirement after nine credits, they will be dismissed.

Students with less than a 2.5 CGPA in their undergraduate work may be admitted to the college under certain conditions. These students may be required to submit additional information such as:

- Graduate Record Examination (GRE), Graduate Management Admissions Test (GMAT) or Miller's Analogies Test results
- Resume of relevant work experience
- Letters of recommendation

Students with a CGPA less than 2.5 but with a 3.0 GPA in their last 60 hours of undergraduate work will also be given additional consideration.

Additional Admissions Requirements

Some master of science programs have additional technical competency requirements as follows:

Computer Science

A bachelor of science in computer science or equivalent required. Students must have the following undergraduate coursework:

- Programming equivalent to Capitol College course CS-230 Computer Science Fundamentals II:
 - a. Programming (C++ or Java recommended)
 - b. Object-oriented programming (classes, objects, inheritance and polymorphism)
 - c. Data structures (queues, stacks, lists, linked lists, trees, sorts and searches)
- Mathematics equivalent to Calculus I through Linear Algebra:
 - a. Capitol College course MA-261 Calculus I
 - b. Capitol College course MA-262 Calculus II

- c. Capitol College course MA-330 Linear Algebra or any math that has Calculus II as a prerequisite
Note: Students with Differential Equations, instead of Linear Algebra, will need departmental advising.

Electrical Engineering

A bachelor of science in electrical engineering or equivalent is required. Students must have the following undergraduate coursework:

- Mathematics equivalent to Calculus I through Laplace and Fourier Analysis (these Capitol College courses or equivalent):
 - a. MA-261 Calculus I
 - b. MA-262 Calculus II
 - c. MA-330 Linear Algebra
 - d. MA-340 Ordinary Differential Equations
 - e. MA-345 Probability and Statistics for Engineers
 - f. MA-360 Laplace and Fourier Analysis
- Engineering and Science prerequisites (these Capitol College courses or equivalent):
 - a. EE-406 Signal Processing
 - b. EE-453 Control Theory
 - c. EE-362 Microprocessors
 - d. EE-401 Communication Theory
 - e. Familiarity with MATLAB.

Information Architecture

Information architecture students are expected to have exposure to object-oriented programming.

Network Security

Network security students are expected to have a foundation of knowledge with regard to TCP/IP, routers, hubs, switches and related areas.

Students must have either an IT-oriented bachelor's degree or three to five years of security work experience.

Application Procedure

1. File an application for admission online via Capitol's website at www.capitol-college.edu. (Applications remain active for one year.)
2. Request that the degree-granting undergraduate institution forward an official transcript to the Office of Graduate Admissions, 11301 Springfield Road, Laurel, MD 20708.

Programs of Study

Capitol College's post-baccalaureate certificates and programs of study for master of science degrees are outlined beginning on page 62 of this catalog.

Graduate Programs of Study

Business Administration

The master of business administration (MBA) program is designed to support working professionals, and to prepare students for careers in management and leadership in both the government and private sectors. Students will develop high-level leadership skills, the ability to understand the new technologies associated with their business objectives and the ability to apply these technologies to business problem solving environments.

Emphasis will be placed on developing practical skills through the addition of lab requirements to several fundamental core courses. The MBA program provides students with the advanced knowledge and practical skills necessary to make them leaders. The emphasis is on emerging technologies and the ability to succeed in the global and virtual business environment.

The MBA program requires a total of 42 credit hours. There is a core of ten courses (33 credits) and a concentration of three electives (9 credits). Prerequisites have been established for several of the courses in both the core and concentration areas.

Course Requirements

Master of Business Administration 42 Credits
 Course Credits

Required Courses	30 Credits
MBA-610 Statistics for Managers	4
MBA-615 Financial Management	3
MBA-620 Managerial Accounting	3
MBA-625 Organizational Behavior	4
MBA-630 Marketing Process and Strategy	3
MBA-635 Production and Operations Management	3
MBA-640 Managerial Economics	3
MBA-645 Negotiation	4
MBA-650 Strategic Management	3
Capstone Course	3 Credits
MBA-700 Capstone Project	3

MBA Concentrations 9 Credits
 Choose three courses from one of the concentrations below, or create your own concentration with advice from faculty.

Entrepreneurship	
MBA-658 Business Law	3
MBA-665 Entrepreneurship	3
MBA-667 Financing the Entrepreneurship Venture	3
MBA-668 Marketing for Entrepreneurs	3

E-Business	
MBA-685 Introduction to E-Business	3
MBA-686 Strategic Management of Business Technology	3
MBA-687 E-Business Marketing	3
SM-587 Law and Regulation of E-Commerce	3

General Management	
MBA-655 Managing the Global Virtual Organization	3
MBA-656 Human Resources Management	3
MBA-658 Business Law	3
SM-563 Managing Information Systems	3

Information Technology	
Department approval is required for this concentration. These are not introductory courses and require prior experience/prerequisites.	
SM-563 Managing Information Systems	3
SM-567 Telecommunications and Computer Networking	3
SM-568 Global Telecommunications Applications	3
SM-569 Decision Support and Expert Systems	3

Courses are offered only online in 16-week or 8-week accelerated formats. For descriptions of required courses, see courses beginning on page 70.

Computer Science

The computer science (CS) degree is structured to focus on new technologies, graphics aimed at virtual realities, and the Internet. The main objective of the program is to provide students with the advanced knowledge and skills necessary to design and use modern computer-based systems, with an emphasis on emerging technologies such as embedded languages, wireless technologies, miniaturization (PDAs), and data security.

CS majors study computer language design, intelligent systems design, and multithreaded and distributed programming and may specialize in an area of their choice, including information architecture, network security or advanced computer science.

The master of science in computer science is a 30-credit degree program. All students complete a capstone course pair of Research Methods and the Capstone Research Project in which they identify a research topic in consultation with the faculty and develop a major project-based research paper by integrating prior coursework and personal experiences.

Course Requirements

Master of Science	30 Credits
Course	Credits
Required Courses	12 Credits
CS-504 Theory of Computation	3
CS-512 Computer Language Design	3
CS-701 Designing Intelligent Systems	3
CS-705 Multithreaded and Distributed Programming	3
Elective Courses	12 Credits
Choose any four below.	
CS-507 Database Systems Implementation	3
CS-511 Numerical Methods	3
CS-513 Gaming Theory – Real-time 3D Graphics	3
IA-705 Comparison of Operating Systems and Web Servers	3
IA-707 Network Architecture Convergence Using Wireless Technology	3
NS-670 Network Systems Security Concepts	3
NS-673 Secure Information Transfer and Storage	3
NS-677 Malicious Software	3
NS-682 Internal Protection	3
NS-684 Complimentary Security	3
Capstone Courses	6 Credits
CS-712 Research Methods	3
CS-714 Capstone Research Project	3

Courses are offered only online in 16-week or 8-week accelerated formats.

For descriptions of required courses, see courses beginning on page 70.

Electrical Engineering

The electrical engineering (EE) degree is structured to educate students to design and develop applications from the inception stage through the manufacturing, testing, and delivery of a product. The main objective of the program is to provide traditional engineers with the fundamentals of circuit modeling and design, circuit analysis, circuit construction and testing, government and industry regulations, and the advanced knowledge and skills necessary to design and use modern computer-based design and analysis software.

EE majors study mathematical modeling and analysis, electromagnetic interference and compatibility, and advanced concepts of design for reliability, manufacturability and testability with the emphasis of the program on the practical applications of theoretical principles to the design and construction of circuits to meet industrial, military and international standards.

The master of science in electrical engineering is a 30-credit degree program. All students complete a capstone course pair of Master's Project Research and Master's Project in which they choose a project in consultation with the faculty and carry the research of the project through proposal, design, testing and delivery. Students may choose to use the two elective courses in conjunction with the capstone courses to obtain a four-course certificate in an area of specialization.

Course Requirements

Master of Science	30 Credits
Course	Credits
Required Courses	18 Credits
EE-600 Mathematical Modeling and Analysis	3
EE-601 Modern Circuit Design and Simulation	3
EE-606 Signal Processing	3
EE-607 Electromagnetic Interference and Compatibility	3
EE-710 Designing for Reliability and Manufacturability	3
EE-720 Designing for Testability	3
Electives Courses	6 Credits
Choose any two courses below.	
EE-614 Large Scale Integrated Design	3
EE-651 Communications Theory	3
EE-652 Microcontroller System Development	3
EE-653 Analog and Digital Control Theory	3
EE-656 Image Processing	3
EE-665 Microwave Circuit Theory and Design	3
IA-707 Network Architecture Convergence Using Wireless Technology	3
Capstone Courses	6 Credits
EE-708 Master's Project Research	3
EE-758 Master's Project	3

Courses are offered only online in 16-week formats.

For descriptions of required courses, see courses beginning on page 70.

Information Architecture

The information architecture (IA) degree is structured to fill a market niche that, in terms of technological sophistication, lies above technology management programs and below engineering and computer science programs. The main objective of the program is to provide students with business-oriented Internet technical competencies so that, as graduates, they can respond to career opportunities at the level of chief technical officer or chief information officer in a corporation.

IA majors study network and wireless devices and protocols, firewalls and e-security, multimedia technologies and intellectual property regulations, and component collaboration and integration.

The master of science in information architecture is a 30-credit degree program. All students complete a capstone course in which they integrate the prior coursework and their personal experiences to develop a major research paper or project. Students may choose to fill the capstone requirement with an elective taken from selected courses in other degree programs as approved by the department chair.

Course Requirements

Master of Science		30 Credits
Course		Credits
Required Courses		27 Credits
IA-701	Network Devices, Standards, and Protocols	3
IA-703	Thin and Fat Client Deployment	3
IA-705	Comparison of Operating Systems and Web Servers	3
IA-707	Network Architecture Convergence Using Wireless Technology	3
IA-709	Comparison of Object-Oriented and Scripting Languages	3
IA-712	Design and Practice of Secure Information Networks	3
IA-713	Multimedia and Web Casting	3
IA-715	Identifying and Integrating Component Collaboration Technologies	3
IA-717	Invention, Innovation, and the Use of Intellectual Property	3
Capstone Course		3 Credits
IA-719	Capstone Course*	3

* Students may substitute an elective according to their specific career goals.

Courses are offered only online in 16-week or 8-week accelerated formats.

For descriptions of required courses, see courses beginning on page 70.

Information and Telecommunications Systems Management

The information and telecommunications systems management (ITSM) degree is structured as an interdisciplinary study of systems management theory and practices. The main objective of the program is to develop students' abilities to anticipate, recognize, and solve organizational and technological problems, optimize their own capabilities and the capabilities of others, allocate and effectively use resources, and apply systems management theory in organizational situations.

ITSM majors study systems principles, management and economics, psychological and behavioral factors in systems management, management of information and decision support systems, and may specialize in an area of their choice, including global telecommunications systems, information technology, network security or information architecture.

ITSM is a 38-credit degree program. All students complete the 29 credit core and may choose to complete one or more certificates to fulfill the remaining elective credits.

Course Requirements

Master of Science	38 Credits
Course	Credits
Required Courses 29 Credits	
MBA-610 Statistics for Managers	4
MBA-625 Organizational Behavior	4
MBA-640 Managerial Economics	3
SM-513 Systems Management and Organization Theory	3
SM-517 Psychological Factors in Systems Management	3
SM-518 Principles of Systems	3
SM-563 Managing Information Systems	3
SM-567 Telecommunications and Computer Networking	3
SM-569 Decision Support and Expert Systems	3
Elective Courses 9 Credits	
See appropriate department for list of courses. Students may also select three elective courses from different concentrations. Students should consult an advisor for more information. Suggested Concentrations:	
Global Telecommunications Concentration	
SM-568 Global Telecommunications Applications	3
SM-586 Global Telecommunications Policies and Regulations	3
SM-587 Law and Regulation of E-Commerce	3
Network Security Concentration	
Choose any three courses from the MSNS program.	
9	
Information Architecture Concentration	
Choose any three courses from the MSIA program.	
9	
MBA Concentration	
Choose any three courses from the MBA program with department permission.	
9	

Courses are offered only online in 16-week or 8-week accelerated formats.

For descriptions of required courses, see courses beginning on page 70.

Network Security

The network security (NS) degree is structured to meet the needs of organizations and our communities to understand, prepare for, respond to and recover from threats to our information infrastructures. The main objective of the program is to provide information system and security professionals with in-depth instruction on new security ideas, concepts and techniques to prevent and react to malicious intrusion and to secure information assets.

NS majors study basic network security concepts, secure information transfer and storage, risk management and vulnerability mitigation, computer forensics and malicious software, and perimeter and internal protection.

The master of science in network security is a 30-credit degree program. Graduates are prepared to respond to career opportunities at the level of a director of information security, network security manager or a related security position.

Course Requirements

Master of Science **30 Credits**
 Course Credits

Required Courses 24-30 Credits

Select eight to ten courses from the following.

NS-611	Wireless Security	3
NS-621	Applied Wireless Network Security	3
NS-670	Network Systems Security Concepts	3
NS-671	Legal Aspects of Computer Security and Information Privacy	3
NS-673	Secure Information Transfer and Storage	3
NS-674	Security Risk Management	3
NS-675	Computer Forensics and Incident Handling	3
NS-677	Malicious Software	3
NS-679	Vulnerability Mitigation	3
NS-680	Perimeter Protection	3
NS-682	Internal Protection	3
NS-684	Complementary Security	3

Elective Courses 0-6 Credits

Elective courses (2)*

* Up to two courses with department approval.

Courses are offered only online in 16-week or 8-week accelerated formats.

For descriptions of required courses, see courses beginning on page 70.

Post-baccalaureate Certificates

The post-baccalaureate certificates are targeted toward systems managers and information technology professionals seeking to augment or update their skills and career with graduate-level credentials. The courses required for these certificates are offered online in accelerated 8-week terms and 16-week semesters. Consult the schedule of classes for more information.

Client/Server and Wireless Devices (12 credits)

This certificate provides students with a specialization in the hardware and software that drive local, Internet and wireless computing. Students learn the technical aspects of network and wireless devices and the standards and protocols of connectivity. An introductory course in network devices explores the technologies that link personal computers to servers and servers to servers. The three additional courses explore the movement from cable-connected terminals to remote server technology, the similarities and differences between operating systems and web servers, and the various wireless technologies and devices for personal and business communications.

Required Courses

IA-701	Network Devices, Standards, and Protocols	3
IA-703	Thin- and Fat-Client Deployment	3
IA-705	Comparison of Operating Systems and Web Servers	3
IA-707	Network Architecture Convergence Using Wireless Technology	3

Courses are offered only online in 16-week or 8-week accelerated formats.

For descriptions of required courses, see courses beginning on page 70.

Component Technologies and Online Collaboration (12 credits)

This certificate provides students with an advanced understanding of the sophisticated technologies used to develop, integrate, and deploy e-business solutions. Students learn aspects of programming tools for online applications, technologies and policies of multimedia products, and component integration for on-demand communications. Courses in object-oriented and scripting languages and component collaboration technologies explore the development and optimization of electronic commerce applications. A multimedia and web casting course and a policy course in intellectual property explore the technical, marketing and legal aspect of online multimedia.

Required Courses

IA-709	Comparison of Object-Oriented and Scripting Languages	3
IA-713	Multimedia and Web Casting	3
IA-715	Identifying and Integrating Component Collaboration Technologies	3
IA-717	Invention, Innovation, and the Use of Intellectual Property	3

Courses are offered only online in 16-week or 8-week accelerated formats.

For descriptions of required courses, see courses beginning on page 70.

Global Telecommunications Systems (12 credits)

This certificate provides students with a case-study approach to the issues faced in global business. Students learn the fundamental concepts of global telecommunications from both technical and legal standpoints. Introductory courses in global telecommunications technologies, policies, and regulations provide an understanding of the emerging technologies of satellite-based, computer-enhanced and digitally produced communications.

Required Courses

SM-563	Managing Information Systems	3
SM-567	Telecommunications and Computer Networks	3
SM-568	Global Telecommunications Applications	3
SM-586	Global Telecommunications Policies and Regulations	3

Courses are offered only online in 16-week or 8-week accelerated formats.

For descriptions of required courses, see courses beginning on page 70.

Information Technology (12 credits)

This certificate provides students with a foundational knowledge of systems management with respect to telecommunications systems as well as the computer systems that support managerial decision-making. Students learn principles of technology management and information systems. Introductory courses in systems management and telecommunications networks provide the fundamental principles applied in the decision support and expert systems course. A course in strategic management of business technology lays the foundation for business management in a global environment with specific attention given to electronic commerce management goals.

Required Courses

MBA-650	Strategic Management	3
SM-563	Managing Information Systems	3
SM-567	Telecommunications and Computer Networks	3
SM-569	Decision Support and Expert Systems	3

Courses are offered only online in 16-week or 8-week accelerated formats.

For descriptions of required courses, see courses beginning on page 70.

Network Protection (12 credits)

This certificate provides students with a detailed understanding of the methods computer attackers utilize to infiltrate web and application technologies and how the security professionals can anticipate and protect against attacks. Students learn the anatomies of viruses and worms and the defense mechanisms for the perimeter and the inner network. A course in malicious software serves as an introduction to what security professionals deal with daily and the basic anti-virus programs individuals can utilize to protect their information on the small scale of personal computing. The three additional courses focus on the need for internal and external vulnerability assessment, a detailed understanding of firewalls and perimeter network defense, and methods practices for protecting the inner network in the event of a perimeter breach.

Required Courses

NS-677	Malicious Software	3
NS-679	Vulnerability Mitigation	3
NS-680	Perimeter Protection	3
NS-682	Internal Protection	3

Courses are offered only online in 16-week or 8-week accelerated formats.

For descriptions of required courses, see courses beginning on page 70.

Security Management (12 credits)

This certificate provides students with a fundamental understanding of network systems security as it applies to the overall enterprise mission. Students learn aspects of detection, recovery and damage control methods as well as the laws and rights to privacy. An introductory course in network systems security concepts introduces students to the terminology, principles and special issues facing industries, including the importance of user involvement, security training, ethics, trust and informed management. The three additional courses focus on secure data transfer and storage with a history of cryptography and a study of public- and private-key algorithms, risk management with detailed instruction in contingency/disaster recovery planning research and security policy formulation and enforcement, and computer forensics and incident handling with a focus on legal and ethical issues of privacy associated with information and intellectual property and managing trouble tickets and analyzing events.

Required Courses

NS-670	Information Systems Security Concepts	3
NS-673	Secure Information Transfer and Storage	3
NS-674	Security Risk Management	3
NS-675	Computer Forensics and Incident Handling	3

Courses are offered only online in 16-week or 8-week accelerated formats.

For descriptions of required courses, see courses beginning on page 70.

Courses

The numbers in parentheses indicate the following: for undergraduate, (in sequence) class hours – laboratory hours – semester credit hours; for graduate, the number of semester credit hours. Students must have completed the listed prerequisite or its equivalent before registering for a course.

Course Descriptions

AE-150 Introduction to Space (3-0-3)

Introduces the student to elements of astronomy and space sciences. History of NASA and its earth missions and operations. Simple physics of satellite orbits and types of orbits and orbital terminology. The space environment and its effects on satellites and equipment. Types of satellites and their uses. Prerequisite: MA-114. Corequisite: PH-201 or PH-261.

AE-311 Spacecraft Systems (3-0-3)

Design of spacecraft for different applications and missions. Passive and active devices. Designing with redundancy and reliability. Heating and cooling thermal issues. Power handling, telemetry and communications with antenna design. Detectors and instrumentation. Command and control systems. Prerequisite: AE-150 and EL-261 or equivalent background.

AE-351 Dynamics of Aerospace Systems (3-0-3)

Orbital mechanics. Newton's equations and Kepler's laws. Use of spherical coordinate to solve for orbital equations. Corrections to basic equations caused by earth's geometry, the moon and the sun. Other effects depending on orbital parameters. Prerequisite: MA-340.

AE-361 Remote Sensing (3-0-3)

Physics of detectors used for monitoring and analyzing the earth and the atmosphere. Types of detectors and bandwidth of operations. Noise problems. Applications to meteorology, oceanography, vegetation and geology. Prerequisites: AE-311 and PH-263.

AE-401 Computational Dynamics (3-0-3)

Advanced orbital mechanics. Effects of gravitational variations of the earth, moon, sun and other bodies on orbital equations. Perturbation and modeling of orbital equations. Use of numerical methods and computer modeling to determine orbital paths. Prerequisite: AE-351.

AE-454 Spacecraft Dynamics and Control (3-0-3)

Analysis of methods of monitoring maintaining and controlling spacecraft attitude and positioning. Effects of gravity gradients, space environment, and atmospheric drag. Stabilization using controllers, actuators, sensors and impulse devices. Design of control subsystems. Systems engineering approach. Prerequisite: EE-453.

AE-455 Satellite Communications (2-2-3)

Analysis of satellite communications systems. Communications subsystems, telemetry, tracking and monitoring, data handling, satellite link design, propagation effects, modulation techniques and performance, error control. Satellite control networks SN, GN. VSAT systems, satellite navigation, positioning command and control. Prerequisites: EL-261, MA-128 and MA-262 or equivalent.

AE-458 Senior Project in Space Science (1-4-3)

Continuation of EN-408 into project implementation phase. Students work on their senior projects and submit progress reports and design reviews. Presentation of final project with written and oral report required. Prerequisite: EN-408 and senior standing. EN-408 should be taken immediately before this course when possible.

BA-270 -Financial Accounting I (3-0-3)

This is an introductory accounting course that will provide students with a strong basic knowledge of accounting terms, concepts, and procedures. Analyzing business transactions as they relate to the General Ledger and the use of special journals will be addressed as well as the

various processes and procedures related to the full accounting cycle. The accounting principles described are those endorsed by the Financial Accounting Standards Board.

BA-271 - Financial Accounting II (3-0-3)

This course continues the focus on accounting principles, theories, and applications introduced in Financial Accounting I. It builds additional skills in ledger entry and organization, payroll accounting, and the development of financial statements. The foundation acquired in Accounting I is integral to exploring topics as accounting for partnerships and corporations, promissory notes, and valuation of assets.

BA-280 Macroeconomics (3-0-3)

This course is an introduction to macroeconomic concepts and analysis. It deals with the relationship between government, business, and the overall economy. The key areas focused on include gross domestic product, the public sector, unemployment, and aggregate supply and demand. The global economy is covered with discussion of issues such as international trade and protectionism.

BA-281 Microeconomics (3-0-3)

This course is an introduction to microeconomic concepts and analysis. The course focuses on competitive market dynamics including individual and firm behavior through the study of market structure and economic decisions regarding production, pricing, and personnel. Labor markets and labor unions are addressed as well as regulatory and distributional issues.

BA-300 Business Communications (3-0-3)

This course includes preparation for various kinds of both written and oral business communication. The course will develop and sharpen the critical thinking and writing skills, including report/proposal preparation and presentation, needed in the workplace. Strategies for effective communication will also be explored.

CH-120 Chemistry (2-2-3)

Metric system and significant figures; stoichiometry; fundamental concepts of atomic structure and its relationship to the periodic table; electron configuration; bonds and electronegativity; gases; oxidation states and redox; solutions, acids and bases, changes of state, thermodynamics, chemical kinetics and equilibrium. Prerequisite: MA-110 or Corequisite: MA-114.

CRT-270 Routers and Switches in Enterprise (2-2-3)

Students who take this course will be prepared to take the Cisco Exam 640-607 (CCNA Exam). CRT-270 revolves around the use of Cisco routers and switches in small multiprotocol internetworks. OSI reference model, basic LAN and WAN design, dial access services, TCP/IP protocol suites, IP addressing, subnetting, static and dynamic routing, WAN technologies including, HDLC, PPP, Frame Relay, and ISDN, access lists. Prerequisites: TC-110 or CompTIA Network+ or equivalent industry experience.

CRT-360 Check Point Security Administration (2-2-3)

Defining firewall-1 objects and users. Defining a security policy using the Security Dashboard and the Visual Policy Editor. Administrating and troubleshooting basic security policies. Deploying and managing distributed security gateways, using Secure Update and Secure Internal Communications (SIC). Configuring Network Address Translation (NAT). Setting up user authentication. Configuring VPN-1/firewall-1 for basic network security. VPN-1/firewall-1 architecture and how to deploy its modules and components. Prepares students for Check Point CCSA exam 156-210. Prerequisite: CT-240, NS-352 or equivalent industry experience.

CRT-460 Check Point Security Expert (4-0-3)

Configuring gateways to support VPN deployments. Deploying SecuRemote and Secure Client for remote access. Setting Secure Client personal firewall policies for secure remote access deployments. Setting up desktop policies for Secure Client and using Security Configuration Verification to ensure client security. Employing digital certificates to establish trust relationships. General VPN/firewall security functions. Encryption. Using content security to enable blocking, filtering, and anti-virus checking. Installing and configuring VPN-1/firewall-1 for enterprise deployment. Prepares students for Check Point (CCSE) exam 156-310. Prerequisite: CRT-360.

CS-130 Computer Science Fundamentals I (4-0-4)

Introduces students to the discipline, methodologies, and techniques of software development. The emphasis is on developing essential programming skills, an understanding of object-oriented design and good software engineering practices using the Java programming language. Program constructs include selection, looping, arrays, graphical output of data, the use of the standard Java class library, and construction of simple user-defined classes. Programming projects are assigned as part of the homework requirements. Prerequisite: CT-115 or equivalent. Corequisite: MA-110 or MA-114.

CS-220 Database Management (3-0-3)

An overview of a database system, with the emphasis on relational databases. Terminology, basic analysis and design concepts. Database creation, update, and retrieval. Client/server and middleware, object-oriented issues, SQL. Secure database access and concurrency issues. Projects, which are assigned as homework are implemented in Oracle and include hands-on work with enhanced E/R and object-oriented design techniques using relational databases. Prerequisite: CS-130 or CT-115.

CS-221 Database Administration

This course covers the tasks performed by a database administrator. Topics include database architecture, capacity and performance requirements, database creation, user management, transaction management, backup and recovery, security, performance tuning, and other administrative functions. Students will work with an Oracle database server. Prerequisite: CS-220.

CS-230 Computer Science Fundamentals II (3-0-3)

Advance pointers and dynamic memory usage. Concepts of object-oriented design and programming. Includes classes, friend functions, templates, overloading, polymorphism, inheritance, exception handling, containers, iterators and the standard template library. Applications involve the use of simple data structures such as stacks, queues, lists and binary trees. OOP concepts are implemented through a series of hands-on programming projects, all of which are completed as part of the homework requirements. Prerequisite: CS-130.

CS-310 Computer Algorithms (3-0-3)

Mathematical fundamentals of algorithms and algorithmic techniques. Sorting, searching, hashing and other techniques associated with retrieving information. Basic and advanced graph algorithms. Dynamic programming. NP-completeness. Course requires written (non-programming) assignments and programming projects. Prerequisites: CS-230 and MA-124. Offered spring semester only.

CS-316 Intelligent Systems (3-0-3)

Fundamental techniques and concepts of intelligent systems: pattern recognition, tree searches, expert systems and natural language processing. Neural networks, genetic algorithms and genetic programming. Programming projects are assigned as part of the homework requirements. Prerequisites: CS-230 and MA-124. Offered fall semester only.

CS-325 Advanced Data Structures (3-0-3)

Arrays and linked structures. Construction, usage and theory behind stacks, queues, linked lists, binary trees, B-trees, file structures, and algorithms for searching, sorting, merging and hashing. Programming projects are assigned as part of the homework requirements. Prerequisites: CS-230 and MA-124.

CS-351 Assembly Language Programming (3-0-3)

This course introduces the student to assembly language, specifically that used with the Intel 80x86 computer architecture. Topics include data representation, branching and looping, procedures, string operation, bit manipulation, and macros. By learning how to write in assembly language, the student will better understand how programs are executed in a computer and how to optimize performance of programs written in high-level languages, such as C++. The student will be assigned programming projects as homework. Prerequisites: CS-130.

CS-356 Web/CGI Programming using Perl (3-0-3)

Overview of the Perl programming language. Syntax, arrays, subroutines, I/O, regular expressions, SQL review, relational database access, read/write/query operations. Overview of CGI programming, HTML review, building dynamic pages using Perl/CGI, processing HTML forms, integration of a database into web page design. Programming projects are assigned as part of the homework requirements. Prerequisites: CS-220 and CT-152.

CS-418 Operating Systems Security (3-0-3)

Principles underlying computer operating systems are presented from a computer designer's perspective. Concepts explained include process concurrency, synchronization, resource management, input/output scheduling, job and process scheduling, scheduling policies, deadlock, semaphore, consumer/producer relationship, storage management (real storage management policies in a multiprogramming environ-

ment), virtual memory management (segmentation and paging), secure memory management, access control lists and kernel protection. An overview of contemporary operating systems with these principles. Students program in a high-level language. Projects are assigned as part of the homework requirements. Prerequisites: CS-230 or CT-251 or NS-352 and senior status. Offered fall semester only.

CS-428 Comparative Programming Languages (3-0-3)

Strengths and weaknesses of contemporary high-level languages in different operating system environments. Selected languages are closely studied, and students program in each language to highlight the differences between languages and operating system environment. Projects are assigned as part of the homework requirements. Prerequisites: CS-230 or CT-251 and senior status.

CS-432 Computer Graphics (3-0-3)

Discussion of some basic types of computer graphic devices. Graphics and text modes, point plotting and line drawing, area filling image array plotting, mathematics and generation of two and three-dimensional translations. Rotations, scaling, reflections, orthogonal and perspective transformations. Projects are assigned as part of the homework requirements. Prerequisites: MA-330 and CS-230 or CT-251. Offered spring semester only.

CS-504 Theory of Computation (3)

An investigation into the fundamental ideas and models underlying computing. Automata languages, determinism, Chomsky hierarchy, computability, Turing machines, Church's Thesis, complexity, NP-completeness, intractability.

CS-507 Database Systems Implementation (3)

Emphasis on DBMS architecture and implementation issues such as storage structures, multidimensional index structures, query optimization, concurrency control and recovery, distributed processing, database security, and parallel database systems.

CS-511 Numerical Methods (3)

Analysis of errors in numerical computations, solution of linear algebraic systems of equations, matrix inversion, eigenvalues, roots of nonlinear equations, interpolation and approximation.

CS-512 Computer Language Design (3)

Using parsers and code generation techniques to fashion new mini-languages that can be used to creatively modify the interface between a user and the computer. Topics include language design; grammars; regular expression grammars; parsers and parser construction; parsing expressions; tokenizing; assemblers; engines vs. interpreters; logic, query and imperative language parsers and assemblers.

CS-513 Gaming Theory Real-Time 3D Graphics (3)

The growing importance of virtual realities in training, scientific modeling, and communication comes on the heels of increasing processor capabilities, new innovations in hardware, increasingly sophisticated programming languages, and advanced math-based modeling techniques. Real-time 3D graphics are at the leading edge of these developments. Topics include mathematical foundations and modeling techniques, mapping, anti-aliasing, real-time rendering, Binary Space Partition Trees, object control issues. Uses C++ and the OpenGL graphics interface.

CS-701 Designing Intelligent Systems (3)

The artificial intelligence revival of the late 1980s has produced many new and innovative approaches to the creation of intelligent systems. Such systems permeate today's computer environment supporting everything from computer games to autonomous robotic systems and intelligent agents. The focus of this course will vary over time. Topics include knowledge representation and rule-based systems, fuzzy-logic systems, learning systems such as artificial neural networks and genetic algorithms, genetic programming and evolutionary computing, hybrid intelligent systems, and intelligent agents.

CS-705 Multithreaded and Distributed Programming (3)

Modern applications such as GUI interfaces use multithreaded programming to achieve responsiveness and to make efficient use of computer resources. In addition, the Internet has made distributed programming an integral part of almost every computing system. In today's world programmers and computer professionals must understand the principles underlying both these paradigms. Topics include concepts and applications of multithreaded and distributed programs. Process interaction using shared variables and message passing; systematic development of correct programs; general problem solving techniques; scientific computing; distributed systems.

CS-712 Research Methods (3)

This is part one of a two-course sequence in research and writing. In part one, students work to identify a research topic and, as initial research begins, they investigate the requirements for maintaining a research journal, writing a research paper, and presenting a research paper.

CS-714 Capstone Research Project (3)

This is part two of a two-course sequence in research and writing. The course is in graduate seminar format. Students integrate prior course work and personal experiences into researching an approved topic to produce a project-based paper.

CSH-150 Honors Seminar in Linux (3-0-3)

This is a hands-on course. The goal is to introduce students to the richness and complexity of the Linux environment. Students install Linux on computers in the laboratory; learn how to network the computers; work with system utilities; learn how the PHP language can be used to connect web pages to information stored in a database. Prerequisites: CT-152 and GPA of 3.0 or higher.

CSH-410 Honors Seminar in Neural Networks (3-0-3)

Basics of neural network computing, important neural network models such as Adaline, Perceptron, back propagation, self-organizing maps, Hopfield nets. Analysis and limitations of neural networks; programming neural networks using OOP. Prerequisites: CS-130 or CT-251 with grade of B or better; Junior or senior status; Good programming skills, knowledge of matrices and some multivariable calculus.

CT-101 Introduction to Software Applications (3-0-3)

This is an introductory course on software that is essential for the successful use of a Windows-based PC system. Students are introduced to the basic features and functions of the Windows operating system, word processing, the use of spreadsheets and tools that accompany spreadsheets, setting up a simple database, and the creation of PowerPoint® presentations. Students will learn how to use and integrate the various applications into one larger document and produce a written, electronic and oral presentation.

CT-102 Introduction to Internet Applications (3-0-3)

Introduces students to dynamic HTML web page design using tables, style sheets, cascading style sheets (CSS), images, and dynamic images, with emphasis on page layout, navigation bars and forms. Scripting languages are used to enhance web page features. Graphic, video and audio file standards, such as GIF, TIF, JPEG, WAV and MIDI are discussed. SGML and XML are defined, and role of XML in enabling the communication of data between disparate applications is discussed. Students are required to complete projects as part of the homework requirements.

CT-115 Introduction to Programming (3-0-3)

An introductory programming course that teaches the computer essentials and programming essentials: components of a computer, the computer as a tool for connecting to networks/Internet, digital vs. analog, binary arithmetic, how information is stored, algorithms, branching, looping, functions and arrays. An important aspect of this course is to present students with techniques for translating problem descriptions into computer algorithms, which are then implemented as a computer program. Extensive programming assignments are completed as part of the homework assignments. Acceptance based on placement test scores.

CT-152 Introduction to Unix (3-0-3)

Unix file and operating system. Understanding multi-user and multitasking concepts. Editors, X-windows, Awk, email, Internet commands, shell commands and shell scripts. Projects, which provide practical experience, are completed as part of the homework requirements. Corequisite: CT-115 or professor approval.

CT-201 Multimedia Applications (3-0-3)

Use online and resident window tools to create, edit and enhance text, audio, and video for multimedia applications, including multimedia web pages and presentations. Study the philosophy, aesthetics and theory behind the layout, construction and display of multimedia material. Programming projects are completed as part of the homework requirements. Prerequisite: CT-102 or equivalent.

CT-240 Internetworking with Routers and Switches (2-2-3)

Configuring routers and switches to build multiprotocol internetworks. OSI reference model, basic LAN and WAN design, dial access services, TCP/IP protocol suites, IP addressing, subnetting, static and dynamic routing, WAN technologies such as HDLC, PPP, Frame Relay, ATM and ISDN. Prerequisites: TC-110 and CS-130 or CT-115 or professor approval.

CT-251 Intermediate Java Programming (3-0-3)

Java syntax, Java and HTML. Philosophy behind Java. Platform independence. Applications and Applets. Overview of object-oriented programming, including inheritance and Java's particular implementation of polymorphism. Java's Abstract Windows Toolkit/ SWING, exception handling and threads, multimedia. Applications of Java including I/O classes and JDBC. Programming projects are assigned as part of the homework requirements. Prerequisite: CS-220 or equivalent.

CT-301 Website Construction (3-0-3)

Website requirements and platform selection, web server functions, browser requirements. Client-side applications and issues including the use of cookies, advertising banners, and privacy. Website development tools for Microsoft and Unix environments. Overview of web programming languages assigned as part of the homework requirements. Prerequisites: CT-152 and CT-201 or CS-230.

CT-366 Web Programming Languages (3-0-3)

This course will explore how to make a dynamic website using five programming languages: Perl, PHP, Java Servlets, Java Server Pages, and C#. Students will have access to a Unix server including an Apache Web Server and a MySQL Database. This course can be taken as an elective or as a substitute for CS-325 (CS-325 is no longer offered). Prerequisite: CS-356 or instructor permission.

CT-451 Special Topics (3-0-3)

Students research current trends in telecommunications and emerging technologies. Oral presentation required. Prerequisite: Senior status.

CT-497 Cooperative Education (0-0-0)

Offered each semester to eligible, degree-seeking students. These placements provide temporary work experience in computer engineering technology which complements classroom learning. Students are evaluated (satisfactory or unsatisfactory) by the director of career services upon completion of each semester. Contact the Office of Career Services for admission to the program. Prerequisite: Completion of the first 32 semester hours (see plan of study) with a minimum CGPA of 2.5.

CTH-301 Honors Seminar in XML (3-0-3)

XML is showing up everywhere such as configuration files, content management, electronic data interchange, and web services. This class will cover the core technologies that make up XML:DTD, XML Schemas, XSLT, DOM, SAX, and SOAP. Assignments will be done with both MS Windows and Unix/Linux operating systems. Prerequisite: CS-220, CT-251, junior status and professor approval.

EE-159 Circuit Theory (3-2-4)

Network analysis, mesh analysis, nodal analysis, Thevenin, Norton, superposition, reciprocity, capacitors, inductors, RC circuits, RL circuits, RLC circuits. Steady state and transient conditions involving RC time constants, RL time constants. AC circuit analysis involving sine waves, phasors, reactance, impedance in series circuits, parallel circuits, and series-parallel circuits. Thevenin, Norton, network theorems. Power, effective power, resonance and filter circuits. Students who have taken EL-100 and EL-150 may not take this course for credit. Prerequisite: MA-114.

EE-259 Semiconductor Devices and Circuits (3-2-4)

A course in basic semi-conductor theory with applications. Topics include diodes, transistors, field-effect transistors, operational amplifiers and circuits. Analysis of circuits includes small- and large-signal modeling with frequency response and Bode plot methods. Amplifier theory and analysis for both small and large signal amplification. Multistage amplifiers and classes. Prerequisite: EE-159 or EL-150. Students may not take this course with EL-200 and EL-250.

EE-300 Power Supply and Regulator Design (2-2-3)

Design and analysis of power supplies and regulators. Includes special adjustable and fixed voltage regulator ICs, three-pin regulators, switch-mode supplies. DC to DC convertors. Supply topologies, power handling, current limiting methods. Prerequisites: EL-250 and MA-261.

EE-304 Digital Design I (2-2-3)

Minimization of Boolean functions using Karnaugh Maps and Quine-McCluskey Tabulation. Multilevel circuits: PLAs, PALs, gate arrays. Combinational logic design with MSI LSI. Chip count reduction. Sequential circuit analysis and design. State tables and state diagrams. Asynchronous circuit design. Introduction to PAL design software. Students design, simulate and build circuits. Design using programmable devices. Prerequisite: EL-204.

EE-309 Circuit Design and Simulation (2-2-3)

An advanced circuit analysis course that introduces students to computer-aided electronics packages and automated design. Students design and analyze circuits both mathematically and with computer simulation. Students build the circuits and compare predicted results with measured results obtained in the laboratory. Prerequisites: EL-250 or equivalent and MA-261.

EE-353 Power System Engineering (3-0-3)

Fundamentals of power transmission and electric motors. Single versus three-phase, poly-phase systems, synchronous, asynchronous machines. DC and compound DC motors, induction motors. Equivalent circuit modeling of motors. Start-up conditions. Prerequisites: EE-159 and MA-261.

EE-354 Digital Design II (2-2-3)

Continuation of Digital Design I. Students explore larger-scale digital arithmetic and logic circuits using PAL programmer and related software. Introduction to HDL design and implementation. Students design and build circuits according to design objectives in two parts: students design, compile and verify their circuits using timing simulation on computers; then build and test circuits. Final project involves design, assembly, and testing of a PLD-based system. Prerequisite: EE-304. Offered spring semester only.

EE-362 Microcontroller System Design (2-2-3)

Study of the MC68HC11 Microcontroller and related families. Evaluation board hardware preparation and checkout. PC to EVB interfaces. S-records, utilities and I/O routines. Expanded MUX-Modes, EPROM-based CONFIG register. On-chip memories. Synchronous serial peripheral interface, asynchronous serial communication interface. A/D converter, real-time interrupts. Design case studies and projects. Students will be required to build, write drivers for and test their circuits using the 68HC11 EVB. Written report and oral presentation required. Prerequisite: EL-262 or microcomputer, micro-assembly background.

EE-364 Computer Architecture (2-2-3)

Design and architecture of modern computers. System components: processor, memory and interfaces. Instruction sets and operations. Reduced instruction sets (RISC) and RISC architecture. Processor design to support RISC instruction set. Evolution to parallel processing and multi-processing. Prerequisite: EE-304. Offered spring semester only.

EE-382 Robotic Systems (2-2-3)

An introduction to the design and control of autonomous robots. Mechanical considerations and review. Interfacing issues and programming. Sensors for perception and environmental detection and navigational ability. Students will develop algorithms and use machine learning techniques to generate programs to control electromechanical systems to perform tasks. Team based projects and laboratories. Prerequisites: EL-255 and EE-362 or equivalent.

EE-400 Special Projects in Engineering (credits vary from 1-4)

Application of engineering principles or research into a special project. Projects vary from semester to semester. Students primarily work in a guided study environment with a faculty mentor. Prerequisites: Permission of instructor and department chair and at least junior status. This course may be repeated with different projects.

EE-401 Introductory Communications Theory (2-2-3)

Fourier analysis. Signals and spectra for AM and FM systems. Digital transmission and detection. Modulated digital transmission and detection. Matched filters detectors and bit-error-rates of systems based upon constellation diagrams. Prerequisites: EL-261 and MA-360.

EE-404 Large Scale Digital Design (2-2-3)

Contemporary hardware description language modeling of digital systems, events, delay and concurrency, structural modeling, and behavioral modeling. Focuses on design, development, verification, and synthesis of combinational or sequential digital systems. Writing test-bench, modular programming, module and circuit instantiation, simulation and synthesis. Students use popular design and simulation environment tools. Prerequisite: EE-304.

EE-406 Signals and Systems (3-0-3)

Mathematical models, systems, signal classifications, differential and difference equations, block diagram realizations, discrete-time systems. Convolutions: discrete-time and continuous-time. The z-Transform in linear discrete-time systems, transfer functions. Trigonometric Fourier series, polar and rectangular forms, odd/even functions, response of a linear system to periodic input. Fourier transform, symmetry properties, transform theorems, linear filtering, modulation theorem. Prerequisite: MA-360. Offered during fall semester only.

EE-409 Network Analysis and Synthesis (2-2-3)

Comparison of analysis and synthesis. Transfer function and frequency response: phase and time delay. Familiarization with complex impedance and admittance functions. Active filter design: bandpass, allpass, bandreject, FDNR and gyrator. Impedance evaluation: Foster I, Foster II, Cauer I and Cauer II. Synthesis of Butterworth and Chebyshev filters. Sensitivity of networks to parameter changes. Biquad circuits. Prerequisites: EE-309 and MA-360.

EE-415 Microwave Theory and Devices (2-2-3)

Waveguide theory: modes of operation. Waveguide components: tuners, windows, sifters, tees and couplers, filters, mixers, isolators, circulators. Microwave tubes. Klystrons: multicavity and reflex. Magnetron, traveling wave tubes, backward wave oscillators, amplifier techniques, microwave semiconductors: operations and applications. Microwave measurement techniques. Prerequisites: MA-340 and PH-262. Offered during fall semester only.

EE-419 Electrostatics (3-0-3)

Stationary electric and magnetic fields. Introduction to vector calculus. Coulomb's law, Gauss's law, Laplace and Poisson's equations. Solutions to static field problems. Biot-Savart law, Ampere's law, Faraday's law. Boundary conditions. Magnetic circuits. Prerequisites: MA-340 and PH-262. Offered during fall semester only.

EE-451 Advanced Communications**Theory (2-2-3)**

Vectors and functions: inner product spaces, orthogonality and projections. Advanced Fourier analysis: generalized Fourier series, Parseval's theorem. Noise: power spectral density and quadrature decomposition. Optimal digital detection criteria. Bit-error-rate calculations for M-ary PSK and M-ary orthogonal signals. Spread spectrum systems. Prerequisite: EE-401 and MA-345. Offered during spring semester only.

EE-452 Advanced Microcontroller System Design (1-4-3)

Extension of EE-362. Project course utilizing commercially available microcontroller EVB boards. Fuzzy logic introduction. Programming using fuzzy logic rules and high performance design techniques. Students design, select, build, and generate code for microcontroller-based systems. Prototypes are evaluated and debugged before final assembly. Written report and oral presentation required. Prerequisite: EE-362. Offered spring semester only.

EE-453 Control I (2-2-3)

Introductory concepts. Feedback control systems and transfer function. Mathematical modeling of control systems including Laplace transform method, state-space model, block diagrams and signal flow graphs. System characteristics and system performance. Routh-Hurwitz stability analysis. Frequency response methods. Design of feedback control system to meet design requirements. Use of modern engineering tools such as MATLAB to model, simulate control systems and analyze system performance. Prerequisite: MA-360.

EE-456 Digital Signal Processing (2-2-3)

Discrete-time methods applied to continuous-time processes. Use of Z, fast-Fourier and discrete transforms. Design methods for digital filters. Digital filter software packages introduced. Prerequisite: MA-360. Offered spring semester only.

EE-458 Senior Design Project (3-0-3)

Students propose design, create and test a functioning product using engineering standards and realistic constraints. This is a major design experience based on the knowledge and skills acquired in earlier course work. The project includes design reviews as scheduled by the professor, progress reports, and a final project demonstration with oral presentation. Issues such as cost, maintainability, environmental impact, ethical, social, manufacturability and safety must be considered in developing the final product. Students majoring in CE, CET or SE who are developing a software project should see their advisor before registering. Prerequisites: EN-408 and senior standing. EN-408 should be taken immediately before this course when possible.

EE-459 Electromagnetic Field Theory (3-0-3)

Continuation of EE-419. Motion of charge particles in both electric and magnetic fields. Boundary conditions. Maxwell's equations, phasor notation, and applications of Maxwell's equations to wave phenomena. Relation of classical circuit theory to Maxwell's equations. Plane wave propagation in different media. Skin effect, skin resistance, shielding. Reflection of plane wave. Transmission lines, Smith chart. Antenna and satellite communications systems. Prerequisite: EE-419. Offered during spring semester only.

EE-463 Control II (3-0-3)

Root locus techniques and design compensators for optimization of stability and error. Multiparameter root locus. Nyquist criteria and design in frequency domain. System performance indices: ISE, IAE, ITAE and ITSE. Modern control engineering: state variable methods and phase variable methods. Controllability and observability. Controller and observer design to meet design specifications. Design of optimal control systems. Use modern engineering tools such as MATLAB for the design and analysis of control systems. Prerequisites: EE-453 and MA-330. Offered during spring semester only.

EE-600 Mathematical Modeling and Analysis (3)

A study of MATLAB and various toolboxes that are used by engineers for modeling, simulation, analysis of systems in control, and signal processing. System modeling including Laplace transform method, block diagram, signal flow graphs and state-space. System response specifications, system stability, root locus analysis, and frequency response analysis. Dynamic system modeling and simulation using Simulink. Offered during fall semester.

EE-601 Modern Circuit Design and Simulation (3)

A study of the various SPICE based software tools used by engineers to design and simulate circuits. Analog, digital and mixed simulation. Component selection and modeling use of libraries and customizing components and models. Students design and calculate theoretical results and compare results to simulations. Students will be required to purchase software. Prerequisite: normal undergraduate course in circuit modeling. Offered during fall semester.

EE-606 Signal Processing (3)

Review of signal and system theory. Sampling and the z-Transform. Complex variable theory applied to z-Transforms. Digital filter design techniques. Mixed-radix DFTs and FFTs. Quantization theory. Speech processing. Prerequisite: undergraduate course in signal processing.

EE-607 Electromagnetic Interference and Compatibility (3)

Class A and Class B devices. Standards for measuring emissions and acceptable limits. Conducted and radiated emission. Mutual capacitance and inductance. Coupling Paths. Crosstalk. Shielding theory and applications. Modeling of circuits in noise applications. Parasitics and their reduction. Ferrite beads and chokes. Overview of low noise design for printed circuits. Frequency and time domain analysis of noise. Grounding issues and their reduction. Electrostatic discharge, electromagnetic pulses and lightning. Offered during spring semester only.

EE-614 Large Scale Integrated Design (3)

Introduction to VLSI and VLSI CAD software tools. Digital design and logic verification, layout, timing analysis and programming, with synthesis, simulation and verification. Applications change from semester to semester. Subjects included designing ASICs, DSP, and processor chips. Students design and verify chip. Prerequisite: EE-354 or equivalent advanced course in digital chip design. Offered based on demand.

EE-651 Communications Theory (3)

State-space modeling of signals. Calculation of bit-error-rate for BPSK, QPSK, M-ary PSK, M-ary orthogonal signals. Trellis-code modulation and demodulation (using trellis diagrams). Fading channels and random phase in analog systems. Prerequisite: EE-600 or equivalent. Offered during spring semester only.

EE-652 Microcontroller System Development (3)

In-depth study of the organization and instruction sets of popular modern microcontroller chips and typical evaluation boards, including on-chip memories, peripherals and interfaces to external circuits or devices. Writing application codes in low-level and high-level programming languages. Students use a professional-quality integrated development system, an evaluation C compiler, built-in macro assembler, and the target microcontroller chip's in-system programmer. Students are required to purchase an evaluation board as part of the course material in order to download the object code for real time testing. Prerequisite: EE-362 or equivalent.

EE-653 Analog and Digital Control Theory (3)

State equations, simulation and modeling, controllability and observability, controller and observer design specification and structures, feedback system stability classical and modern approach, multivariable control, sampled-data digital control system, impulse samples, aliasing, zero-order hold, z-Transform, discrete-time systems, sampled-data systems, stability by jury criterion, root locus, Nyquist crite-

tion, and discretization of continuous-time design. Prerequisites: EE-600 and EE-601 or equivalent.

EE-656 Image Processing (3)

Two-dimensional Fourier Transforms and z-Transforms. Two-dimensional convolution. Filtering and masking. Discrete Cosine transforms, Haddamard transforms, Karhunen-Loeve transforms. Radon transformations. Contour estimation (Sobel, Snake algorithm). Motion estimation and compensation. Compression techniques (JPEG, MPEG). Prerequisite: EE-606.

EE-665 Microwave Circuit Theory and Design (3)

Transmission lines, two port networks scattering parameters. Measuring scattering parameters. The Smith chart and impedance matching. Impedance matching circuits. Microstrip design. Microwave amplifiers. Broadband amplifiers. Applications to broadband circuit design. Prerequisite: EE-601 and EE-607.

EE-708 Master's Project Research (3)

This course will cover all aspects of proposing and executing a research and development task for the U.S. government. Case studies on how to identify, interpret, and respond to Broad Agency Announcements. Creating preliminary response, including quad charts and white papers. Techniques for providing a rough order of magnitude (ROM) cost. Preparing the full final proposal, including abstract, statement of work, schedule, milestones, deliverables, risk mitigation, preplanned follow-on efforts, procurement, subcontracts, describing the labor mix, and developing a full cost proposal. Attention will be given to protection of proprietary information, protection of intellectual property, and to compliance with the Federal Acquisition Regulations (FAR). The course will culminate with the execution of a mock project, with final deliverables, and final closeout of the project. Examples from federal R&D projects in public domain will be used throughout the course. Offered fall semester only.

EE-710 Designing for Reliability and Manufacturability (3)

Design methodology and standards applied in the construction and assembly of electronic circuits for reliability. Redundancy, parallel structure and majority rule circuits. Materials and component selection. Vibrational analysis, thermal analysis and packaging. Classification of hardware for commercial, military or space applications. MIL-spec and IPC standards discussed. Normally offered during summer.

EE-720 Designing for Testability (3)

Design for testability. Types of testing, functional testing, and structural testing. Automatic test pattern generation. Scanning and scan-based design rules. Critical paths. Memory test and diagnostics. Built-in self-testing. ATE equipment, local and remote testing and limitations. Students will have access to on-line test workstations. Normally offered during summer.

EE-758 Master's Project (3)

Students integrate prior course work and personal experiences into a master's project. Students develop a full final proposal, including abstract, statement of work, schedule, milestones, deliverables as learned in EE-708. Proposal must be delivered to class and approval of project advisor required. Regular progress reports required. Final presentation will be live over the Internet. Prerequisite: EE-708. Offered spring semester only.

EL-100 Introduction to DC/AC Circuits (2-2-3)

Basic electrical concepts and laboratory techniques. Current, voltage, resistance and power. Ohm's law, series and parallel resistive circuits. Kirchhoff's voltage and current laws. Loading effects on meters and supplies. Capacitors and Inductors. Charging and discharging. RC and RL time constants. Introduction to AC. Sinusoidal waveforms, phasors and use of the J operator. Reactance and admittance. Average values and RMS. Laboratory emphasis is on the proper use of standard meters, testing equipment and circuit breadboarding. Corequisite: MA-114.

EL-150 DC/AC Circuits and Analysis (2-2-3)

Applications of Kirchhoff laws to multiple source and complex series-parallel circuits. Determinants and matrices. Mesh and nodal analysis. Network Theorems: Thevenin, Norton, superposition, maximum power transfer. Review of complex number manipulation. Application to capacitive and inductive circuits, impedance. Complex Mesh analysis. Network theorems applied to complex RLC networks. Frequency response of RL and RC circuits. Plotting frequency response. Bode plots. Laboratory emphasis on the use of standard test equipment to verify theory. Prerequisites: EL-100 and MA-114.

EL-200 Electronic Devices and Circuits (3-2-4)

Principles and characteristics of semiconductor devices. Devices covered include diodes, Zener diodes, bipolar junction transistors, field-effect transistors, and operational amplifiers. Includes bias networks, operating points, maximum output and optimum bias, and DC and AC load lines. Input and output impedances, and voltage and current gains for each amplifier configuration. Prerequisite: EE-159 or EL-100.

EL-204 Digital Electronics (2-2-3)

Number systems, including binary, octal and hexadecimal bases. Binary arithmetic. Boolean algebra, Karnaugh map simplification. Array Logic, Simple Programmable logic devices (SPLD), implementation of logic expressions using PLA, PAL and GAL. Design of combinational circuits. Decoders, multiplexers, flip-flops and other multi-vibrator circuits. Logic families including TTL, CMOS, ECL and others. Memory, shift registers and counters. Introduction to VHDL, VHDL model for combinational circuits.

EL-212 Transmission Lines (2-2-3)

Study of transmission lines: characteristic impedance, propagation constant, standing wave ratio and reflection coefficient. Transmission line response to transients. Bounce diagrams. Lossless and lossy line analysis using classical approach as well as graphical approach (Smith Chart). Voltage and power calculations on transmission lines. Matching techniques

for transmission lines and discrete circuits. Measurements using slotted lines. Offered spring semester only. Prerequisite: EE-159 or EL-100.

EL-220 Fabrication and Troubleshooting (1-4-3)

Covers the basic methods of circuit construction and troubleshooting, including IC fabrication, wire wrapping, soldering, etching and chassis layout. Identification and removal of components; project oriented; may be used as a technical elective.

EL-250 Advanced Analog Circuits (3-2-4)

Amplifier theory. Analysis of circuits in small signal operation, equivalent circuit models, frequency response and Bode plots. Cascaded stages with direct, capacitor and transformer coupling of amplifier stages, loads and signal sources. Analysis of power transfer, efficiency, thermal effects, and distortion of amplifier circuits in large signal operation, amplifier operating classes and push-pull amplifier circuits. Operational amplifier circuits. Oscillators. Prerequisite: EL-200.

EL-255 Introduction to Control and Robotics (2-2-3)

Open and closed loop control systems compared with examples. Conditions, which determine a robot. Permanent magnet, brushless, series and shunt motors. Stepper motors. Reversing circuits and speed control techniques. Gear trains and effect on speed, acceleration and torque. Robot power supplies, robot arm and gripper, degrees of freedom and work envelope. Electrical and mechanical considerations for robots. Frequency response of control system components. Transducers used in robotics. Prerequisite: EL-200.

EL-261 Introduction to Communications Circuits and Systems (2-2-3)

Fundamental concepts in communications. Amplitude and frequency modulation. Waveform and waveform analysis. Spectral content of signal. Circuits used to generate signal. Signal recovery circuits. Introduction to digital modulation and digital waveforms. Students build and test circuits. Offered spring semester. Prerequisite: EL-200.

EL-262 Microprocessors and Microassembly (2-2-3)

Introduction to microprocessors. Architecture. Fetch and execute cycles. Microprocessor instruction set and assembly language programming. Hardware configuration, pin functions and modes of operation of a typical microprocessor. Basic I/O timing, control and memories.

EL-301 Advanced Communications Circuits and Systems (2-2-3)

A continuation in the study and analysis of communications circuits as they apply to communications systems. Circuits such as voltage controlled oscillators, modulators, mixers, phase-locked loops, frequency synthesizers, passive and active filters are analyzed and mathematically discussed. Students build and test their circuits. Prerequisite: EL-261.

EL-307 Noise and Shielding (2-2-3)

Noise types and specifications. Natural, Manmade and Intrinsic noise sources. Thermal, shot, contact, popcorn and avalanche noise as related to electronic devices. Reactive network effects on thermal noise. Signal to noise ratio, noise figure, noise factor, noise temperature and noise bandwidth. Low noise design techniques, measurement techniques for noise factor and noise bandwidth. Ground loops and how to eliminate them. Grounding techniques, shielding, digital circuit radiation, electrostatic discharge and electromagnetic pulse. Prerequisite: EL-261.

EL-400 Special Projects in Technology (credits vary from 1-4)

Guided Study. Project-oriented course. Students are expected to design and build electronic systems in their specialization. Students will produce a final project including a written report and an oral presentation.

EL-452 Automated Test Systems (2-2-3)

Systems design course for automating the testing of electronic circuits and systems in both the engineering and production environments; stresses both hardware design and system software development. Begins with simple PC-based systems assembly for circuit testing as part

of the design process and progresses to the design and development of full-scale systems for testing of large production volumes. Detailed study of the operation of the IEEE STD-488 and its use in test systems assembly. Offered spring semester only.

EN-001 Basic Writing Skills (3-0-3)

Course in the basic skills of written expression, reading comprehension and vocabulary building, which will enable the students to clearly present feelings, ideas and opinions. It includes a review of spelling, punctuation, and word usage plus sentence construction and other basic writing skills. Students will be expected to complete numerous short writing assignments with an emphasis on paragraphs. Study skills are also stressed. This course is required of all students whose test scores and writing samples indicate the need. This course provides three semester credits but does not meet the AAS, BS degree requirements for graduation. Grades given will be P-pass or R-repeat.

EN-101 English Communications I (3-0-3)

This introductory college-level course focuses on effective oral and written communication skills and the development of analytical abilities through various reading and writing assignments. Students must be able to demonstrate competence in writing mechanics, including grammar, structure and logical content development when writing essays, summaries, and short reports. Rhetorical modes include description, contrast, illustration and process demonstration. Oral presentation skills are developed through the delivery of two speeches on related topics.

EN-102 English Communications II (3-0-3)

This sequel to EN-101 involves more sophisticated research, reading, writing, and speaking assignments. Essay topics dealing with cause and effect, classification, persuasion and argumentation/debate are required. Students will demonstrate competence in research and documentation methods by conducting one major research project during the semester.

EN-408 Writing Seminar in Technical Research (3-0-3)

This is a project-oriented course requiring the application of certain basic principles in developing a major research paper in the student's academic area. Each student must identify a technical problem and devise an original research-based approach for solving it. The research paper should provide a thorough literature review and analysis of relevant issues, expert opinions, and the author's recommendations for solving the problem. Emphasis will be placed on the preparation of proposal, summary, abstract and progress reports, as well as on the development of a properly formatted, comprehensive final research paper, complete with supporting documentation. Formal presentations are required. Prerequisites: EN-102 and junior or senior status.

ENI-101 English Communications I - Intensive (3-5-3)

This introductory college-level course focuses on effective oral and written communication skills and the development of analytical abilities through various reading and writing assignments. Students must be able to demonstrate competence in writing mechanics, including grammar, structure and logical content development when writing essays, summaries, and short reports. Rhetorical modes include description, contrast, illustration and process demonstration. Oral presentation skills are developed through the delivery of two speeches on related topics.

ESL-099 Intermediate American English (3-5-3)

This course focuses on developing the skills of non-native speakers in reading, writing, speaking and listening. Special emphasis is placed on vocabulary development, reading strategies, writing grammatical sentences and paragraphs, pronunciation, auditory comprehension and American culture. Students are encouraged to work collaboratively and independently. Class meets up to eight hours per week with additional homework hours. This course

provides three semester credits but does not meet the AAS, BS degree requirements for graduation. Grades given will be P-pass or R-repeat.

ESL-100 Advanced American English (3-5-3)

This second course further develops the skills of non-native speakers. This course may either be a first course for some advanced students or a continuing course for students who started in ESL-099. Emphasis is placed on developing skills in college reading and studying, writing at the level of the paragraph and the short essay, making oral presentations, conversation, and understanding American culture. Preparing the students to enter EN-101 English Communications I is the goal of this course. Class meets up to eight hours. This course provides three semester credits but does not meet the AAS, BS degree requirements for graduation. Grades given will be P-pass or R-repeat.

ET-190 Computer Construction Design (2-8-6)

This is a course in PC constructions and design. Students build a personal computer, install software, learn to use standard hardware and software testing techniques to troubleshoot problems. Different types of internal components such as memory, power supplies, buses, drivers, modems, video cards, network cards and operating systems are discussed, compared and installed by the students.

FS-100 Freshman Seminar (2-0-1)

Throughout this course students will learn skills to better prepare them for the rigors and challenges of college. Students will learn and practice various proven techniques and tools to help them be successful with college level work. Additionally students will explore the personal characteristics necessary for success, learn about the college culture, and develop a support network.

HP-251 Critical Issues in U.S. History I (3-0-3)

This is a survey course designed to give students an overall view of the development of America from the time of its founding up to the Civil War. This course is directed toward discovering the emergence of American political, economic, and social traditions through critical analysis and student research. Prerequisites: EN-101.

HP-252 Critical Issues in U.S. History II (3-0-3)

This is a survey course designed to give students an overall view of the development of America from 1850 until 1920 including through analysis of the Civil War and Reconstruction. The course is directed toward discovering the emergence of American political, economic, and social traditions through critical analysis and student research with the goal of developing an enhanced understanding of America today. Prerequisite: EN-101.

HP-253 Critical Issues in U.S. History III (3-0-3)

This is survey course designed to give students an overall view of the development of America in recent times, from 1920 to the present. The course is directed toward discovering the emergence of American political, economic, and social traditions through critical analysis and student research with the goal of developing an enhanced understanding of America today. Prerequisite: EN-101.

HU-163 Horror Fiction (3-0-3)

This course offers the student a survey of horror fiction beginning with Edgar Allan Poe and ending with present-day writers such as Stephen King. Students read short stories as well as novels. The translation of horror literature into film is also examined. Prerequisite or Corequisite: EN-101.

HU-205 Twenty-first Century Mass Media (3-0-3)

A broad survey of contemporary mass media such as film, radio and television with particular attention paid to emerging media such as the Internet, related technological and commercial infrastructures, as well as the globalization of the new media.

HU-331 Arts and Ideas (3-0-3)

This course enables students to study and appreciate various forms of art, including painting, sculpture, architecture, music, drama, film, and literature through in-class and on-site experiences. The arts are also surveyed from an historical perspective, focusing primarily on eras in Western civilization. This enables students to sense the parallel development of the arts, of philosophy, and of sociopolitical systems and to recognize various ways of viewing reality. Prerequisite: EN-102.

HU-332 Arts and Ideas: Special Topics (3-0-3)

This course has the same general requirements as HU-331, but the orientation of the course will be on alternate traditions to the Western canon. Students will study various forms of art, including painting, sculpture, architecture, music, drama, film, and literature through in-class and on-site experience. Students will gain an appreciation for the arts as they are represented by a particular culture or national identity. The course will concentrate on how the arts are shaped by cultural/social forces that result in distinct philosophies and ideologies. Prerequisite: EN-102.

HU-345 Approaches to Shakespeare (3-0-3)

This course introduces students to the most enduring playwright of the English language. The readings will include at least one play from the genres of history, comedy, tragedy, and romance. Some attention will also be given to the sonnets. The historical context of the literature of Elizabethan England is also explored. Prerequisite: EN-102.

IA-701 Network Devices, Standards and Protocols (3)

Networking and the Internet have introduced us to a new set of devices and protocols that link personal computers to servers, and servers to servers. This course explores all the hardware and software that drives local and Internet computing. Special emphasis on connectivity and throughput is explored.

IA-703 Thin and Fat Client Deployment (3)

Computing has moved from dumb terminals connected to mainframes via RS232 cable to personal computers where the application runs locally and connects to remote data or where applications and data run on a remote server and viewed through a web browser. To examine this shift and to understand the technologies involved, this course focuses on what is now called thin client and fat client computing and the new mechanisms employed to bring legacy computing to the information economy.

IA-705 Comparison of Operating Systems and Web Servers (3)

This course explores the operating software underlying Internet and intranet computing. The similarities and differences between operating systems and web servers are investigated with a view to choosing the best technology and optimization practices. Topics include NT, 2000 Server, Advanced Server, Windows CE, Unix and versions, Linux, IIS, Apache, third party, and public domain.

IA-707 Network Architecture Convergence Using Wireless Technology (3)

This course will investigate the techniques used by successful network engineers to create converged network architectures and provide optimum information access to their users. These techniques include how to select the optimum mix of mobile technologies for performance and cost, and mandatory feature requirements such as expandability, extensibility and security. The course will provide an in-depth study of the current and contemplated mobile technologies that can facilitate network convergence. Students will test these

mobile technologies and their applications via the virtual laboratory concept using OpNet, the most advanced network modeling software currently available. Technical information on specific equipment and software will be provided as instruction supplemental to the textbook, and case studies will be used throughout the course.

IA-709 Comparison of Object-Oriented and Scripting Languages (3)

For the first time in two decades, software developers now have to be proficient in multiple programming languages to deploy thin client or fat client Internet-based applications. Choosing the right set of languages has a dramatic impact on application performance and e-commerce. This course is designed to compare and contrast the various language tools for crafting Internet-based and web-based applications.

IA-712 Design and Practice of Secure Information Networks (3)

This course will examine Internet security concerning two key network design issues: information security and information privacy. Students will learn and understand the technical tools to protect information from external compromise; internal and external threats; various network security technologies and protection systems; application of network design techniques capable of providing information security to local and wide-area networks; general information encryption techniques and protocols including symmetric and asymmetric cryptographic methodologies, one-way hashes and digital signatures, secure sockets layer and Internet Protocol Security (IPSEC). Students will learn to evaluate and create corporate policies regarding privacy and information network security.

IA-713 Multimedia and Web Casting (3)

The Internet and increased bandwidth management technologies has brought us a new venue to communicate with each other in either full duplex, half-duplex, or simplex modalities. Dot-com companies present us with radio stations, on demand streaming audio and video, and live casting of audio and video. To understand the integration, deployment, and optimization of

these technologies, this course compares technical aspects, market positioning, and strengths, and weaknesses of various media products in the market.

IA-715 Identifying and Integrating Component Collaboration Technologies (3)

Software and hardware companies have utilized a component approach to product development in order to address the requirement that Internet and Intranet communications applications operate in a on-demand mode. This is the technical underpinning of the “anywhere, anytime” mantra of the Internet. However, these components do not always integrate easily. This course identifies the various component technologies, standards, and issues with integration to provide on-demand communication capabilities.

IA-717 Invention, Innovation and the Use of Intellectual Property (3)

The Internet’s ability to share ideas between millions of people instantaneously, and the ability of Internet users to improve upon those ideas and share them with everyone on the Internet instantaneously, has challenged intellectual property’s status quo. While lawmakers and intellectual property owners struggle with this challenge, others such as Linux and Napster seek to test the new paradigm. This course will examine the legal and regulatory limits of an e-business’ ability to exploit intellectual value in the new paradigm. In addition, the latest changes to intellectual property law and regulation as a result of Internet commerce will be examined.

IA-719 Capstone Course (3)

The capstone course is in graduate seminar format. Students will integrate the prior course work and personal experiences into a major paper or a project. Students may replace IA-719 with a selected course from another Capitol College MS degree program, based on each student’s personal career goals.

MA-005 Basic Mathematics (3-0-3)

Designed for students needing math skills for MA-110 and MA-114. Topics include operations on signed numbers and fractions, products and factoring, exponents and roots, graphs, and solutions of first degree and quadratic equations. Credits from this course are not applicable toward a degree.

MA-110 College Mathematics with Business Applications (3-0-3)

Algebraic operations on numbers, polynomials, rational expressions, exponents and radicals. Factoring, solving linear and quadratic equations, Cartesian system, exponential and logarithmic functions, finite mathematics, system of linear equations, linear programming, probability and business applications. Prerequisite: Acceptance based on placement test score.

MA-114 Algebra and Trigonometry (4-0-4)

Algebra: basic operations on real and complex numbers, fractions, exponents and radicals. Determinates. Solution of linear, fractional, quadratic and system equations. Trigonometry: definition and identities, angular measurements, solving triangles, vectors, graphs and logarithms. Prerequisite: Acceptance based on placement test score.

MA-124 Discrete Mathematics (3-0-3)

Logic sets and sequences; algorithms, divisibility and matrices; proof, induction and recursion; counting methods and probability; relations, closure and equivalence relations, graphs and trees; Boolean algebra. Prerequisite: MA-110 or MA-114. Fall–evening only; spring–daytime only.

MA-128 Introduction to Statistics (3-0-3)

Probability: definitions, theorems, permutations and combinations. Binomial, hypergeometric, Poisson and normal distributions. Sampling distribution and central limit theorem, estimation and hypothesis testing. Prerequisite: MA-110 or MA-114. Fall–daytime only; spring–evening only.

MA-210 Calculus with Business

Applications (3-0-3)

Limits and the derivatives. Derivatives of constants, power form, products and quotients, chain rule, marginal analysis in business and economics. Second derivative and curve sketching, maxima and minima, compound interests, the derivatives of logarithmic and exponential functions. Method of integration and its business applications. Prerequisite: MA-110.

MA-261 Calculus I (4-0-4)

Lines, circles, ellipses. Functions and limits, differentiation, power rule, higher-order derivatives, product, quotient and chain rules, implicit differentiation, applications. Integration: definite integrals; indeterminate forms; exponential, logarithmic, trigonometric and hyperbolic functions; differentiation and integration, graphing. Prerequisite: MA-114. Fall—daytime only; spring—evening only.

MA-262 Calculus II (4-0-4)

Methods of integration: completing the square, substitution, partial fractions, integration by parts, trigonometric integrals, power series, parametric equations. Partial and directional derivatives. Introduction to multiple integrals. Prerequisite MA-261. Fall-evening only; spring-daytime only.

MA-263 Calculus III (4-0-4)

Multivariable and Vector Calculus. Integrals in two and three dimensional coordinate systems. Cylindrical and spherical coordinates. Vector functions and their derivatives. Gradients, divergence and curl. Stokes theorem, Green's theorem, Gauss's Theorem. Prerequisite: MA-262.

MA-330 Linear Algebra (3-0-3)

Solutions of systems of equations by Gauss elimination, inverse matrix and determinant methods. Matrix properties and operations; elementary matrices. Vector spaces and similarity transformations. Linear transformations. Eigenvalues and eigenvectors. Prerequisite: MA-262.

MA-340 Ordinary Differential Equations

(3-0-3)

Methods of solving first order equations with applications to mechanics and rate problems. Solutions of second order equations by undetermined coefficients and variations of parameters. Applications to circuits. Introduction to systems of equations and operational and numerical methods. Prerequisites: MA-262.

MA-345 Probability and Statistics for Engineers (3-0-3)

Sets and methods of counting. Probability density functions, expected values and correlations. Binomial, Poisson, exponential and normal distribution. Central limit theorem and statistical estimation. Introduction to stochastic processes. Applications to noise and reliability. Prerequisite: MA-262.

MA-350 Complex Variables (3-0-3)

Complex numbers, Cauchy-Riemann equations, trigonometric, exponential functions and logarithms, Cauchy integral theorem and formula, Taylor and Laurent series, residue theorem. Prerequisite: MA-262. Not offered on a regular basis.

MA-355 Numerical Analysis (2-2-3)

Number systems, floating-point arithmetic and error analysis. Taylor, interpolating and minimax polynomials. Integration and differentiation. Methods of solving equations, systems of linear equations. Prerequisites: CT-115 or CS-130 and MA-262.

MA-360 Laplace and Fourier Analysis (3-0-3)

Definition of transform: Laplace transform of algebraic, exponential and trigonometric functions; basic theorems including shifting, initial and final-value theorems; unit-step, periodic and delta functions; methods of inverting transforms; solutions of differential equations by transform methods; applications to network problems; Fourier series and coefficients; expansion of functions in Fourier series; complex Fourier coefficients; Parseval's Theorem; Fourier transform and its properties. Prerequisite: MA-340

MAH-360 Honors Seminar in Laplace and Fourier Analysis (3-0-3)

Definition of the Laplace and Fourier transform. Laplace transform solution of differential equations, applications of the Laplace transform to signal processing, control systems and AM modulation. Fourier series and partial differential equations. Properties and theorems of the Laplace and Fourier transforms. Delta functions, expansion of functions in Fourier series. Inverse transform methods. Prerequisite: MA-340

MBA-610 Statistics for Managers (4)

Develop probabilistic and statistical concepts, methods, and models through the use of real-life data from business. Stresses the role that statistics plays in the managerial decision-making process. Use of statistical software package is emphasized. Practicum: students will be introduced to a statistical software package which is used to complete the course project. Prerequisite: completion of an undergraduate statistics course.

MBA-615 Financial Management (3)

Provides an understanding of the business decision framework in the context of the economic environment in which decisions are made. Covers topics in capital investment policy, financing and capital structures, dividend policy, financial statement analysis, forecasting, and working capital management.

MBA-620 Managerial Accounting (3)

The course examines the use of accounting data in corporate planning and control. The aim is student proficiency in the analysis and design of control systems in order to make decisions that allow management attention to be focused on long-term strategic issues. Covers internal and external auditing systems, financial reporting, and tax planning.

MBA-625 Organizational Behavior (4)

Analyzes the elements of organizational behavior. Theory and research in behavior science are explored. Topics include motivation, group dynamics, power, communication, ethics, conflict resolution, stress management, workforce diversity, and managing change. Cases are analyzed to develop skills in applying theories to common managerial problems. Practicum: business ethics. Being in business today means dealing with a variety of difficult ethical decisions. Students will apply ethical decision-making skills they learn in class to business matters involving conflicts of interest, work requirements, work conditions, and dealing with work-related problems.

MBA-630 Marketing Process and Strategy (3)

Explains key marketing concepts and their significance in domestic and international activities. Analyzes marketing problems and efforts regarding the organization's product and services, pricing activities, channel selection, and promotion strategies. Emphasis is on development and implementation of marketing plans and programs.

MBA-635 Production and Operations Management (3)

This course provides an analysis of the role of operations management in a global environment. Focus is on the interaction of production and operations management with other functional systems in the organization. Incorporates quantitative and qualitative tools to support the decision-making process.

MBA-640 Managerial Economics (3)

Application of relevant economic theory to business problems. Examines general principles that can be applied to the business decision-making process in the presence of risk and uncertainty. Analysis of demand, costs, productivity, pricing policies, market structure, and government policies toward business within various marketing structures. Prerequisite: Completion of an undergraduate economics course.

MBA-645 Negotiation (4)

The course focuses on effective negotiation skills and the importance of these skills to organizational management. In addition to course readings, students will participate in structured exercises. Practicum: students will participate in structured exercises designed to provide them with practical negotiation experience.

MBA-650 Strategic Management (3)

Examines business policy focusing on strategy formulation and implementation in domestic and global environments. Analytical, integrative, and decision-making skills are stressed. Case studies serve as a basis for analysis. This class should be taken as the last core course prior to the capstone project.

MBA-655 Managing the Global Virtual Organization (3)

The 21st Century business entity must utilize a variety of methods to be competitive in the business environment of the New Millennium. This course focuses on the needs of the organization, the organization's culture and how the modern "virtual" organization will communicate with itself, its vendors and its customers. This course focuses on solutions to management and leadership-at-a-distance.

MBA-656 Human Resource Management (3)

Examines the concepts and techniques of human resource planning, evaluation systems, incentive and performance standards, and the impact of labor organizations on management. Human characteristics and their bearing on management are reviewed.

MBA-658 Business Law (3)

This course examines the areas of law critical to the success of managers and entrepreneurs. Topics include contract issues, torts and product liability, business crimes, intellectual property, the law and structure of business organizations, employment, and bankruptcy. These issues are also explored in the context of rapidly changing technology and business practices.

MBA-665 Entrepreneurship (3)

Course focuses on all aspects of starting a new business. Emphasis is on the critical role of recognizing and creating opportunities. Topics include attributes of entrepreneurs and entrepreneurial careers, evaluating opportunities, writing business plans, and financing the venture.

MBA-667 Financing the Entrepreneurial Venture (3)

Financing alternatives are explored: raising seed and growth capital from venture capital, business angels, investment banking, and commercial banking sources. Financial problems unique to the small- and medium-sized firms undergoing rapid growth are identified. Course examines financial management for entrepreneurs over the life of a business project. Prerequisite: MBA-615.

MBA-668 Marketing for Entrepreneurs (3)

Provides an understanding of the principal components of electronic commerce. Topics include Internet business practices, key terminology, legal and ethical challenges, security issues, and the socio-economic and technical impacts of e-commerce on business-to-business and business-to-consumer transactions in the global environment.

MBA-685 Introduction to E-Business (3)

Provides an understanding of the principal components of electronic commerce. Topics include Internet business practices, key terminology, legal and ethical challenges, security issues, and the socio-economic and technical impacts of e-commerce on business-to-business and business-to-consumer transactions in the global environment.

MBA-686 Strategic Management of Business Technology (3)

This course lays the technology foundation for business management in a global environment. Fundamental technology management principles, the role of technology management in the organization, concepts in management-at-a-distance, and business case studies are covered.

MBA-687 E-Business Marketing (3)

Provides an understanding of marketing principles as they apply to e-business. Topics include product/brand awareness, promotion, online catalogs, communication, establishing customer profiles, reaching international markets, and website reporting and data analysis.

MBA-700 Capstone Project (3)

Students complete a research project in the field of major concentration. The research is supervised by a faculty member and must be defended by the student in an oral examination. Internships under the supervision of an academic advisor are an option. This course is to be taken last or next to last as the student applies accumulated knowledge of both core and concentration classes to this effort.

MIT-173 Business Fundamentals (3-0-3)

A general introduction to the business world. The forms of business organization and their legal implications are discussed. Structure, producing a product, marketing, management, finance, accounting and financial control, and government regulation of business are covered. Units on business and professional ethics, securities and the stock market, and international business are included. Prerequisite or Corequisite: EN-001 or EN-101.

MIT-208 Internet and the Law (3-0-3)

Students will examine the numerous legal concepts that arise when establishing websites for personal or business purposes. More particularly, a myriad of legal issues arise when text, photographs, motion pictures and/or sound recordings either previously composed by others or originally created by the student are placed on the Internet. In addition, the legal concepts that arise due to engaging in e-commerce and emailing will also be examined. In doing so, i.e., examining these topics, students will learn basic legal terms, as well as learn to identify and articulate the legal concepts and related issues that arise by their actions of placing text, photographs, motion pictures and/or sound recordings on the Internet. This course of study enables

students to avoid or diminish legal pitfalls encountered when engaging and using the Internet for personal or business gain, for themselves or their present and/or future employers.

MIT-272 Personal Finance (3-0-3)

This course teaches students the fundamentals of personal/family finance. A broad range of financial topics are covered including budgets, savings, the importance of establishing good credit, living within your means, and the true cost of money. Students gain a thorough understanding of personal finance, including hands-on experience with various types of loans, balancing a check book, the financial consequences of different home mortgages, investments and appreciation, depreciation, interest, charity, taxes, and net worth.

MIT-276 Marketing Principles (3-0-3)

The role of marketing and the strategies used by marketing managers to solve problems is the content of this course. Emphasis is placed on the relationship among consumers, business, and government in regard to product, promotion, pricing, and distribution strategies. Industry standards and ethical practice are focal points of the course. Prerequisite: MIT-173 or MIT-278.

MIT-278 Principles of Management (3-0-3)

A survey of modern management and supervision concepts, theory and practice. The roles of the manager, history and development of management theory, and the functional aspects of management are stressed. A particular focus of the course is the relationship between manager and employee. In addition to the text, students will learn about current management practice by reading primary texts in the field, newspapers, journals and magazines, and preparing in-class reports. The class is structured as a seminar course with emphasis on class discussion and collaborative learning. Prerequisite: EN-102.

MIT-283 Managerial Accounting (3-0-3)

This course focuses on budgeting and planning. Emphasis is on the use of accounting information to plan and redirect allocations to support business decisions. Managerial Accounting is designed to follow Principles of accounting. Prerequisite: BA-270.

MIT-289 Small Business Management and Entrepreneurship (3-0-3)

This course provides an overview of the principles and processes of entrepreneurship and small business management. Students learn to identify characteristics of entrepreneurs; identify business innovations; conduct feasibility analyses; develop formal business plans; and finance, organize, and operate a small business.

MIT-362 Information Systems for Managers (3-0-3)

Computer-based information systems and online information systems to increase individual and organizational efficiency and productivity constitute the foundation of this course. Specifically, topics that relate to operational, knowledge worker, management and executive-level computer-based information and online systems will be analyzed and discussed. These topics include information systems for database management, transaction processing, knowledge worker, office automation, management information, decision support, and executive support. The course also includes system security, troubleshooting, and disaster recovery, system upgrading, and client/server issues. Prerequisites: CS-220, MA-210 or MA-261.

MIT-372 Financial Management (3-0-3)

This course is designed to familiarize the student with the principles that guide a firm's financial resources management. The primary philosophy around which this course is organized is wealth maximization and the decision criterion used to achieve such a state. Topics such as capital management, fixed-asset investment, cost of capital, capital structure, long-term finance, mergers, leasing, and multinational finance are covered. In addition, accounting terminology and concepts relevant to financial analysis and decision making will be presented. Prerequisites: BA-270, MA-110 or MA-114.

MIT-375 Human Resource Management (3-0-3)

Human Resource Management is a course with dual purposes. First, the development of employer-employee relations in both the private and public sector in order to facilitate organization productivity. Second, the management of scarce human resources in terms of planning and development techniques in both the private and public sector will be covered. Wage and salary administration, forecasting employment needs, recruiting and selection, evaluation, and training issues will be the focus of discussion and lecture.

MIT-378 Legal Environment of Business (3-0-3)

This course introduces the student to legal reasoning; ethical norms; the legal process and the American legal system; administrative law process and the role of business people in that process; the study of selected areas of public and private law, such as securities regulation, antitrust, labor, product liability, contracts, and consumer and environmental law; and international dimensions of the legal environment of law. The purpose of the course is to establish legal literacy and to develop an understanding of legal dynamics, particularly in the business world. Prerequisites: EN-102, MIT-173 or MIT-278.

MIT-384 Production and Operations Management (3-0-3)

This course stresses the decisions that managers make in increasing productivity in a world economy, and examines the processes by which goods and services are produced. Specifically, identification of customer needs, strategic decisions for meeting customer needs, and tactical decisions for meeting customer needs are discussed. Strategies, techniques and problems in forecasting, statistical quality control, total quality management, inventory management, scheduling, maintenance and reliability, product, process, technology, location, layout, and purchasing are the core topics of this course. Prerequisites: MA-128 and MIT-278.

MIT-386 Organizational Theory and Behavior (3-0-3)

The content of this course represents a synthesis of behavioral sciences providing a broad framework for management. Topics include organization goals, authority and leadership, motivation and morale, work groups and group dynamics, communications, planning and management by objectives, concepts of organizational development, organizational structure and processes, and organizational conflict and change. Prerequisites: MIT-278 and MIT-375.

MIT-458 Senior Project (3-0-3)

This is a capstone course designed to challenge students as they work individually or in small teams on a real-world business/industry problem requiring technical expertise and management acumen. Drawing upon the writing seminar in technical research, students are required to submit a major report outlining and analyzing the problem and proposing management solutions. For MIT and MTs programs. Prerequisites: MIT-483 and EN-408. EN-408 should be taken immediately before this course when possible.

MIT-474 International Business, Financial Markets and Technology (3-0-3)

Drawing upon previous management and business courses, this course studies the nature and scope of international trade and investment, international institutions, the international monetary system and exchange markets, and the cultural factor affecting international business operations and their influence on the principal business functions. The effects of the revolution in electronic technologies on global business are also examined. Case study analysis and a variety of current media are used in this course. Prerequisites: EN-408 and MIT-173, MIT-276 or MIT-278.

MIT-483 Problems Seminar in MIT (3-0-3)

Seminar course centered on the advanced study of management concepts and selected topics with a particular focus on information technology. The students will engage in intensive analysis of management problems which represent long-term strategic significance or current urgency for organizational planning and operations. Prerequisites: MIT-384 and MIT-386.

NS-201 Network Security Protocols and Administration (3-0-3)

This course covers topics related to administration of network security. Topics include a survey of encryption and authentication algorithms; threats to security; operating system security; IP security; user authentication schemes; web security; email security protocols; intrusion detection; viruses; firewalls; Virtual Private Networks; network management and security policies and procedures. Laboratory projects are assigned as part of the homework requirements. Prerequisites: MA-110 and TC-110.

NS-351 Secure Website Administration (3-0-3)

Selecting web server software. Installing, configuring and administering a web server. Installing and configuring applications and database servers. Setting up user accounts. CGI support. Alternatives to CGI such as ASP, Java Servlets, and direct server API programming. Server-side versus client-side software. Website security, including SSL, S-HTTP, certificates and encryption. Using software to optimize, monitor website operations, security flaws and methods to secure various website applications and servers. Projects are assigned as part of the homework requirements. Prerequisite: CT-301 or NS-352. Offered spring semester only. Formerly CT-351.

NS-352 Unix Administration and Security (3-0-3)

Installing Unix/Linux, creating user accounts, controlling directory file access, removing users, shutting system down. File handling utilities (tabular processing, search/modify, split/join, sort/merge, and compress/encrypt), text processing (nroff/troff), software development utilities (yacc, lex, lint, sccs, etc), communication utilities. Unix security, encryption, secure socket layers, disaster recovery plans, password security and security policies. Tuning the system. Learn how to secure insecure services, NFS and protect trust relationships. Projects are assigned as part of the homework requirements. Prerequisite: CT-152. Formerly CT-352.

NS-401 Network Security Theory and Algorithms (3-0-3)

This course covers encryption and authentication algorithms and security protocols in depth. Topics include conventional and public key encryption algorithms, secure hash functions, digital signatures and key management. Implementation of these algorithms in security protocols will be examined in terms of their effectiveness

in delivering security services: confidentiality, message integrity, timeliness, authentications and non-repudiation. Laboratory projects are assigned as part of the homework requirements. Prerequisites: NS-201, NS-352 and senior status. Offered fall semester only. Formerly CS-401.

NS-611 Wireless Security (3)

This course provides students with an in-depth understanding of the security vulnerabilities in the various methods of wireless communications and their corresponding countermeasures. This course also provides training on practical methods for designing, configuring, testing, and maintaining wireless networks appropriate to their organizations' operating requirements. Students will be introduced to wireless network protocols, access modes, portable communications and computing devices, management tools, security solutions, and current industry best practices for managing wireless communications in a secure environment. Case studies will be used throughout the course. Prerequisite: NS-670.

NS-621 Applied Wireless Network Security (3)

This course provides students with practical, real-world experience with wireless network security with an understanding of wireless fundamentals, wireless network threats, tools to test wireless security, and safeguards. Specifically, this course provides a CD-ROM of the most popular hacking, cracking and wireless security network analysis tools and trains students to use them to test and secure wireless networks. This course will train students on current industry best practices for managing wireless networks in a secure environment. Students will be required to purchase and install wireless network equipment to create a home wireless network for the purpose of conducting experiments on various wireless security vulnerabilities and countermeasures. Case studies will be used throughout the course. Prerequisite: NS-670.

NS-670 Network Systems Security Concepts (3)

This course explores security terms, definitions, concepts, and issues that face industries today. This course also will examine how the concept of security, and being secure, integrates into the overall enterprise mission. The importance of user involvement, security training, ethics, trust, and informed management will be explored.

NS-671 Legal Aspects of Computer Security and Information Privacy (3)

This course provides an overview of the legal rights and liabilities associated with operation and use of computers and information. It discusses the key statutes, regulations, treaties, and court cases (in the United States and abroad) that establish legal rights and responsibilities as to computer security and information privacy. The course also helps students to learn how to reduce their risk of potential legal liability for computer security or information privacy failures, and how to enforce their security and privacy rights against other parties. Case studies and lessons learned from information security failures are used throughout the course. Prerequisite: NS-670.

NS-673 Secure Information Transfer and Storage (3)

This course will provide the student a history of cryptography from Caesar's cipher to elliptic-curve cryptography of today. Students will study public and private key algorithms and understand their functionality, and how they work with network protocols. One-way hashes and Digital signatures will be discussed, and used by the students in submissions to the instructor. Public-key infrastructure with certificate authorities and web-of-trust infrastructure methods will be learned. Prerequisite: NS-670.

NS-674 Security Risk Management (3)

This course will begin with an understanding of why risk management evaluations are useful. This class will discuss the general methodologies for security risk assessment and security test and evaluation, including the interviews and documentation research necessary. The student will be provided practical lab exercises to provide a hands-on analysis of a fictitious site. Detection, recovery, and damage control methods in contingency/disaster recovery planning research, documentation and training; methods of and procedures for contingency planning and security policy formulation and enforcement. Prerequisites: NS-670 and NS-682.

NS-675 Computer Forensics and Incident Handling (3)

This course begins with lectures discussing the laws and rights to privacy by individuals and what organizations may or may not do. Online ethics are considered. It then moves on to understanding incident handling and how incident response teams work, managing trouble tickets, and basic analysis of events to determine if an incident has occurred. It concludes with computer forensics issues and practices, and rules of evidence. Prerequisite: NS-670.

NS-677 Malicious Software (3)

This course examines malicious software detection and malicious software defenses including tripwire and signature software techniques. Viruses, worms and Trojan horses, logic bombs, malicious CGI scripts will be discussed. Students will review the anatomy of well-known viruses and worms to understand how they work. Mobile code issues as they apply to web and application technologies and resulting insecurities will be discussed in detail. Students will then review the underlying methodologies used by the anti-virus vendors and freeware offerings to protect electronic assets from harm or other compromise.

NS-679 Vulnerability Mitigation (3)

This “Defense-in-Depth” course provides the student detailed understanding of the need for internal and external Vulnerability Assessment. An integral technical part of any risk management program, this course goes hand-in-hand with the more analytical practices in NS-674. Prerequisite: NS-670.

NS-680 Perimeter Protection (3)

In this “Defense-in-Depth” course, firewalls and network IDS issues will be discussed. A detailed understanding of firewall configuration and rule sets, load balancing, web farms, wireless access, web security issues and network intrusion detection will be explored to prepare the student with the basic tools to coordinate the design and implementation of perimeter network defenses for a high volume, high access site. Prerequisites: NS-670 and NS-682.

NS-682 Internal Protection (3)

This course explores the protections available to the practitioner through host operating systems and third party equipment and software, to protect the inner network from the attacker who has successfully circumvented the perimeter or from the disgruntled insider. Use of methodologies including host-based intrusion detection methods, audit settings and review PC Firewalls, host operating hardening for Linux and Windows 2000, and Virtual LANs will be reviewed.

NS-684 Complementary Security (3)

This class discusses security disciplines that are important to the rounded InfoSec or information warfare professional, such as personnel security, physical security, and operational security. Additionally authentication standards in practice will be discussed as an advent of operational security, including RADIUS, TACACS+, Kerberos, and NTLM2 and biological methods. Prerequisite: NS-670.

OP-301 Fiber-Optic Communications (2-2-3)

Lightwave propagation in fiber optics, including modal conditions, numerical aperture, attenuation and signal distortion in step-index and graded-index fibers. Connectors, splices and analysis of coupling losses. Operating principles and characteristics of optical sources and detectors. Transmitter and receiver circuits for analog and digital communication. Design consideration for practical optical communication links using power budget and rise-time analysis. Discussion and comparison of latest multiplexing and coupling techniques used in optical networks. Prerequisites: EL-261 and MA-261.

PH-201 General Physics I (2-2-3)

Non calculus-based physics intended for credit in engineering technology courses. Use PH-261 for electrical, computer and software engineering courses. Mechanics: units, conversion factors: vector diagrams, translational equilibrium, friction, torque and rotational equilibrium: uniformly accelerated motion, projectiles: Newton’s Law, work energy and power: kinetic and potential energy, Conservation of energy: impulse and momentum. Heat: temperature scales, thermal properties of matter, heat and temperature change, heat and change of phase, physics of heat transfer; applications. Prerequisite: MA-114. Fall–evening only; spring–daytime only.

PH-202 General Physics II (2-2-3)

Non calculus-based physics intended for credit in engineering technology courses. Use PH-262 for electrical, computer and software engineering courses. Light and sound: wave motion, nature of light, reflection and mirrors, refraction, prisms, dispersion lenses; simple harmonic motion; sound transmission, resonance, interference. Doppler effect. Electricity and magnetism: Static electricity, Electric fields, magnetic fields, electric potential, capacitance; electricity in motion; magnetic induction; electromagnetic relations. Alternating currents. Prerequisite: PH-201. Fall–daytime only; spring–evening only.

PH-253 Energy and the Environment (3-0-3)

This course covers fundamentals of energy generation (conversion), current diversity of energy resources from fossil fuels to renewable and alternative sources, and environmental impact of the generation and use of energy. Topics include the availability, economics and environmental consequences of energy generation, distribution and consumption from oil, coal, gas, hydrogen, nuclear, wind, solar, geothermal, hydro, biomass and other alternative sources currently under development, and study by the scientific and engineering communities. Efficient use of energy in the domestic, transportation and industrial sectors will be discussed. In addition to exams and quizzes, students will be required to research selected topics of interest in order to enhance their understanding of the most recent advances in the fields of energy and the environment. This course may be used as a general, technical, science or engineering elective. Prerequisites: PH-201.

PH-261 Engineering Physics I (3-2-4)

Calculus-based physics. Displacement, velocity and acceleration, equations of motion, Newton's laws of motion and their applications, gravitation, work and energy, impulse and momentum, conservation laws, rotational motion, rotational dynamics, equilibrium, elasticity, periodic motion. Prerequisite: MA-261. Corequisite: MA-262. Fall-evening only; spring-daytime only.

PH-262 Engineering Physics II (3-2-4)

Calculus-based physics. A continuation of PH-261. Topics include wave motion, vibration and sound, electricity and magnetism, Coulomb's Law, electrical fields, induction. Prerequisites: PH-261. Corequisite: MA-262. Fall-daytime only; spring-evening only.

PH-263 Engineering Physics III (3-2-4)

Introduction to wave particle duality, quanta photons. Photon energy, work-functions and the photoelectric effect. Photon interactions. Applications to detectors. Prerequisite: PH-262.

PH-281 Thermodynamics (3-0-3)

Energy and the first law: energy transfer mechanisms, control-mass energy balances. Properties and states: thermodynamic states, equations of state, temperature, control-volume analysis. Entropy and the second law: second law, entropy thermodynamic temperature and pressure, second-law analysis for a control-mass and control-volume. Analysis of thermodynamic systems: carnot cycle, rankine cycle and vapor systems, gas-powered systems, direct-energy conversion, thrusting systems. Prerequisites: MA-262 and PH-262. Offered during spring semester only.

SE-301 Software Engineering (2-2-3)

Introduction to software design. Software performance, modularity, portability and reliability. Students apply engineering principles to create software solutions to specified problems. Software testing and CASE tools introduced. Emphasis on UML and object-oriented code. Prerequisite: CS-220. Offered during fall semester only.

SE-321 Human Computer Interaction (2-2-3)

Investigates the relationship between the functionality and usability of computer systems in order to maximize their efficiency by selecting appropriate input output devices and interaction styles. Characteristics of the technology such as keyboards, mice, pens, video, computer speech, and graphical interfaces. Characteristics of the users, such as age, dexterity and experience, derived from more general considerations of human psychology, sociology and anthropology. Projects are assigned as part of the homework requirements. Prerequisite: CS-220. Offered during spring semester only.

SE-458 Senior Design Project (3-0-3)

Student proposes, designs, builds and tests a working software project. Students write a report according to specifications and deliver an oral presentation for review. For SE, SIA, CS, CE and CET programs. CE and CET students should see advisor before registering. Prerequisites: EN-408 and senior standing. EN-408 should be taken immediately before this course when possible.

SM-513 Systems Management and Organization (3)

Basic concepts applied to managing large-scale systems. Perspectives and philosophies of organization, functions and processes of systems management and organizational leadership.

SM-517 Psychological Factors in Systems Management (3)

Human characteristics and their bearing on systems management critical review of theory and research on personality, motivation, values, stress, leadership skills and power bases.

SM-518 Principles of Systems (3)

Systems theories, methodologies, thinking and practice; hard and soft systems approaches; multidisciplinary approaches to organizational problem solving, feedback loops and system change.

SM-563 Managing Information Systems (3)

Identifying organizational situations which can be supported by computerized management information systems (MIS); hands-on experience designing and implementing an automated system.

SM-567 Telecommunications and Computer Networking (3)

Fundamentals of telecommunications, teleprocessing, and computer networks; data communications, distributed processing, interactive systems; telemetric, analysis and design of telecommunications-based information systems.

SM-568 Global Telecommunications Applications (3)

Applications of the fundamental concepts and technologies of global telecommunications. Case studies, software, and student projects will be used to extend the knowledge of theoretical concepts, policies and regulations of global telecommunications into practice. Prerequisite: SM-567.

SM-569 Decision Support and Expert Systems (3)

Role of computers in management decision-making processes; structured, semi-structured, and unstructured decision support and expert systems; knowledge engineering and artificial intelligence to support management control and strategic planning.

SM-586 Global Telecommunications Policies and Regulations (3)

The emerging technologies of satellite based communications, PCS/PCN, HDTV and computer enhanced communications. The policies of international organizations such as INMARSAT and INTELSAT, the deregulation of PTTS, the impact of competition, agreements between multi-national companies, and bilateral and regional trade pacts (NAFTA) on the creation of the information highway.

SM-587 Law and Regulation of E-Commerce (3)

The course is an examination of the complex political, legal and regulatory issues influencing electronic commerce. As the Internet and electronic commerce technologies evolve to make electronic business more popular, lawmakers and regulators seek to adapt traditional methods of business transactions to the new media. These adaptations are frustrated frequently by domestic political pressure not to regulate or tax electronic commerce. As electronic commerce becomes increasingly global, however, complications arise as a result of foreign political pressures in the opposite direction. Thus, in summary, electronic commerce law and regulation are in flux, and changing rapidly to catch up to the impact of the information revolution on the global economy. In recognition thereof, the majority of the course will attempt to make sense of the status quo ante of electronic law and regulation to enable students to conduct business online. The course will conclude with an analysis of the future landscape based upon developments in technology, applications, proposed legislation and administrative rule making.

SM-599 Independent Study (3)

If a student is near program completion (at least 27 hours completed) and a required course is not available, that student may petition the Academic Director to take the course as Directed Research. A maximum of two courses (6 credits) can be taken as Directed Research.

SS-171 Introduction to Psychology (3-0-3)

This course is a fundamental study of human behavior exploring such topics as learning and cognition, memory, intelligence, motivation and emotion, consciousness, personality, and abnormal behavior. A discussion of the scientific character of psychology and the research methodology employed in the discipline will be included. Prerequisite: EN-001 or EN-101.

SS-175 Introduction to Sociology (3-0-3)

A survey of the basic concepts and principles of sociology; culture, human nature, personality and the self, socialization, society, group behavior, norms and deviance, and institutions. The topic of social problems will be addressed by an in-depth examination of a contemporary issue. A primary text and newspapers, magazines and journals will be used in addition to the textbook. Prerequisite: EN-101.

SS-181 Human Development (3-0-3)

This course provides a comprehensive and integrated review of human development from a psychological perspective. The life span model provides a coherent time-line approach for students to study, observe, and reflect on personal life developments as well as how relationships with individuals, families, and communities are integral to our development as humans. Prerequisite or Corequisite: EN-101.

SS-272 Group Dynamics (3-0-3)

Focuses on interpersonal relations and skills development; cross-cultural relations and communication; organizational climate and culture and their relationship to and impact on individuals and groups; personality traits and team building; and characteristics and functions of groups in high-tech organizations both in the United States and abroad. Prerequisites: EN-102 and SS-171 or SS-175 or SS-177 or SS-181.

SS-351 Ethics (3-0-3)

This course is designed to help students improve their ability to make ethical decisions in business. This is done by providing a framework that enables the student to identify, analyze, and resolve ethical issues that arise when making decisions in business. Case analysis is a primary tool of this course.

TC-110 Introduction to Telecommunications (2-2-3)

Telecommunications defined and its effects on our daily lives. Structure of the telecommunications industry. Brief history. Basic terminology. Type of analog and digital communications systems. Data communications and networking. Introduction to local area networks, and wide area networks. Microwave and cellular systems. Satellite systems. Internet and its structure, World Wide Web, websites technology and terminology.

TC-191 Computer Architecture and Networking (2-12-6)

This course starts with a basic introduction to the design and construction of a current model PC including operating systems and some diagnostic software. The course continues into the networking with major emphasis on local network equipment, network software and addressing schemes. Students build, configure, test and troubleshoot PC's and a small network in the laboratory. This material can be used as a basis for studying for both the CompTIA A+ and CompTIA Network+ exams.

TC-212 Data Communications I (2-2-3)

Data communications, transmission codes, PCs in data communications, interface standards, communications media, telephone networks and modems. Introduction to various types of PC hardware components and software. The lab experiments emphasize data communication testing and types modulation. Prerequisites: TC-110. Offered fall semester.

TC-252 Data Communications II (2-2-3)

Networking standards and protocols. LAN, WAN, Enterprise networks, wireless networks, types of network hardware (such as routers, gateways, hubs, bridges) used in local and wide area networking. Setting up, testing, and managing networks. The lab emphasizes configuring PCs for network operation with windows NT 4.0 server and building a LAN. Prerequisites: EL-204 and TC-212. Offered spring semester.

TC-309 Network Simulation and Modeling (2-2-3)

Provides an introduction to probability, statistics, and discrete event simulation. Topics include survey of discrete and continuous simulation languages, elementary queuing theory, discrete and continuous random variable selection applied to computer networks. Information is used to generate random variables to study network traffic, network utilization, response time, throughput, capacity, queuing delay for discrete event simulation models. Emphasis is placed on student design, development, implementation and performance and analysis of simulations of real-world commercial systems. Extensive use and development of simulation software. Prerequisites: MA-128 or MA-345 and MA-261 and TC-110 or equivalent.

TC-400 Special Projects in Telecommunications (0-6-3)

Guided study. This course is a project course in which students research a problem in the field of telecommunications under the guidance of a professor or member of the academic staff. Students are required to produce a final written and oral presentation of their effort. Prerequisite: Permission of instructor.

TC-421 Computer Communications and Protocols (2-2-3)

Advanced data communications theory. Hardware/software and equipment/protocol requirements for various data-link topologies including point-to-point and multipoint networks. Physical interfaces, asynchronous and synchronous; transmission codes; error detection and correction, automatic repeat request (ARQ); flow control and sliding-window protocols. Examples of these concepts used in balanced, unbalanced and contention networks. Prerequisites: TC-309 and background in data communications. Offered during fall semester only.

TC-451 Computer Networking (2-2-3)

Advanced networking theory. Bit and byte-level detail. Comparison of various networking techniques. Digital/data circuit switched networks. Packet-switched networks. Virtual circuits, datagrams, routing traffic and error control. Local area networks, and topology. OSI seven-layered architecture. Detailed discussions of layered access and Internetworking protocols (TCP/IP). Commercial examples of other networks such as ARPAnet, DECnet, Ethernet and SNA are examined. Students use computer network simulation software to set up networks for study. Prerequisites: TC-309 and TC-421. Offered during spring semester only.

TC-497 Cooperative Education (0-0-0)

Offered each semester to eligible, degree-seeking students. These placements provide temporary work experience in telecommunications engineering technology which complements classroom learning. Students are evaluated (satisfactory or unsatisfactory) by the director of Career Services upon completion of each semester. Contact the Office of Career Services for admission to the program. Prerequisite: Completion of the first 32 semester hours (see plan of study) with a minimum CGPA of 2.5.

TM-330 Business Telecommunications
(3-0-3)

This course explores online transactions and practices including voice, data and video communications used in networking systems (Internet, Intranets, extranets, and enterprise networks) that are currently available for business. The final project is a cumulative case study in network technologies and services, network design for quality, security, and manageability. A basic understanding of the telecommunications industry is assumed. Prerequisites: MA-110 and TC-110.

TM-460 Standards and Regulations in Telecommunications (3-0-3)

Regulations and policies affecting the telecommunications industry. FCC, CCITT, ISO organizations and other standard-making bodies. Studies include latest legal rulings and their effects. Prerequisites: MIT-173 and TC-110.

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Fall Semester 2005

Undergraduate Classes

Semester-long Classes

Aug. 16-19 Registration for part-time students
Aug. 17-19 Orientation/registration and residence hall check-in for new students
Aug. 19 Final day of registration
December graduates notify Office of Registration and Records
Aug. 20 Residence hall check-in for returning students
Aug. 22 Classes begin
Last day for 100% refund
First tuition installment due
Library opens
Cooperative education work period begins
Aug. 29 Electronics, physics/chemistry and computer labs open
Tutoring Resource Center opens
Sept. 5 Labor Day - college closed
Sept. 6 Last day to add or audit a course
Last day for 75% refund
Sept. 13 Last day for 50% refund
Sept. 20 Last day for 25% refund
Sept. 26 Second tuition installment due
Sept. 27 Career Day - no classes
Oct. 10-14 Financial Aid Disbursement Week/
Pell Census
Oct. 24 Final tuition installment due
Nov. 1 Last day to drop a course
Registration for spring semester begins for continuing students
Nov. 24-27 Thanksgiving recess - college closed
Nov. 28 Classes resume
Dec. 7 Friday classes meet
Dec. 8 Classes end
Electronics and physics/chemistry labs close
Tutoring Resource Center closes
All library materials are due
Last day for cooperative education work
Dec. 9-15 Final examinations
Dec. 15 Library, computer labs close
Dec. 16 Residence halls close at 5 p.m.
Dec. 21 College closes at 5 p.m. for recess
Dec. 22-Jan. 2
Winter recess - college closed

Fall - Term I

Aug. 19 Final day of registration
Aug. 22 Classes begin
Last day for 100% refund
Aug. 29 Last day for 75% refund
Last day to add or audit a course
Sept. 5 Labor Day - college closed
Sept. 6 Last day for 50% refund
Sept. 13 Last day for 25% refund
Last day to drop a course
Oct. 10-15 Final week of classes
Final examinations

Fall - Term II

Oct. 14 Final day of registration
Oct. 17 Classes begin
Last day for 100% refund
Oct. 24 Last day for 75% refund
Last day to add or audit a course
Oct. 31 Last day for 50% refund
Nov. 7 Last day for 25% refund
Last day to drop a course
Nov. 24-27 Thanksgiving recess - college closed
Dec. 7-13 Final week of classes
Final examinations
Dec. 21 College closes at 5 p.m. for recess
Dec. 22-Jan. 2
Winter recess – college closed

Graduate Classes

Semester-long Classes

Aug. 26	Final day of registration
Aug. 29	Classes begin Last day for 100% refund
Sept. 5	Labor Day - college closed (Online classes will meet asynchronously.)
Sept. 13	Last day for 75% refund Last day to add or audit a course
Sept. 20	Last day for 50% refund
Sept. 27	Last day for 25% refund
Oct. 10-14	Financial Aid Disbursement Week/ Pell Census
Nov. 8	Last day to drop a course
Nov. 24-27	Thanksgiving - college closed (Online classes will meet asynchronously.)
Dec. 10	Last day of classes
Dec. 12-17	Final examinations
Dec. 21	College closes at 5 p.m. for recess
Dec. 22-Jan. 2	Winter recess – college closed

Fall - Term I

Aug. 26	Final day of registration
Aug. 29	Classes begin Last day for 100% refund
Sept. 5	Labor Day - college closed (Online classes will meet asynchronously.)
Sept. 6	Last day for 75% refund Last day to add or audit a course
Sept. 13	Last day for 50% refund
Sept. 20	Last day for 25% refund Last day to drop a course
Oct. 17-22	Final week of classes Final examinations

Fall - Term II

Oct. 21	Final day of registration
Oct. 24	Classes begin Last day for 100% refund
Oct. 31	Last day for 75% refund Last day to add or audit a course
Nov. 7	Last day for 50% refund
Nov. 14	Last day for 25% refund Last day to drop a course
Nov. 24-27	Thanksgiving - college closed (Online classes will meet asynchronously.)
Dec. 12-17	Final week of classes Final examinations
Dec. 21	College closes at 5 p.m. for recess
Dec. 22-Jan. 2	Winter recess – college closed

Spring Semester 2006

Undergraduate Classes

Semester-long Classes

Jan. 5	Residence hall check-in for new students
Jan. 6	Final day of registration Graduation applications due for Class of 2006. Orientation/registration for new students
Jan. 7	Residence hall check-in for returning students
Jan. 9	Classes begin Last day for 100% refund First tuition installment due Library opens Cooperative education work period begins
Jan. 16	Martin Luther King Jr. Day – college closed
Jan. 17	Electronics, physics/chemistry and computer labs open Tutoring Resource Center opens
Jan. 24	Last day to add or audit a course Last day for 75% refund
Jan. 31	Last day for 50% refund
Feb. 7	Last day for 25% refund
Feb. 10	Second tuition installment due
Mar. 5-12	Spring recess (service offices open)
Mar. 6-10	Financial Aid Disbursement Week/ Pell Census
Mar. 10	Final tuition installment due
Mar. 13	Classes resume
Mar. 28	Last day to drop a course Registration for summer session begins
Apr. 10	Pre-registration for fall semester begins for continuing students
May 1	Classes end Electronics and physics/chemistry labs close Tutoring Resource Center closes All library materials are due Last day for cooperative education work
May 2-8	Final examinations
May 8	Library, computer labs close
May 9	Residence halls close at 5 p.m.
May 13	Commencement

Spring – Term I

Jan. 6	Final day of registration
Jan. 9	Classes begin Last day or 100% refund
Jan. 16	Martin Luther King Jr. Day – college closed
Jan. 17	Last day for 75% refund Last day to add or audit a course
Jan. 24	Last day for 50% refund
Jan. 31	Last day for 25% refund Last day to drop a course
Feb. 6-10	Financial Aid Disbursement Week/ Pell Census
Feb. 27-Mar. 4	Final week of classes Final examinations
Mar. 5-12	Spring recess (service offices open)

Spring – Term II

Mar. 10	Final day of registration
Mar. 13	Classes begin Last day for 100% refund
Mar. 20	Last day for 75% refund Last day to add or audit a course
Mar. 27	Last day for 50% refund
Mar. 28	Registration for summer begins
Apr. 3	Last day for 25% refund Last day to drop a course
Apr. 10	Pre-registration for fall semester begins for continuing students
Apr. 10-14	Financial Aid Disbursement Week/ Pell Census
May 1-6	Final week of classes Final examinations
May 13	Commencement

Graduate Classes

Semester-long Classes

Jan. 2	Final day of registration
Jan. 3	Classes begin Last day for 100% refund Graduation applications due for Class of 2006.
Jan. 16	Martin Luther King Jr. Day - college closed (Online classes will meet asynchronously.)
Jan. 17	Last day to add or audit a course Last day for 75% refund
Jan. 24	Last day for 50% refund
Jan. 31	Last day for 25% refund
Feb. 20-24	Financial Aid Disbursement Week/ Pell Census
Mar. 9	Registration for summer session begins
Mar. 14	Last day to drop a course
Apr. 17	Last day of classes
Apr. 18-24	Final examinations
May 13	Commencement

Spring - Term I

Jan. 2	Final day of registration
Jan. 3	Classes begin Last day for 100% refund
Jan. 10	Last day for 75% refund Last day to add or audit a course
Jan. 16	Martin Luther King Jr. Day - college closed (Online classes will meet asynchronously.)
Jan. 17	Last day for 50% refund
Jan. 24	Last day for 25% refund Last day to drop a course
Feb. 21-27	Final week of classes Final examinations

Spring - Term II

Feb. 27	Final day of registration
Feb. 28	Classes begin Last day for 100% refund
Mar. 7	Last day for 75% refund Last day to add or audit a course
Mar. 14	Last day for 50% refund
Mar. 21	Last day for 25% refund Last day to drop a course
Apr. 18-24	Final week of classes Final examinations
May 13	Commencement

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

Summer Session 2006

Undergraduate Classes

Session-long Classes

May 19	Final day of registration August graduates notify Office of Registration and Records Cooperative education work period begins	June 19-23	Financial Aid Disbursement Week/ Pell Census
May 22	Classes begin Last day for 100% refund First tuition installment due Library opens	June 20	Last day for 25% refund for 11-week courses
May 29	Memorial Day - college closed	June 30	Final tuition installment due for 8-week courses
May 30	Last day to add or audit a course Last day for 75% refund for 8-week courses Electronics, physics/chemistry and computer labs open	July 4	Independence Day - college closed
June 2	Second tuition installment due for 8-week courses	July 11	Last day to drop an 11-week course
June 6	Last day for 50% refund for 8-week courses Last day for 75% refund for 11-week courses	July 14	Final tuition installment due for 11-week courses
June 9	Second tuition installment due for 11-week courses	July 19-25	Final examinations for 8-week classes during last class session 8-week classes end
June 13	Last day to drop an 8-week course Last day for 25% refund for 8-week courses Last day for 50% refund for 11-week courses	Aug. 2	Monday classes meet for 11-week classes
		Aug. 3	Tuesday classes meet for 11-week classes Electronics and physics/chemistry labs close All library materials are due
		Aug. 4-10	Final examinations 11-week classes during last class session 11-week classes end

Graduate Classes

Session-long Classes

Apr. 28	Final day of registration
May 1	Classes begin Last day for 100% refund
May 13	Commencement
May 15	Last day to add or audit a course Last day for 75% refund
May 22	Last day for 50% refund
May 29	Memorial Day - college closed (Online classes will meet asynchronously.)
May 30	Last day for 25% refund
June 19-23	Financial Aid Disbursement Week/ Pell Census
July 4	Independence Day - college closed (Online classes will meet asynchronously.)
July 5	Last day to drop a course
Aug. 12	Classes end
Aug. 14-19	Final examinations

Summer - Term I

Apr. 28	Final day of registration
May 1	Classes begin Last day for 100% refund
May 8	Last day for 75% refund Last day to add or audit a course
May 13	Commencement
May 15	Last day for 50% refund
May 22	Last day for 25% refund Last day to drop a course
May 29	Memorial Day - college closed (Online classes will meet asynchronously.)
May 30-June 2	Financial Aid Disbursement Week/ Pell Census
June 19-24	Final week of classes Final examinations

Summer - Term II

June 23	Final day of registration
June 26	Classes begin Last day for 100% refund
July 4	Independence Day - college closed (Online classes will meet asynchronously.)
July 5	Last day for 75% refund Last day to add or audit a course
July 11	Last day for 50% refund
July 18	Last day for 25% refund Last day to drop a course
July 24-28	Financial Aid Disbursement Week/ Pell Census
Aug. 14-19	Final week of classes Final examinations

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

Fall Semester 2006

Undergraduate Classes

Semester-long Classes

Aug. 15-18 Registration for part-time students
Aug. 16-18 Orientation/registration and residence hall check-in for new students
Aug. 18 Final day of registration
December graduates notify Office of Registration and Records
Aug. 19 Residence hall check-in for returning students
Aug. 21 Classes begin
Last day for 100% refund
First tuition installment due
Library opens
Cooperative education work period begins
Aug. 28 Electronics, physics/chemistry and computer labs open
Tutoring Resource Center opens
Sept. 4 Labor Day - college closed
Sept. 5 Last day to add or audit a course
Last day for 75% refund
Sept. 12 Last day for 50% refund
Sept. 19 Last day for 25% refund
Sept. 25 Second tuition installment due
Sept. 26 Career Day - no classes
Oct. 9-13 Financial Aid Disbursement Week/
Pell Census
Oct. 23 Final tuition installment due
Oct. 31 Last day to drop a course
Registration for spring semester begins for continuing students
Nov. 23-26 Thanksgiving recess - college closed
Nov. 27 Classes resume
Dec. 6 Friday classes meet
Dec. 7 Classes end
Electronics and physics/chemistry labs close
Tutoring Resource Center closes
All library materials are due
Last day for cooperative education work
Dec. 8-14 Final examinations
Dec. 14 Library, computer labs close
Dec. 15 Residence halls close at 5 p.m.
Dec. 20 College closes at 5 p.m. for recess
Dec. 21-Jan. 1
Winter recess - college closed

Fall - Term I

Aug. 18 Final day of registration
Aug. 21 Classes begin
Last day for 100% refund
Aug. 28 Last day for 75% refund
Last day to add or audit a course
Sept. 4 Labor Day - college closed
Sept. 5 Last day for 50% refund
Sept. 12 Last day for 25% refund
Last day to drop a course
Sept. 18-22 Financial Aid Disbursement Week/
Pell Census
Oct. 9-14 Final week of classes
Final examinations

Fall - Term II

Oct. 13 Final day of registration
Oct. 16 Classes begin
Last day for 100% refund
Oct. 23 Last day for 75% refund
Last day to add or audit a course
Oct. 30 Last day for 50% refund
Nov. 6 Last day for 25% refund
Last day to drop a course
Nov. 13-17 Financial Aid Disbursement Week/
Pell Census
Nov. 23-26 Thanksgiving recess - college closed
Dec. 6-12 Final week of classes
Final examinations
Dec. 20 College closes at 5 p.m. for recess
Dec. 21-Jan. 1
Winter recess – college closed

Graduate Classes

Semester-long Classes

Aug. 25	Final day of registration
Aug. 28	Classes begin Last day for 100% refund
Sept. 4	Labor Day - college closed (Online classes will meet asynchronously.)
Sept. 12	Last day for 75% refund Last day to add or audit a course
Sept. 19	Last day for 50% refund
Sept. 26	Last day for 25% refund
Oct. 9-13	Financial Aid Disbursement Week/ Pell Census
Nov. 7	Last day to drop a course
Nov. 23-26	Thanksgiving - college closed (Online classes will meet asynchronously.)
Dec. 9	Last day of classes
Dec. 11-16	Final examinations
Dec. 20	College closes at 5 p.m. for recess
Dec. 21-Jan. 1	Winter recess – college closed

Fall - Term I

Aug. 25	Final day of registration
Aug. 28	Classes begin Last day for 100% refund
Sept. 4	Labor Day - college closed (Online classes will meet asynchronously.)
Sept. 5	Last day for 75% refund Last day to add or audit a course
Sept. 12	Last day for 50% refund
Sept. 19	Last day for 25% refund Last day to drop a course
Sept. 25-29	Financial Aid Disbursement Week/ Pell Census
Oct. 16-21	Final week of classes Final examinations

Fall - Term II

Oct. 20	Final day of registration
Oct. 23	Classes begin Last day for 100% refund
Oct. 30	Last day for 75% refund Last day to add or audit a course
Nov. 6	Last day for 50% refund
Nov. 13	Last day for 25% refund Last day to drop a course
Nov. 20-24	Financial Aid Disbursement Week/ Pell Census
Nov. 23-26	Thanksgiving - college closed (Online classes will meet asynchronously.)
Dec. 11-16	Final week of classes Final examinations
Dec. 20	College closes at 5 p.m. for recess
Dec. 21-Jan. 1	Winter recess – college closed

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

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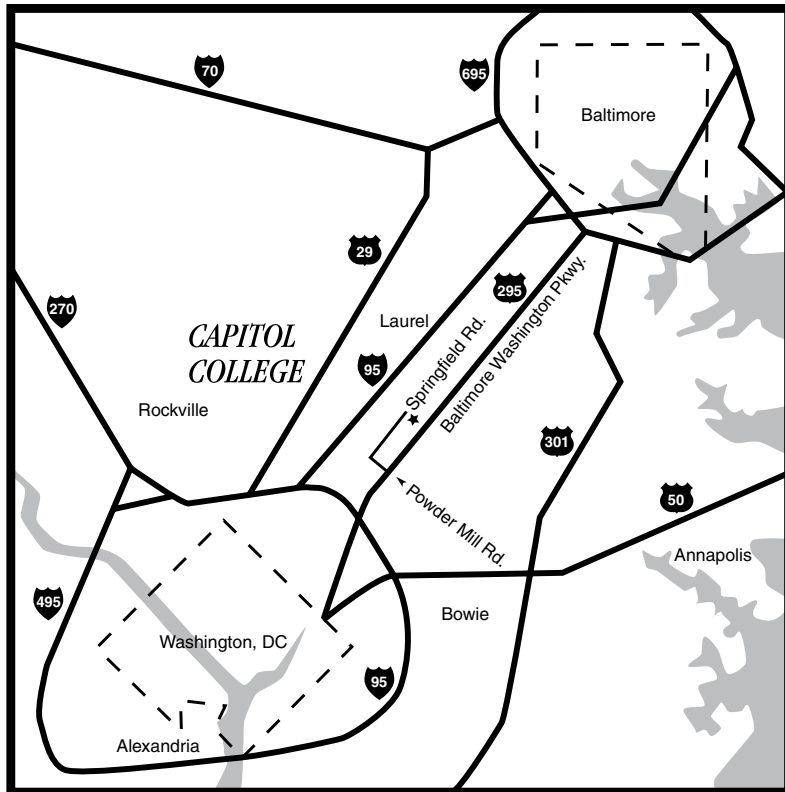
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Directions from Washington, DC and points south of Laurel, MD:

Take the Baltimore/Washington Parkway (Exit 22, north off I-95) to the Beltsville Powder Mill Road exit. Turn left on Powder Mill Road and take the first right onto Springfield Road. Follow Springfield Road one mile. Capitol College is on the right.

Directions from Baltimore, MD and points north of Laurel, MD:

Take the Baltimore/Washington Parkway (Exit 7, south off I-695) to the Beltsville Powder Mill Road exit. Turn right on Powder Mill Road and take the first right onto Springfield Road. Follow Springfield Road one mile. Capitol College is on the right.

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