CAPITOL COLLEGE

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2008–2009 catalog

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CAPITOL COLLEGE

2008–2009 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

Admissions

Washington, DC	301-953-3200
In-State	800-950-1992
Out-of-State	888-522-7486
Fax	301-953-1442

Undergraduate Admissions Email
admissions@capitol-college.edu
Graduate Admissions Email
gradadmit@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 Planning and Assessment
Administration and Human Resources
Advancement and Alumni Services
Career Services*
Office of the Deans
Marketing and Communications

*Evening appointments are available.

The following offices are open as indicated (EST).

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.

Student Life

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

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, information assurance, management of information technology, 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. The BS programs in business administration and management of information technology are fully 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 assurance, information and telecommunications systems management, and Internet engineering. 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 fully 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 baccalaureate degree programs in computer engineering technology, electronics engineering technology and telecommunications engineering technology 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 Student Life 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 the field of engineering, engineering technology, computer sciences, information technology or business 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.

Southern Maryland

Selected courses leading to degrees in electrical engineering and computer science are offered in classrooms at the Southern Maryland Higher Education Center in California, Maryland, near the Patuxent River Naval Air Station.

Mission and Philosophy

Mission

The mission of Capitol College is to provide practical education in engineering, computer science, information technology and business that prepares individuals for professional careers and affords them the opportunity to thrive in a changing world.

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 and advance their careers 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 practices, Capitol College values sustained academic performance.

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.

History

Since its start more than 80 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 in Washington, DC, 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 allowing students to work hands on in laboratories. As radio technology improved, new training programs and courses were quickly added. Following 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 three-year AAS 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 space 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 recognized a need for a permanent home and began searching for a new campus.

In 1980 the college found its home in Laurel, Maryland. Within three years, Capitol purchased the 52-acre former site of the 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 convert from a quarterly academic calendar to a semester system.

Master's degrees were introduced in the 1990s. 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. The opening of the William G. McGowan Academic Center in 2005 marked the next era for the college. The academic center hosts an expanded computer science department and the Space Operations Institute.

Today Capitol is the only independent college in Maryland that specializes in providing a relevant education in engineering, business 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 and Department of Homeland Security have designated Capitol a

National Center of Academic Excellence in Information Assurance Education, and the Institute of Electrical and Electronics Engineers has named Capitol College one of its twelve 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. As it looks to the future, Capitol College remains committed to providing students with a quality education and the relevant experience to excel in a changing world.

Partnerships and Affiliations

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

Anti-Terrorism Advisory Council

Capitol College is a member of the Maryland Anti-Terrorism Advisory Council. The Council works to combat terrorism in Maryland through four components: intelligence and information sharing; aggressive investigation and prosecution; emergency preparedness and response; and training. Membership includes federal, State and local agencies working in law enforcement, public health, and emergency planning and response, as well as the military, intelligence, and private sectors.

Critical Infrastructures and Cyber Protection Center

Capitol College's Critical Infrastructures and Cyber Protection Center (CICPC) offers education, customized training programs and certification examination preparation programs to information technology professionals as required by the DoD Regulation 8570.1M, and conducts community outreach seminars focused on the nation's critical and cyber infrastructures.

The interdisciplinary center is a collaborative effort involving universities and college, state, industrial and business partners, federal agencies and Department of Defense organizations.

The center's mission is built upon education, training and awareness to enhance the security of critical infrastructures as well as physical and cyber infrastructures statewide, regionally and nationally. The center's focus is to:

- educate and train critical infrastructure and cyber assurance professionals at all levels—undergraduate, graduate and postgraduate
- develop and deliver online certification exam preparation an review classes (CISSP, Security+, SSCP, FISMA Review)

- present IT symposia focused on the needs of government, industry and small- to medium-seized businesses
- work with industry and academic partners to enhance the security of the critical, physical and cyber security infrastructures
- establish partnerships with government and industry to promote the above objectives
- develop interstate and intrastate alliances
- engage in capacity building with interstate and intrastate academics institutions
- enhance public awareness of potential threats and ongoing activities of the government and the public/private sectors to mitigate those threats.

CyberWATCH

Capitol College is a member of CyberWATCH, a regional center comprised of 19 partner community colleges as well as 6 colleges and universities established with a National Science Foundation grant in 2005. The CyberWATCH Regional Center was established to address cyber security and information assurance education, including faculty development and workforce shortages.

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.

InfraGard

Capitol College is a member of the Maryland InfraGard Chapter, an organization of businesses, academic institutions, state and local law enforcement agencies and other participants dedicated to sharing information and intelligence to prevent hostile acts against the United States.

Institute of Electrical and Electronics Engineers

Capitol College is one of only a dozen institutions that have entered into the university partnership program with the Institute of Electrical and Electronics Engineers. Individuals who hold full membership in IEEE at the time of registration will receive a 10 percent EPP discount on tuition charges upon verification.

Innovation and Leadership Institute

The Innovation and Leadership Institute offers programs designed to build the technical and social skills of young people and working adults who want to succeed in technology entrepreneurship and leadership careers. ILI sponsors the Capitol President's Forums and speaker series, which bring distinguished speakers and panelists together with students and community members to share insights on innovation, entrepreneurship and leadership.

Future ILI endeavors will continue to deliver seminars, conferences and symposia on innovative topics, and non-credit professional development programs in information assurance, technology management and entrepreneurship.

Other ILI activities include:

- a program of applied innovation and leadership research, resulting in the publication of best practices, organizational trends and successful leadership stories
- providing facilities and college faculty as neutral resources focused on bringing together people with common technology and leadership challenges to solve problems
- programs for minorities and women, two groups that continue to be underrepresented in both technology and business leadership
- outreach programs to high school and community college audiences to increase interest in engineering, technology and business leadership careers

National Defense University

Capitol College has partnered with the National Defense University Information Resource Management College (NDU/IRMC) to advance the professional skills and knowledge of active-duty military, veterans and select Department of Defense employees. This arrangement provides an

opportunity for military and DoD students who have completed selected NDU programs to transfer up to 15 credits in lieu of Capitol College graduate coursework.

National Security Agency and Department of Homeland Security

The National Security Agency and the Department of Homeland Security designated Capitol College as a National Center for Academic Excellence in Information Assurance Education (CAEIAE).

Capitol was recertified as a CAEIAE after a thorough review of its online master's degree-level information assurance curriculum (MSIA), which meets all six of the standards for information assurance education established by the Presidentially appointed Committee for National Security Systems. In 2007, Capitol became one of several institutions nationwide to be certified as meeting all six CNSS standards at the most advanced lever (where applicable) and the only institution to offer the MSIA online with this all-inclusive mapping.

Students successfully completing the requirements for the degree are awarded, in addition to the graduate degree, a federally accepted certificate attesting that they studied the requirements of the six domains. In the process of earning the MSIA students have the opportunity to earn two post-baccalaureate certificates; Network Protection and Security Management. For more information on these certificates see the Post-baccalaureate Certificates section of the college catalog.

Capitol first received the Center of Academic Excellence designation in 2003, one of a select group of universities and colleges to receive this recognition. The program is an outreach effort designed by the federal government to reduce vulnerability in the national information infrastructure by promoting higher education in information assurance, and producing professionals with information assurance expertise.

Partner Institutions

Capitol College has collaborated with nine Maryland colleges to provide transfer/articulation agreements in certain degree fields. These colleges include Anne Arundel Community College, Baltimore City Community College, College of Southern Maryland, Community College of Baltimore County, Hagerstown Community College, Howard Community College, Montgomery Community College, Prince George's Community College and WorWic Community College. These agreements allow students to easily transfer from participating colleges to Capitol College .

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 works closely with NASA to understand the aerospace industry's changing skills requirements.

Full-time students enrolled in one of Capitol's engineering disciplines may apply for NASA and industry sponsored co-op positions. SOI co-op students work in one of our NASA Satellite control centers or development labs to gain practical experience that supplements their academic learning.

SOI is currently responsible for the Tropical Rainforest Measurement Mission (TRMM) satellite that is operated from the Goddard Space Flight Center. SOI is also responsible for redesigning the TRMM ground control system in Capitol's William G. McGowan Academic Center. SOI management is continually searching for new opportunities with NASA and private industry to expand training and learning opportunities for students including: research and development projects; ground system design, build and test; systems security and security management.

Online Learning

Capitol College offers all graduate degrees and certificates entirely online. In addition, 3rd and 4th year courses leading to a BS in Business Administration, Information Assurance, or Management of Information Technology are available online for undergraduate degree completion at-a-distance. Students enrolled in Capitol's online programs meet in virtual classrooms, allowing them to complete courses from a distance. The curricula are 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 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 IV (350 MHz or more) with 128 MB RAM and 40 MB free space
- Microsoft 2000, XP, Vista, Mac OSX, (Windows XP (SP2) recommended)
- Internet Explorer 5.x, 6.x, , Firefox 1.0+ or Netscape 7.x (Internet Explorer 7.x recommended)
- Internet connection with a 56K modem or faster (Broadband connection recommended)
- A full-duplex sound card (SoundBlaster compatible) with headset or microphone and speakers

For technical assistance visit our support website at support.capitol-college.edu or email helpdesk@capitol-college.edu. Phone support is available 9:30 a.m. to 10 p.m. Monday-Thursday and 9:30 a.m. to 5 p.m. Friday and Saturday at 888-522-7486 ext. 2011.

Academic Policies and Procedures

Program Advisors

Degree-seeking students are assigned academic advisors before 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 before the beginning of each semester. Registration dates are listed in the college calendar beginning on page 110 and online. Students must be in good financial standing with the college to be eligible for registration services.

Registration forms can be obtained and submitted at the Laurel campus or online.

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 110 and online.

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. Students receiving VA benefits will not receive payment for audited courses. Any student receiving financial aid contemplating an audit should contact the Office of Financial Aid. 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 110 and online.

Independent Study

Independent study in a course will be granted in only the most extraordinary circumstances. The professor who administers the independent study and the appropriate academic dean must give 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 cumulative GPA of 2.5 to petition for independent study. Students interested in independent studies should consult with the appropriate academic dean 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 online. The academic dean 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. Any student receiving financial aid contemplating a change of degree should see the Office of Financial Aid. Completed documentation must be submitted to the Office of Registration and Records after academic dean approval.

Double Degree Requirements

Undergraduate students who are currently enrolled and want to pursue two degrees (AAS or BS) must have a cumulative GPA 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 academic dean for advisement.

All students declaring a second degree must have academic dean approval and complete the change of degree program form. This may be obtained in the Office of Registration and Records or online.

Course Drop

There are two course drop periods. The first course drop period occurs during the registration period and ends on the last day for a 75% refund. The second course drop period occurs following the period for 75% refund and continues until the date indicated on the academic calendar.

For a course drop that takes place during the first period students are entitled to a percentage refund as outlined in the refund schedule. The course is removed from the student's transcript and no grade is assigned.

A course drop that takes place during the second period results in a mark of W on the student's transcript. A grade of W does not affect students' cumulative GPA. Failure to attend class does not constitute withdrawal from the course and does not eliminate a student's academic or financial responsibilities.

If a student drops all classes for the semester (zero credits), he/she is considered withdrawing from the college and should follow the procedure for withdrawal (as listed in the next section). Deadline dates for dropping a course with or without a W from a course are listed in the college calendar on page 110 and online.

Withdrawal from the College

Students who want to withdraw from the college or are dropping from all classes in a term or semester must complete a withdrawal form from the Office of Student Life or online. Students who interrupt their attendance for less than one academic year and are in good standing with Capitol College at the time of the withdrawal do not need to reapply to the college. Also see "Readmission."

Failure to attend classes does not constitute withdrawal and does not eliminate students' academic or financial responsibilities. Students cannot withdraw during the week of final exams.

Withdrawal from the college may affect financial aid awards. Anyone receiving financial aid or VA benefits must 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 in full or credited to your next term in full.

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 academic dean.

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 dean of business and information management before registering.

Class Attendance

Each professor establishes regulations regarding class attendance at Capitol College. Regular class and laboratory attendance is necessary to achieve maximum success in college work. Students receiving financial aid who do not attend classes will 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 the student submits a signed request form 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 summer semester is composed 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 period. Please refer to the college calendar beginning on page 110 for the summer session schedule.

Graduate 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 student activity fee covers the cost of the original ID card. 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 Student Life.

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.

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 before 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, the Academic Affairs Council must approve changes in grades.

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 available at http://mycapitol.capitol-college.edu within three weeks after the last day of final exams. Students who want to have grades sent to sponsors must complete the proper request form available in the Office of Registration and Records or online. 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 academic dean. If the academic dean and student are unable to resolve the issue in a satisfactory manner, the student may appeal in writing to the vice president for academic affairs. The vice president will review the situation and may seek the advice of the Academic Affairs Council. The decision of the vice president 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 twice in order to improve a grade or replace a W or X. Therefore, a student may take a specific course only three times. Three-

time enrollment is limited to a maximum of five different courses during a student's academic career. The higher grade is used and the lower grade is omitted in computing the CGPA. All grades are recorded on the student's transcript.

Any student who has taken a course required for their degree three times and has not achieved a satisfactory grade will be dismissed from that academic program. The dismissed student is permitted to apply for any other program that does not require that specific course. An academically dismissed student with extenuating circumstances can appeal in writing to the departmental dean for recommendation to the vice president of academic affairs.

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.

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 before registration and may not register for more than 12 semester credits, or no more than four courses.

Graduate students whose cumulative GPA 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 cumulative GPA 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 cumulative GPA 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. Students suspended from the college are not relieved of their financial obligations.

Upon return, students will remain on probation and must achieve and maintain good academic standing or 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, the director of admissions will review his or her file.

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 period will be

automatically dismissed and not permitted to return to Capitol College.

Students dismissed from the college are not relieved of their financial obligations.

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

The Office of Registration and Records 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. Students dismissed from the college are not relieved of their financial obligations.

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 academic dean. Transfer credit approval forms are available at the Office of Registration and Records and online.

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 18 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 to 5 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 in Laurel. Transcripts always reflect the exact semester the degree program is completed. The "date degree conferred" information on transcripts and diplomas is the month and year of the next commencement ceremony, except that the "date degree conferred" for students completing their degree requirements during the summer in August.

Undergraduate 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 students 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 April 15, 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 before the semester of completion. The student's file is reviewed and forwarded to the appropriate academic dean for final approval. Students are subsequently notified of approval and status. Applications for graduation are available in the Office of Registration and Records and online. 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 Requirements

Graduate students must have a minimum 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, available online and in the Office of Records and Registration, 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 April 15, 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 accomplished within seven years. The seven-year period 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, the 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 graduate with the following cumulative GPAs:

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

Graduate students who complete their degree requirements with a 4.0 cumulative GPA 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.

Coursework 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.
- Comply with Residency Requirements as stated on page 16.

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 Registration and Records 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 American Council on Education has approved the course. Students who have taken industrial courses may elect to take validation exams (see below).

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 must do so during their first two semesters of study at the college. The official results of all CLEP exams must be submitted to the Office of Registration and Records no later than two semesters before 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 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 academic dean.

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; they may 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 except in the case of students who participated in selected NDU programs (see page 8 for details). Once the student enrolls at Capitol College, all remaining credits must be completed at Capitol College.

The time limit for degree completion applies to transfer credits. Therefore, any course that was taken more than seven years before the date of graduation will not fulfill graduation requirements.

Tuition and Fees

The following rates are in effect for the 2008-2009 academic year beginning fall 2008 and continuing through summer 2009. Tuition rates are subject to change without notice.

Undergraduate Tuition

Engineering, Computer and Technology Degree Programs	
Full-time tuition, per semester (12-18 credits)	$9,392
Full-time credits above 18 (per credit)	783
Part-time 1-11 credits (per credit)	602
Audited courses (per credit)	602
Business and Management Degree Programs	
On-campus and Online (per credit)	328
Independent Study (per credit)	400
3-credit course	984

Graduate Tuition

Online (per credit)	540
Independent study (per credit)	618
Online 3-credit course	1,620

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	40
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	75
BS, MS, MBA degree programs	150
Validation exam	250
Residence Halls	
Single room (per semester)	2,615
Double room (per semester)	2,257
Room reservation deposit	
Continuing students	50
Security deposit (refundable)*	200

*See Guide to Residence Life to determine eligibility for refund.

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 110 for due dates.)
- Remain in good academic standing. (See page 14 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 24)
- Employer sponsorship (see page 22)

Deferred Payment Plan

The college offers a deferred payment plan that allows undergraduate and graduate 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

Graduate students are required to pay 50 percent of tuition upon registration. If tuition is not paid in full at the start of classes, students will be automatically enrolled in the deferred payment plan and assessed a $30 deferment fee. The remaining balance is due four weeks after classes begin. Nonpayment of tuition could result in cancellation of student registration. Sponsored students must submit tuition assistance paperwork in lieu of the deposit. Students receiving financial aid should contact the Business Office to discuss payment options.

In addition to the cost of tuition, graduate students should expect to pay, on average, $150 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 a sponsor is responsible for only a portion of the tuition, students are required to pay at least 50 percent of their portion at time of registration, and the other 50 percent is due four weeks after the class begins.

If an employer reimburses students, 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 become 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 student 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 a 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 before 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 110 of this catalog or online 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 before 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 before 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 that 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
- Academic Competitiveness Grant
- National SMART Grant
- Federal Supplemental Opportunity Grants for which a Return of funds is required

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 earns the failing grade. The return of financial aid does not relieve the student of financial obligations.

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.

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. Students who meet the priority deadlines enjoy the security of having their award authorization ready in time for class registration.

1. You must complete and submit the Free Application for Federal Student Aid (FAFSA) to apply for federal and state financial aid. Complete the application by March 1 or as far in advance of the starting term as possible. Applying online with FAFSA on the web at www.fafsa.ed.gov is faster and easier than using a paper FAFSA. Be sure to list Capitol College on the FAFSA, School Code 001436 so the FAFSA information will be electronically forwarded to the college. A paper FAFSA can be obtained by requesting one from the Department of Education at 1-800-433-3243.

2. After reviewing your processed FAFSA data, the Office of Financial Aid will send an award letter listing the awards for which you are eligible.

3. 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 based on 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 23.

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 Admissions and is based on prior academic performance and SAT scores. For eligibility requirements, contact the Office of Admissions. All of the scholarships are annually renewable to recipients who maintain at least a 3.0 GPA and complete 24 credits each year.

Richard J. Heiman Scholarship

Awards range from $8,000 to $12,000. Named in memory 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.

Capitol College Scholarship

This scholarship is offered to qualifying community college students who are transferring to Capitol College, with awards ranging from $2,500 to $12,000.

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 March 1 before the academic year they want to be considered for a corporate and foundation scholarship. Applications can be obtained in the Office of Financial Aid. For a complete listing of corporate and foundation scholarships and eligibility criteria, please consult the student handbook or visit the financial aid section online.

Maryland State Scholarships

Maryland students seeking Maryland state scholarships 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 federal government 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.

Academic Competitiveness Grant

These federal grants are awarded to Pell Grant eligible U.S. citizens who have completed a rigorous secondary school program of study. A first-year student , must have completed a secondary school after January 1, 2006 and a second-year student must have completed secondary school after January 1, 2005, and have at least a 3.0 grade point average as of the end of the first academic year of undergraduate study.

National Science and Mathematics Access to Retain Talent Grant (National SMART Grant)

An eligible student must receive a Pell Grant during the same award year; be a U.S. citizen; be a full-time student in his or her third or fourth academic year of undergraduate degree study; be pursuing a major in physical, life, or computer sciences, mathematics, technology, engineering or critical foreign language; and have at least a 3.0 grade point average as of the end of the second award year and continue to maintain a 3.0 grade point average. Eligibility will be reviewed at the beginning of each award period (e.g. semester).

Maryland Part-time Grant

These grants are funded by the state of Maryland and are awarded to Maryland residents enrolled on a half-time basis. Interested students enrolled on a half-time basis must complete the FAFSA. Funds are limited.

The Howard P. Rawlings Educational Excellence Awards

These grant program funds (Guaranteed Access Grant, Educational Assistance Grant, Part-time Grant and Professional Scholarship Program) are awarded to full-time 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 Direct Stafford and graduate PLUS loans for students and the Federal Direct PLUS loan for parents. Students can apply for loans online through the college website.

Federal Perkins Loan

The Federal Carl Perkins Loan program is for undergraduate and graduate students with exceptional financial need. Eligibility is determined by the Department of Education, based on the information provided on the FAFSA. Funds are limited and are not awarded to graduate students.

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 federal government and awarded by the Office of Financial Aid to eligible students who have filed the FAFSA. It is the policy of Capitol College that while class is in session during fall and spring, 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.

Maximum Time Frame to Complete Course of Study

Students must complete their educational program within a period 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.

The 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.

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.

Students may appeal financial aid eligibility termination by submitting a written letter to the Office of Financial Aid. Appeals are reviewed by the College Financial Aid Appeals Committee. Student will be notified in writing of the decision.

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.

Credit Hours

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	28	44	59	73	88	103	117	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

Undergraduate Program Offerings

Bachelor of Science (BS) Degrees

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

Associate in Applied Science (AAS) Degrees

- Computer Engineering Technology
- Electronics Engineering Technology
- Telecommunications Engineering Technology

Programs of Study

Capitol College's programs of study for associate in applied science and bachelor of science degrees are outlined beginning on page 34.

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

Requirements for undergraduate certificates are outlined beginning on page 49.

Non-Degree Certification Preparation Programs

- CISSP
- SSCP
- Security+

Requirements for non-degree certifications are outlined on page 54.

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 online.
2. Enclose a $25 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.) The application fee is waived for those students submitting electronic applications through the college website.
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 based on 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 or 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 academic dean 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.

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 online.
2. Enclose a $25 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.) The application fee is waived for those students submitting electronic applications through the college website.
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 18 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.

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 online.

2. Enclose a $25 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.) The application fee is waived for those students submitting electronic applications through the college website.

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 18 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.

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. Concurrently enrolled 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 may be obtained from the Office of Admissions or online.

2. Enclose a $25 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.) The application fee is waived for those students submitting electronic applications through the college website.

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 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 30 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 graduation requirements 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 online, 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.

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 online.
2. Enclose a $25 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.) The application fee is waived for those students submitting electronic applications through the college website.
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 online.

2. Enclose a $25 nonrefundable admissions processing fee with the application. (Applications remain on file for one academic year.) The application fee is waived for those students submitting electronic applications through the college website.

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 online.

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 academic dean.

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 online.

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.

Astronautical Engineering

The astronautical engineering (AE) program is structured to prepare students for engineering careers in 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 maneuvering and propulsions systems 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 **130/131 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-300	Mathematical Methods	3
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
Technical Courses		18 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

*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 65.

Business Administration

The business administration (BA) curriculum provides students with the knowledge necessary to integrate business, analytical and decision-making skills into 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 private and public sector organizations function effectively and efficiently. Students will gain a clear picture of how the functional business areas work together to achieve organizational success in a global environment. Course content builds a solid business and management foundation to include marketing, accounting, finance, information technology and human resource management. The combined required and elective courses provide students with a breadth of skills important in today's technology-driven business climate.

Course Requirements

Bachelor of Science **120/121 Credits**

Course		*Credits*
Business Administration		33 Credits
BUS-270	Financial Accounting I	3
BUS-271	Financial Accounting II	3
BUS-276	Marketing Principles	3
BUS-280	Macroeconomics	3
BUS-281	Microeconomics	3
BUS-300	Business Communications	3
BUS-378	Legal Environment of Business	3
BUS-384	Production and Operations Management	3
BUS-386	Organizational Theory and Behavior	3
BUS-410	Strategic Management	3
BUS-458	Senior Project	3
Business Fundamentals		18 Credits
BUS-173	Business Fundamentals	3
BUS-278	Principles of Management	3
BUS-283	Managerial Accounting	3
BUS-372	Financial Management	3
BUS-375	Human Resource Management	3
BUS-454	International Business	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		19 Credits
FS-100	Freshman Seminar	1
HU-331 or HU-332	Arts and Ideas	3
SS-351	Ethics	3
Humanities/History/Philosophy electives (2)*		6
Social Sciences electives (2)*		6
Information Technology		15 Credits
CT-101	Computer Applications	3
BUS-250	Database for Managers	3
BUS-301	Project Management	3
BUS-362	Information Systems for Managers	3
SE-321	Human-Computer Interaction	3
Mathematics and Sciences		12 Credits
BUS-400	Research Methods	3
MA-110	Business Math	3
MA-128	Introduction to Statistics	3
Science elective		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 65.

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		16 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
Engineering		36 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
EE-458	Senior Project	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		34 Credits
CH-120	Chemistry	3
MA-124	Discrete Mathematics	3
MA-261	Calculus I	4
MA-262	Calculus II	4
MA-300	Mathematical Methods	3
MA-340	Ordinary Differential Equations	3
MA-345	Probability and Statistics for Engineers	3
PH-261	Engineering Physics I	4
PH-262	Engineering Physics II	4
Physics or science elective		3
Technical Courses		17 Credits
EE-159	Circuit Theory	4
EL-200	Electronic Devices and Circuits	4
EL-204	Digital Electronics	3
EL-262	Microprocessors and Microassembly	3
IAE-201	Intro to Information Assurance	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 65.

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,, 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		35 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
IAE-201	Intro in Information Assurance	3
TC-110	Introduction to Telecommunications	3

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		10 Credits
CH-120	Chemistry	3
MA-262	Calculus II	4
MA-300	Mathematical Methods	3
Technical Courses		39 Credits
CS-418	Operating Systems	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
TC-309	Network Sim & Modeling	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 65.

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, 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 and engineering science		40 Credits
CS-130	Computer Science Fundamentals I	4
CS-220	Database Management	3
CS-225	Intermediate Java Programming	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
EE-304	Digital Design 1	
EE-364	Computer Architecture	3
SE-458	Senior Project	3

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

Humanities and Social Sciences		22 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
MA-300	Mathematical Methods	3
PH-201	General Physics I	3
PH-202	General Physics II	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.

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 65.

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 provide them a practical background. The students are then taught to use increasingly sophisticated design and testing techniques to conduct experiments, and interpret data. As students progress through the program they are taught more theoretical methods of circuit modeling and computer-aided circuit simulation tools that enable 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 — 135/136 Credits

Course		*Credits*
Electrical Engineering		48 Credits
EE-304	Digital Design I	3
EE-309	Circuit Design and Simulation	3
EE-362	Microcontroller System Design	3
EE-406	Signals and Systems	3
EE-409	Network Analysis and Synthesis	3
EE-419	Electrostatics	3
EE-453	Control I	3
EE-456	Digital Signal Processing	3
EE-458	Senior Project	3
EE-459	Electromagnetic Field Theory	3
EE-461	Communications 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		39 Credits
CH-120	Chemistry	3
MA-261	Calculus I	4
MA-262	Calculus II	4
MA-263	Calculus III	4
MA-300	Mathematical Methods	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
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 65.

Electronics Engineering Technology

The electronics engineering technology (EET) program is structured to teach students a 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 and conduct 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 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.

Bachelor of Science 134/135 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		12 Credits
CH-120	Chemistry	3
MA-300	Mathematical Methods	3
MA-340	Ordinary Differential Equations	3
MA-360	Laplace and Fourier Analysis	3
Technical Courses		36 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
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 65.

Information Assurance

The bachelor of science in information assurance (IA) builds upon fundamental concepts in computer science and information technology in order to more effectively tackle the challenges posed to information security professionals. This field continues to expand as the number of security incidents has steadily climbed, and as modern society becomes increasingly more reliant on information in electronic form. Coursework in this program prepares students to enter or advance a career in information security. The curriculum provides a broad foundation of the IA common bodies of knowledge and also prepares graduates to sit for two industry certification exams - the CompTIA Security+ and the Systems Security Certified Professional (SSCP). Graduates of the program are therefore cognizant of established industry standards as well as the more general knowledge, skills and abilities necessary for entry and mid-level careers in the field of information assurance.

Course Requirements

Bachelor of Science 127/129 Credits

Course		*Credits*
Computers and Programming		34 Credits
CS-130	Computer Science Fundamentals I	4
CS-220	Database Management	3
CS-225	Intermediate Java Programming	3
CS-230	Computer Science Fundamentals II	3
CS-356	Web/CGI Programming Using Perl	3
CT-115	Introduction to Programming	3
CT-152	Introduction to Unix	3
CS-320	Database Administration	3
CT-366	Web Programming Language	3
SE-301	Software Engineering	3
SE-458	Senior Project	3

Computer Security		21 Credits
CS-418	Operating Systems Security	3
IAE-201	Introduction to Information Assurance Concepts	3
IAE-301	Comprehensive Computer and Network Security I*	3
IAE-302	Comprehensive Computer and Network Security II*	3
IAE-315	Secure System Administration and Operation*	3
IAE-325	Secure Data Communications and Cryptography*	3
IAE-402	Introduction to Incident Handling and Malicious Code*	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		18-19 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
BUS-208	Internet and the Law	3
BUS-278	Principles of Management	3

Mathematics and Sciences		13 Credits
MA-114	Algebra and Trigonometry	4
MA-124	Discrete Mathematics	3
MA-128	Introduction to Statistics	3
Science elective (1)**		3

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

Choose one of three options below:

Option I – Business & Management		21 credits
BUS-270	Financial Accounting I	3
BUS-300	Business Communications	3
BUS-301	Project Management	3
BUS-372	Financial Management	3
BUS-375	Human Resources Management	3
BUS-384	Production & Operations Mgmt	3
BUS-410	Strategic Management	3

Option II – Advanced Computing		20 Credits
CS-310	Computer Algorithms	3
CS-316	Intelligent Systems	3
CS-325	Advanced Data Structures	3
CS-351	Assembly Language Programming	3
MA-261	Calculus I	4
MA-262	Calculus II	4

Option III – choose any 21 credits of courses from those listed under Option I or Option II. Or, for course(s) not listed, request permission from department.

* Offered online only.
** 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 65.

Management of Information Technology

The management of information technology (MIT) program prepares students for positions in the information technology industry or in businesses that rely on the use of sophisticated information resources 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. 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		30 Credits
BUS-173	Business Fundamentals	3
BUS-270	Financial Accounting I	3
BUS-276	Marketing Principles	3
BUS-278	Principles of Management	3
BUS-280	Macroeconomics	3
BUS-300	Business Communications	3
BUS-372	Financial Management	3
BUS-375	Human Resource Management	3
BUS-378	Legal Environment of Business	3
BUS-454	International Business	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		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		21 Credits
BUS-250	Database for Managers	3
BUS-362	Information Systems for Managers	3
CT-102	Introduction to Internet Applications	3
CT-115	Introduction to Programming	3
CT-152	Introduction to Unix	3
IAE-201	Introduction to Information Assurance Concepts	3
TC-110	Introduction to Telecommunications	3
Management		15 Credits
BUS-301	Project Management	3
BUS-384	Production and Operations Mgmt	3
BUS-386	Organizational Theory and Behavior	3
BUS-410	Strategic Management	3
BUS-458	Senior Project	3
Mathematics and Sciences		12 Credits
MA-110	College Math w/Business Apps	3
MA-128	Introduction to Statistics	3
MA-210	Calculus with Business Applications	3
Science elective (1)*		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 65.

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
CS-225	Intermediate Java Programming	3
IAE 315	Secure System Administration	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
SE-351	Software Testing	3
Software or 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
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-300	Mathematical Methods	3
MA-345	Probability and Statistics for Engineers	3
PH-261	Engineering Physics I	4
PH-262	Engineering Physics II	4
Physics Math or Science elective (2)*		6
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 65.

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		46 Credits
CS-130	Computer Science Fundamentals I	4
CS-220	Database Management	3
CS-230	Computer Science Fundamentals II	3
CS-225	Intermediate Java Programming	3
CS-321	Computer Human Interaction	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-366	Web Programming Languages	3
IAE-201	Intro to Information Assurance	3
IAE-301	Comprehensive Network Security I	3
IAE-302	Comprehensive Network Security 2	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		15 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 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 65.

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
IAE-201	Introduction to Information Assurance Concepts	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.

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
OP-301	Fiber Optic Communications	3
TC-309	Network Simulation	3
TC-359	Network Modeling and Design	3
TC-458	Senior Design Project	3
Technical elective (1)**		3

Option I or II

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

Option I		
Data Communications and Networking		12 Credits
IAE-301	Computer/Ntwk Sec I	3
IAE-302	Computer/Ntwk Sec II	3
IAE-315	Secure Systems Admin	3
300/400 level technical elective		3
Option II		
RF and Satellite		12 Credits
AE-455	Satellite Communications	3
EE-301	Advanced Communications Sys	3
MA-360	Laplace and Fourier Analysis	3
MA-345	Probability and Statistics for Engineers	3
Advanced option (online)	12 credits	
IAE-301	Computer/Ntwk Sec I	3
IAE-302	Computer/Ntwk Sec II	3
IAE-670	Network Systems Sec Concepts	3
IAE-611	Wireless Security	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 65.

Undergraduate 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.

For descriptions of required courses, see courses beginning on page 65.

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. The remaining courses provide 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
IAE-201	Introduction to Information Assurance Concepts	3
IAE-301	Computer/Ntwk Sec I	3
IAE-302	Computer/Ntwk Sec II	3

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)

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

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 webpage 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
CS-225	Intermediate Java Programming	3

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 about product, promotion, pricing and distribution strategies.

Required Courses (choose any four)

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

Personnel Management

(12 credits)

This upper-level certificate provides students with a 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)

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

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
CS-225	Intermediate Java Programming	3

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-351	Software Testing	3

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

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 webpage 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 webpages.

Required Courses

CT-102	Introduction to Internet Applications	3
CS-225	Intermediate Java Programming	3
CS-220	Database Management	3
CS-356	Web/CGI Programming Using Perl	3

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

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 webpages 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-366	Web Programming Languages	3
IAE-315	Secure System Administration	3

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

Non-degree Certification Preparation Programs

CISSP

The CISSP Certification Preparation Program* is uniquely crafted and taught by certified faculty, the same faculty who teach in the 36-credit Master of Science in Information Assurance degree program. The coursework, designed for security professionals preparing to sit for the industry examination, focuses on the 10 Common Body of Knowledge domains as designated by (ISC)². Conducted in 10 four-hour sessions over five consecutive weeks, participants are taught synchronously (live) in an online environment where attendees interact with each other and hear comments and questions from the lecturer and classmates. Classes are recorded as they are taught, allowing attendees the opportunity to replay session(s) after class to enhance mastery of the courseware.

SSCP

The SSCP Certification Preparation Program* is uniquely crafted and taught by certified faculty, the same faculty who teach in the 36-credit Master of Science in Information Assurance degree program. The coursework, designed for security professionals preparing to sit for the industry examination, focuses on the seven Common Body of Knowledge domains as designated by (ISC)². Two laboratory sessions are also included. Conducted over 10 weeks with one four-hour session each week, or over 5 weeks with two four-hour sessions each week, participants are taught synchronously (live) in an online environment where attendees interact with each other and hear comments and questions from the lecturer and classmates. Classes are recorded as they are taught, allowing attendees the opportunity to replay session(s) after class to enhance mastery of the courseware.

Security+

The Security+ Certification Preparation Program* is uniquely crafted and taught by certified faculty, the same faculty who teach in the 36-credit Master of Science in Information Assurance degree program. The coursework, designed for security professionals preparing to sit for the industry examination, focuses on the five Common Body of Knowledge domains as designated by (ISC)². Sample exam review sessions are also included. Conducted over 10 weeks with one four-hour session each week, or over 5 weeks with two four-hour sessions each week, participants are taught synchronously (live) in an online environment where attendees interact with each other and hear comments and questions from the lecturer and classmates. Classes are recorded as they are taught, allowing attendees the opportunity to replay session(s) after class to enhance mastery of the courseware.

* Attendees completing these programs must make their own arrangements for testing with the certifying organization.

Graduate Program Offerings

Master of Business Administration (MBA) Degree

Master of Science (MS) Degrees

- Computer Science
- Electrical Engineering
- Information Assurance
- Information and Telecommunications Systems Management
- Internet Engineering

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 with a combination of 8-week terms and 16-week semesters, alternating between regularly scheduled live lectures and asynchronous learning sessions. However, courses that lead to the M.S. in Electrical Engineering offered exclusively in the 16-week semester format with weekly synchronous lectures.

The majority of courses in each graduate degree program are offered exclusively in accelerated 8-week terms with two class sessions each week. However, some courses in each curriculum have too much material to adequately cover in eight weeks. These courses are offered only in the 16-week semester format with one class session each week.

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. Applications for admission are accepted at any time and are processed and reviewed upon receipt of all necessary documents, on a case-by-case basis. Students whose application packages are incomplete will be classified as decision-pending.

Full Acceptance Status

For full acceptance, students must have:

- A completed undergraduate degree from a regionally accredited institution, with a cumulative GPA of no less than 3.0 on a 4.0 scale; OR
- A minimum GMAT (Graduate Management Admission Test) of 450; OR
- A minimum GRE score (Graduate Record Examination) of 1000.
- Special consideration may be given to applicants who show graduate potential and have a minimum of five years of professional experience.

Decision-Pending Status

Students with incomplete application packages (missing transcripts, missing essay, etc.) are classified as decision-pending until the application package is complete.

Decision-pending students who have been approved to register are limited to two courses of enrollment and are not permitted to enroll in a third class until their application is complete.

Provisional Acceptance Status

Students in this category have not met the 3.0 undergraduate cumulative GPA requirement, but are provided an opportunity to gain full acceptance. Students enrolling as provisional acceptance are limited to three courses of enrollment. To achieve full acceptance, provisional students must maintain a 3.0 cumulative GPA in their first three graduate courses. Upon doing so, these students are automatically converted

to full acceptance status. If a provisional student fails to achieve a minimum 3.0 cumulative GPA after completing three courses, then he or she will be academically dismissed, and will not be permitted to enroll in any further courses.

Requirements for Graduate Online Studies

Students should be familiar with Microsoft Office and be able to upload and download electronic files. Each graduate degree requires specific undergraduate coursework or equivalent skills. These prerequisites are listed below.

Program-Specific Prerequisites

Business Administration (MBA)

Applicants who possess an undergraduate degree in business are waived from completing MBA 600 "Fundamentals of Professional Management." All other MBA students must complete it. MBA-600 provides a broad foundation in accounting, finance, economics and statistics.

Computer Science

- Fluency in object oriented programming (C++ or Java is preferred)
- Fluency in mathematics: Calculus I, Calculus II and Linear Algebra required

Electrical Engineering

- Bachelor of science in electrical engineering is preferred, but not required
- Fluency in mathematics: Calculus I, Calculus II, Linear Algebra, Ordinary and Differential Equations, Laplace and Fourier Analysis, and Probability and Statistics for Engineers required.
- Engineering and Science: upper level courses in Control Theory, Signals and Systems, Communication Theory and Microprocessors required. Students with a BSET or equivalent are likely missing these course pre-requisites, and can gain access to the curriculum by completing the summer bridge course, EE-500 Advanced Signals and Systems.

Information Assurance

Courses are written to accommodate students with backgrounds in computer information systems, computer networking, telecommunications, information technology, network security, or computer science. Students are expected to have a working knowledge of servers, routers, hubs, switches, TCP-IP, etc. CCNS, Security+, SSCP, or CISSP certifications provide an excellent foundation for preparation, but are not required.

Information and Telecommunications Systems Management

- Working knowledge of statistics, economics, finance and accounting
- An undergraduate course in each topic is preferred

Internet Engineering

- Working knowledge of object-oriented programming
- C++ or Java is preferred, but not required

Business Administration

The master of business administration (MBA) program is crafted to support professionals who are seeking credentials necessary to qualify for high level management and leadership positions, both in government and industry. MBA core coursework and projects focus on strengthening your leadership skills, enhancing your understanding of new technologies, expanding your ability to use technology to solve business problems, and understanding the process of innovation. Specialization options include leadership, information assurance, information technology, or technology management law and policy. An additional specialization option emphasizing federal acquisition and DoD contracting is under development. Students complete the 36-39 credit hour program through a combination of accelerated 8-week terms and 16-week semesters.

Course Requirements

Master of Business Administration
36-39 Credits

Course	*Credits*
Required Core Courses	24-27 Credits
MBA-600 Fundamentals of Professional Mgmt	3*
MBA-615 Financial Management	3
MBA-620 Managerial Accounting	3
MBA-625 Organizational Behavior	3
MBA-630 Marketing Process and Strategy	3
MBA-635 Production and Operations Management	3
MBA-640 Managerial Economics	3
MBA-646 Project Management	3
MBA-650 Strategic Management	3
Capstone Course	3 Credits
MBA-700 Capstone Project	3
MBA Electives	9 Credits

Complete a 9-credit specialization option, or with permission, choose any three graduate-level courses from the college inventory.

Specialization options:

Leadership

The leadership specialization combines the best theories with proven strategies to help leaders manage change and achieve organizational objectives.

MBA-657	Transformational Leadership and Innovation	3
MBA-658	Legal, Political, and Ethical Implications for Leadership	3
MBA-659	Leadership and Managing Human Capital	3

Information Assurance

The IA specialization emphasizes information assurance challenges, to include general security issues, protection methodologies, and malicious software defense.

IAE-670	Network Systems Security Concepts	3
IAE-682	Internal Protection	3
IAE-677	Malicious Software	3

Information Technology

The information technology specialization provides a broad overview of I.T. management issues, to include the supporting role of info systems, telecommunications fundamentals, and the role of computers in management.

SM-563	Managing Information Systems	3
SM-567	Business Data Communications and Networking	3
SM-569	Decision Support and Expert Systems	3

Technology Management Law & Policy

This specialization focuses on regulatory compliance, to include transacting and marketing law, cyber security law, and the law that governs the legal use of intellectual property.

IAE-671	Legal Aspects of Computer Security and Information Privacy	3
IE-717	Invention, Innovation, and the Use of Intellectual Property	3
SM-587	Law and Regulation of E-Commerce	3

*MBA-600 is waived for students with a recent undergraduate degree (completed within the past 5 years) in business.

Courses are offered only online in 16-week or 8-week accelerated formats. For descriptions of required courses, see courses beginning on page 65.

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
IAE-670	Network Systems Security Concepts	3
IAE-673	Secure Information Transfer and Storage	3
IAE-677	Malicious Software	3
IAE-682	Internal Protection	3
IAE-684	Complimentary Security	3
IE-705	Comparison of Operating Systems and Web Servers	3
IE-707	Network Architecture Convergence Using Wireless Technology	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 65.

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 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.

The college has developed a bridge course, EE-500 Advanced Signal Processing, to allow students who do not meet the upper-level prerequisites an opportunity to qualify for acceptance. Credit for EE-500 is not awarded toward MSEE degree completion.

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
IAE-621	Applied Wireless Network Security	3
IE-701	Principles of Designing and Engineering Computer Networks	3
IE-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 65.

Information Assurance

The information assurance (IA) degree is structured to meet the needs of government and industry 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. The National Security Agency and Department of Homeland Security have designated Capitol College a National Center of Academic Excellence in Information Assurance Education. The Master of Science in Information Assurance (MSIA) curriculum is mapped to all current federal domains at the most advanced level specified in the standards, and also covers the 10 domains of the CISSP (Certified Information Systems Security Professional), considered the gold-standard of industry IA certification.

Course Requirements

Master of Science **36 Credits**

Course		*Credits*
Required Core Courses		24 Credits
IAE-670	Network Systems Security Concepts	3
IAE-671	Legal Aspects of Computer Security and Information Privacy	3
IAE-673	Secure Information Transfer and Storage	3
IAE-674	Security Risk Management	3
IAE-675	Computer Forensics and Incident Handling	3
IAE-677	Malicious Software	3
IAE-680	Perimeter Protection	3
IAE-682	Internal Protection	3
Elective Courses		12 Credits
Choose any combination of four courses from the following list of electives:		
Information Assurance Electives		
IAE-611	Wireless Security	3
IAE-621	Applied Wireless Network Security	3
IAE-679	Vulnerability Mitigation	3
IAE-684	Complementary Security	3
Network Engineering Electives		
IE-701	Principles of Designing and Engineering Computer Networks	3
IE-707	Network Architecture Convergence Using Wireless Technology	3
IE-712	Design and Practice of Secure Information Networks	3
Law & Policy Electives		
IE-717	Invention, Innovation, and the Use of Intellectual Property	3
MBA-658	Legal, Political, and Ethical Implications for Leadership	3
SM-587	Law and Regulation of E-Commerce	3
Technology Management Electives		
SM-563	Managing Information Systems	3
SM-567	Business Data Communications and Networking	3
SM-569	Decision Support & 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 65.

Information and Telecommunications Systems Management

The online Master of Science in Information & Telecommunications Systems Management (ITSM) degree is structured as an interdisciplinary study of systems management theory and practices. As a technology management oriented degree, the main objective of the program is to develop student 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 to organizational situations. Specialization options include leadership, information assurance, or technology management law and policy. ITSM is a 36-credit degree program. All students complete the 27-credit core and select three remaining elective options of their choice.

Course Requirements

Master of Science **36 Credits**

Course		*Credits*
Required Courses		27 Credits
MBA-625	Organizational Behavior	3
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-525	Statistics for Managers	3
SM-563	Managing Information Systems	3
SM-567	Business Data Communications and Networking	3
SM-569	Decision Support and Expert Systems	3

Specialization Options 9 Credits

Complete a 9-credit specialization option, or with permission, choose any three graduate-level courses from the college inventory.

Leadership

MBA-657	Transformational Leadership and Innovation	3
MBA-658	Legal. Political, and Ethical Implications for Leadership	3
MBA-659	Leadership and Managing Human Capital	3

Information Assurance

IAE-670	Network Systems Security Concepts	3
IAE-677	Malicious Software	3
IAE-682	Internal Protection	3

Technology Management Law & Policy

IAE-671	Legal Aspects of Computer Security	3
IE-717	Invention, Innovation, and the Use of Intellectual Property	3
SM-587	Law and Regulation of E-Commerce	3

Courses are offered only online in 16-week or 8-week accelerated formats. For descriptions of required courses, see courses beginning on page 65.

Internet Engineering

Technological advances are driving the convergence of separate voice, data, message switch and video networks onto a single, network-based platform using TCP/IP technology. To stay competitive, companies must if they want to integrate their existing network or rebuild from scratch. The master of science in Internet engineering degree (IE) prepares students to choose the best option.

The 30-credit graduate program is designed to fill the need for professionals who know how to build new networks or migrate existing ones onto platforms based primarily on TCP/IP technology. Network reliability, survivability and outage-recovery design techniques are also featured in the program, as is the practical use and integration of wireless networks.

Network security is taught and practiced throughout the degree program.

Graduates of this degree program are prepared for career opportunities as senior network administrators, engineers and consultants, chief technical officers and chief information officers.

Many of the courses use OPNET, recognized by network engineers and planners as the most advanced network modeling software in the world. Throughout the MSIE program, students will practice network convergence and migration techniques by accessing the OPNET lab applications remotely from personal computers. OPNET lab exercises also include network design techniques that increase the security, survivability and recoverability of networks.

Course Requirements

Master of Science **30 Credits**

Course		*Credits*
Required Courses		27 Credits
IE-701	Principles of Designing and Engineering Computer Networks	3
IE-703	Thin and Fat Client Deployment	3
IE-705	Comparison of Operating Systems and Web Servers	3
IE-707	Network Architecture Convergence Using Wireless Technology	3
IE-709	Comparison of Object-Oriented and Scripting Languages	3
IE-712	Design and Practice of Secure Information Networks	3
IE-713	Multimedia and Web Casting	3
IE-715	Identifying and Integrating Component Collaboration Technologies	3
IE-717	Invention, Innovation, and the Use of Intellectual Property	3
Capstone Course		3 Credits
IE-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 65.

Post-baccalaureate Certificates

The post-baccalaureate certificates are targeted toward systems managers and information assurance professionals seeking to augment or update their skills and career with graduate-level credentials. 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.

The courses required for these certificates are offered only online in accelerated 8-week terms and 16-week semesters. Consult the schedule of classes for more information.

For descriptions of required courses, see courses beginning on page 65.

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

IE-701	Principles of Designing and Engineering Computer Networks	3
IE-703	Thin- and Fat-Client Deployment	3
IE-705	Comparison of Operating Systems and Web Servers	3
IE-707	Network Architecture Convergence Using Wireless Technology	3

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

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

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	Business Data Communications and Networking	3
SM-569	Decision Support and Expert Systems	3

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

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

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

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

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-100 Introduction to Astronomy (3-0-3)

Provides a general overview of topics in astronomy. Includes the history and evolution of our understanding of the solar system, stars, galaxies and cosmos. Basic processes that explain observations of phenomenon in our universe are discussed. May be used as a science elective. Corequisite: MA-114.

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

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

AE-200 High Vacuum Testing Techniques (3-0-3)

This course covers the basic theory and practical knowledge to use, operate, manage or conduct tests in vacuum chambers. Terminology, equipment and methods of obtaining and maintaining vacuum environments, especially in regards to space simulation testing are covered. Topics will include types of vacuum pumps, system components, vacuum gauges, fittings, flanges, materials and their integration. Basic test procedures and standards. Corequisite: MA-114.

AE-250 Ground Systems Engineering (3-0-3)

Provides an introduction to the components that make up a satellite ground system. Included is the design and analysis of ground system components. Provides an introduction into satellite telemetry, command and control subsystems, as well as the software needed to build and run a ground system. Introduction to CCSDS standards and mission planning. Prerequisite: AE-150. Corequisite: CS-130. Offered spring semester only.

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. Propulsion, Thrusters and maneuvering. Command and control systems. Prerequisite: AE-150 and EL-261 or equivalent background.

AE-351 Orbital Mechanics (3-0-3)

Newton's equations and Keplers laws. Use of spherical coordinates 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)

Junior level course in remote sensing. 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. Prerequisite: PH-263 and AE-311.

AE-400 Special Topics in Astronautical Engineering (1-4 credits)

Research into astronautical engineering subjects. Student primarily works in a guided study format with a mentor. Permission required from the instructor and aca-

demic dean. This course may be repeated with different projects.

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

Advanced Orbital Mechanics: Effects of various gravitational variations of the earth, moon sun and other bodies on orbital equations. Perturbation and modeling of orbital equations. Use of numerical methods and commercial computer modeling to determine orbital paths. Prerequisites: MA-300 and AE-351.

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

Analysis of methods of monitoring maintaining and controlling spacecraft attitude and positioning. Propulsion systems. 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 (3-0-3)

Continuation of EN-408 into project implementation phase of project. Students work on senior project and submit progress reports and design reviews. Presentation of final project with written and oral report required. Prerequisite: EN-408.

BUS-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.

BUS-208 Internet and the Law (3-0-3)

Students will examine the numerous legal concepts that arise when establishing web sites 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, 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.

BUS-250 Database for Managers (3-0-3)

A course that introduces the student to the basic concepts, organization, and implementation models of databases, with an emphasis on the relational model. Projects include hands-on work with entity-relationship and relational models.

BUS-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. Prerequisite: MA-110.

BUS-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. Prerequisite: BUS-270.

BUS-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 is regard to product, promotion, pricing, and distribution strategies. Industry standards and ethical practice are focal points of the course. Prerequisite: BUS-173 or BUS-278.

BUS-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.

BUS-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.

BUS-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. Prerequisite: BUS-280.

BUS-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: BUS-271.

BUS-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.

BUS-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. Prerequisite: EN-102.

BUS-301 Project Management (3-0-3)

This course is a full range introduction to project management. It covers the origins, philosophy, methodology, and involves actual applications and use of tools such as MS Project. Among the concepts covered are project initiation, task definition, scheduling, budgeting, risk analysis, and control. The System Development Cycle is used as a framework to discuss project management in a variety of situations. Illustrative cases are used and project leadership and team building are covered as integral aspects of good project management. Prerequisite: BUS-278 or permission of department chair.

BUS-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.

BUS-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: BUS-270, MA-110 or MA-114.

BUS-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.

BUS-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, BUS-173 or BUS-278.

BUS-384 Productions and Operations Management (3-0-3)

This course stresses the decisions that managers make in increasing productivity in a world economy, productions and operations management 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 BUS-278.

BUS-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: BUS-375 and BUS-278.

BUS-400 Research Methods (3-0-3)

Introduction to business research methods. Through the coursework students will learn elements of the research process including problem definition, literature review, hypothesis development, types of research design and data collection methods; sampling strategies; data analysis and interpretation; qualitative research approaches; ethical issues in research; and the reporting of research results. The course encourages students to step outside the classroom and engage in research projects based on the real life case studies.

BUS-410 Strategic Management (3-0-3)

This senior level course is designed to provide students with a general overview of systematic and continuous planning processes used by management to gain strategic and competitive advantage. The students are exposed to, and practice, the complex interrelationships between strategy, structure, culture, and management. Strategic and tactical strategies are explored using case studies, projects and discussions. Students develop and assess the role of management in strategy formulation, implementation and evaluation. Prerequisites: BUS-372, BUS-384 and BUS-386.

BUS-454 International Business (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-102 and BUS-173, BUS-276 or BUS-278.

BUS-458 Senior Project (3-0-3)

This is a BA/MIT 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 course in technical report writing, students are required to submit a major report outlining and analyzing the problem and proposing management solutions. Prerequisites: BUS-410 and EN-408. EN-408 should be taken immediately before this course when possible.

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.

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, MA-110 or MA-114.

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

An overview of database systems, with an emphasis on relational databases. Terminology, basic analysis and design using Entity-Relationship diagrams and relational schemas. Database implementation, queries and updates using SQL. Client/server and middleware. An overview of database administration, transactions and concurrency. Data warehouses. Projects, which are assigned as homework, are implemented in Oracle. Prerequisite: A grade of C or better in CS-130 or CT-115. You may take this course and CS-130 concurrently.

CS-225 Intermediate Java Programming (3-0-3)

This course provides a deeper look into the Java language with a special emphasis on object oriented design. Topics include multidimensional arrays, inheritance, interfaces, polymorphism, graphical user interfaces, exception handling, I/O, multithreading and Java Database Connectivity (JDBC). Programming projects are assigned as homework. Offered spring semester only. Prerequisite: CS-130. Corequisite: 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, operator overloading, polymorphism, inheritance, exception handling, containers, iterators and the standard template library. Applications involve the use of simple data structures such as stacks, queues, linked lists and binary trees. Recursion, searching and sorting algorithms. The above 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 programming assignments. Prerequisites: CS-230 and MA-124. Offered fall semester only.

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

Fundamental techniques and concepts of intelligent systems: tree searching techniques including recursive searches, minmax algorithms, heuristics, alpha beta pruning. Lisp and Prolog programming languages. Genetic and a priori algorithms. Homework and programming assignments. Prerequisites: CS-230 and MA-124. Offered spring semester only.

CS-320 Database Administration (3-0-3)

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. Formerly CS-221. Prerequisite: CS-220.

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. Prerequisite: 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, hidden fields, cookies, integration of a database into Web page design, manipulation of dynamic data. Introduction to Javascript. Introduction to secure coding. Programming projects, including a group project, are assigned as part of the homework requirements. Perquisites: CT-152 and CS-220.

CS-400 Special Topics in Computer Science (1-4 credits)

Applications of computer science principles or research into computer science subjects. Student primarily works in a guided study format with a mentor. Permission required from the instructor and aca-

demic dean. This course may be repeated with different projects.

CS-405 Introduction to Software Design with Unified Modeling Language UML (3)

Undergraduate version of CS-505. Object Oriented principals and concepts, classes, objects and interfaces; as well as inheritance, encapsulation, polymorphism and aggregation; Students will explore the Unified Process and Object Oriented software life cycle. CASE tools and iterative and incremental software development approaches are also covered. Advantages of Object Oriented design patterns are demonstrated.

CS-407 Database Systems Implementation (3)

This is an undergraduate version of the graduate database course CS-507. 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. Prerequisite CS-220 or equivalent.

CS-418 Operating Systems (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 environment), virtual memory management (segmentation and paging), secure memory management, access control lists and kernal 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, CS-225 and senior status. Offered fall semester only.

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 off 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, Chompsky hierarchy, computability, Turing machines, Church's Thesis, complexity, NP-completeness, intractability. Offered as a full semester course.

CS-505 Software Design with Unified Modeling Language UML (3)

Object Oriented principals and concepts, such as classes, objects and interfaces; as well as inheritance, encapsulation, polymorphism and aggregation; etc. Students will explore the Unified Process and Object Oriented software life cycle. CASE tools and iterative and incremental software development approaches are also covered. Advantages of Object Oriented design patterns are demonstrated.

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 grammers; 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. Offered as a full semester course.

CS-701 Designing Intelligent Systems (3)

The artificial intelligence revival of the late 1980's 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. Offered as a full semester course.

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. You will install Linux on computers in the lab; 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. Eligibility requirements: CT-152 and freshman or sophomore status with a GPA of 3.0 or above.

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. Eligibility requirements: Junior or Senior status with a 3.0 GPA or higher; good programming skills; knowledge of matrices and

some multivariable calculus. 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 pages, designed 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 assignments as part of the homework requirements.

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

An introductory programming course that teaches 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 score.

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. Prerequisites: 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 CT-115 or CS-130 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 Absrtact 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. Prerequisites: CS-220 or equivalent.

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 for degrees where CS-325 is a requirement (CS-325 is no longer offered). Prerequisites: CS-356 or permission of instructor.

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

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

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. Prerequisites: 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. Prerequisite: MA-114. Students who have taken EL-100 and EL-150 may not take this course for credit.

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. Prerequisites: EE-159 or EL-150. Students may not take this course with EL-200 and EL-250. Offered upon request.

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 converters. 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 Kamaugh 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: MA-261 and EL-250 or equivalent.

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. Transformers, transmission of electrical energy, energy distribution, and harmonics. 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. Extension to VHDL design and implementation. Programming CPLDs and FPGAs. Students design and build circuits according to design objectives in two parts: students first design, compile and verify their circuits using timing simulation on computers; students build and test circuits. Final project involves design, assembly, and testing of a PLD-based system. Prerequisite: EE-304. Offered during spring semester only.

EE-359 High Frequency Circuit Design (2-2-3)

Students are taught to design, build and test microwave amplifiers using S-parameters and Smith Charts in conjunction with modern circuit design and simulation software. Both bipolar and field effect transistors are used to design amplifiers to specifications regarding signal flow gain, noise figure and intercept point. Students fabricate microstrip circuit boards using an in-house milling machine and then test the completed amplifiers in the laboratory. Actual and simulated results are presented. Prerequisite: EL-309.

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 multiprocessing. Prerequisite: EE-304. Offered during 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 (1-4-3)

Application of engineering principles of 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 standing. This course may be repeated with different projects.

EE-404 Large-scale Digital Design (3)

Analysis and modeling of digital systems, VLSI, VHDL timing, objects and classes. VHDL-based design processes, concurrent and sequential assignments. Variable modes and operators, entities and architectures, behavioral descriptions. Dataflow, synchronous and asynchronous processes using procedures and subfunctions. Library support packages and generation of test-bench data. Prerequisite: EE-354 and EN-408. Offered during fall semester only.

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

Mathematical models, systems, signal classifications, I/O 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, bandreject, FDNR and gyrator. Impedance evaluation: Foster I, Foster II, Cauer I and Cauer II. Synthesis of Butterwork and Chebyshev filters. Sensitivity of networks to parameter changes. 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. Gauss's Law, Laplace and Poisson's equations. Solutions to static field problems. Ampere's Law, Faraday's Law. Prerequisites: PH-262 and MA-340. Offered during fall 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. Prerequisites: EE-362 and EN-408. Offered spring semester only.

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

Introductory concepts. Feedback control systems and derivation of transfer function. System response for undamped and damped systems. Testing for system stability, coefficient test, Routh-Hurwitz technique. System performance, system types, steady state error and error coefficients calculation. Design of compensator. System bode plots, crossover frequencies, gain and phase margins. The course will stress use of a variety of famous industrial computer-aided control system design software packages. 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. Prerequisites: EN-408 and MA-360. Offered during spring semester only.

EE-458 Senior Design Project (1-4-3)

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. For EE, TET, EET, CE and CET programs. CE and CET students

should see advisor before registering. Prerequisites: EN-408 and senior status.

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

Continuation of EE-419. Time-varying electric and magnetic fields. Boundary conditions. Maxwell's equations and applications to wave phenomena. Relation of classical circuit theory to Maxwell's equations. Prerequisite: EE-419. Offered during spring semester only.

EE-461 Communications Theory (3-0-3)

Fourier analysis. Signal and spectral analysis of AM and FM systems. Noise representations; power spectral density and quadrate decomposition. Signal-to-noise improvement in AM and FM demodulators. Maximum likelihood digital signal detection. Signal space representation of modulated signals. Modulated signal detection and bit-error rate calculations for OOK, BPSK, QPSK, QAM, M-ary PSK and M-ary FSK. Prerequisites: EL-261, MA-360 and MA-345.

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

Introduction to state diagrams and state equations. Solutions of state equations for simple systems. Root-locus techniques, compensation, optimization of stability and error. Multiparameter root locus. Nyquist criterion and time domain design. System performance indexes: ISE, IAE, ITAE and ITSE. Modern control engineering: state variable methods, controllable and observable/estimator, observer design and design of optimal control system. Prerequisites: EE-453, EN-408 and MA-330. Offered during spring semester only.

EE-500 Advanced Signals and Systems (3)

Signal representation using step and impulse functions. Differential equation description of linear systems and classical solutions. Laplace transforms in linear systems. Trigonometric and complex exponential Fourier series. Fourier transforms. Parseval's theorems. State-variable equations and solutions. The sampling theorem and the Nyquist criterion. Using Z-transforms to represent and analyze sampled data systems.

EE-600 Mathematical Modeling and Analysis (3)

A study of Matlab and various assorted toolboxes that are used by engineers to perform analysis in control, signal processing. This course will be offered for students who do not have a strong mathematical background in the use of mathematical toolboxes. 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 obtain software for purchase. Prerequisite: normal undergraduate course in circuit modeling. Offered during fall semester.

EE-606 Signal Processing (3)

Review of Laplace and Z-transforms. Synthesis of networks from transfer functions. Complex variable theory applied to Z-transforms. Filter design techniques from "brick wall" specifications. Mixed-radix FFT's. Spectral estimation. Quantization theory. Introduction to recursive estimation. Prerequisite: normal undergraduate course in signal processing.

EE-607 Electromagnetic Interference and Compatibility (3)

Overview of Electromagnetic Interference with examples. 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. Open Area Test Sites. Anechoic chambers. TEM cells. Reverberation chambers. Frequency and time domain analysis of noise. Grounding issues and their reduction. Bonding electrostatic discharge. Extremely fast transients, Surge EMI filteres cables, connectors and components. Electromagnetic pulses and lightning. Offered during spring semester.

EE-614 Large Scale Integrated Design (3)

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

EE-651 Communications Theory (3)

State-Space Model 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.

EE-652 Microcontroller System Development (3)

The course covers both the hardware and software aspect of the 16-bit Motorola microcontroller. Overview of onboard chip components and available instruction sets with emphasis on the newer and enhanced version. Student is required to develop a hardware application and write and test modular code. Software developmental tools will be employed. High level language compliers will be discussed. Students are required to purchase an evaluation board and deliver a final project for testing.

EE-653 Analog and Digital Control Theory (3)

State Equations, Simulation and Modeling, Controllability and Observability, 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 Criterion, 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. Prerequisites: 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 Federal Acquisition Regulations (the 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 during fall semester.

EE-710 Design 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 semester. Prerequisite: graduate status.

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 semester. Prerequisite: graduate status.

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. Offered during spring semester. Prerequisite: EE-708.

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. Sinusional 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: EL-100 or EE-159.

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

Number systems, including binary, octal and hexadecimal bases. Binary arithmetic. Boolean algebra, Karnaugh map simplification. 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. Prerequisite: EL-100.

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

Study of transmissions 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. Prerequisite: EE-159 or EL-150. Offered spring semester only.

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. Prerequisite: EL-100.

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 applications. Regulators. Oscillators: Wein Bridge, RC phase shift, Hartley, Colpitts, Clapp, Negative resistance and crystal types. Prerequisites: EE-159 or EL-150 and 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. Frequency response of control system components. Introduction to Power electronics. Transducers used in robotics. Prerequisites: EL-150 and 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. Prerequisites: EE-159 or EL-150 and EL-200. Corequisite: MA-261. Offered during spring semester only.

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. Prerequisite: EL-204.

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. Prerequisites: EL-250, EL-261 and MA-261. Offered during fall semester only.

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. Prerequisites: EL-261.

EL-400 Special Projects in Technology (0-6-3)

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. Prerequisite: Instructor permission.

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. Prerequisites: CS-130, EN-301 and EL-362. Offered during 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 may include description, compare/contrast, personal experience, definition, 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. Emphasis is on summarizing and analyzing short articles, including one in-class analysis. Students will demonstrate competence in research and documentation methods by conducting one major research project during the semester. Prerequisite: EN-101.

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 devise an original research-based approach for solving a technical problem. 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 proposals, abstracts, progress reports, and audience analysis, as well as on the development of a properly formatted, comprehensive final research paper, complete with supporting documentation. Formal presentations are required. Prerequisite: EN-102 and Senior status. This course is limited to Seniors preparing for Senior project.

ENI-101 English Communications I - Intensive (4-0-3)

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 may include description, compare/contrast, personal experience, definition, illustration and process demonstration. Oral presentation skills are developed throughout 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 does not meet the AAS or BS requirements for graduation. Grades are pass (P) or repeat (R).

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 per week with additional homework hours. This course does not meet the AAS or BS requirements for graduation. Grades are pass (P) or repeat (R).

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-252 Critical Issues in US History I (3-0-3)

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

HP-253 Critical Issues in US History II (3-0-3)

This is survey course designed to give students an overall view of the United States from after the Civil War until recent history. This course is directed toward the emergence of American political, economic, and social traditions through critical analysis and student research. 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-164 Science Fiction (3-0-3)

This course will examine science fiction from the early 20th century to the present, with some attention to the cultural and historical issues that shaped its development. Special attention will be placed on the role of science in science fiction. The relationships between literature, film and television as expressions of science fiction will also be studied. 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-310 African American Literature (3-0-3)

Introduction to African American Literature will trace the development of an African American literary tradition. Study includes major genres of black writers: plays, poetry and fiction. Prerequisite: EN-102.

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.

IAE-201 Introduction to Information Assurance Concepts (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 detections; 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 or MA-114 and TC-110.

IAE-301 Comprehensive Computer and Network Security I (3-0-3)

Both IAE-301 and its compliment, IAE-302, are designed to provide students with an opportunity to master many of the common and basic IA principles supporting the CompTIA Security+ certification. IAE-301 centers on the administrative portion of network security. Topics include IA terms and background, introduction to organizational IA policy, risk analysis, backups and contingency planning. Also included are Linux history and commands, administrative tools and snap-ins for Windows Professional versions.

IAE-302 Comprehensive Computer and Network Security II (3-0-3)

IAE-302 is the companion course to IAE-301. This course provides students with instruction on IA-related protocols, including IPv4 and IPv6, TCP, UDP, ICMP and other supported protocols related to secure data communications. Intrusion detection and firewall principles supporting the protection of networks in a secure enclave architecture are also discussed. Other topics include infrastructure security requirements, network enclave security architecture, introduction to IEEE 802.11 wireless security history and requirements, principles of authentication and access controls, Kerberos authentication, and the use of LDAP. This course maps to the CompTIA Security+certification. Corequisite: IAE-301.

IAE-315 Secure Systems Administration and Operation (3-0-3)

This course introduces students to security settings and requirements of Linux and Windows-based systems and web services. It also introduces students to Linux and Windows-based web services, including methods of configuring, testing the security and the implementing of countermeasures to discovered vulnerabilities. Topics include Linux security settings, IP tables, securing IIS web service, securing Apache web service, access control methods and host auditing and tools.

IAE-325 Secure Data Communications and Cryptography (3-0-3)

This course follows the protocol education provided in IAE-301 and IAE-302 with a more detailed and practical look at secure transactions and correspondence, as well as protection of data in storage. Within the confines of the ISO-OS1 model, this course discusses data communication with emphasis on the security available at the layers, secure sockets layer, and both wired and wireless security topics. One-way message digests/hashes and encryption history and protocols are explored in-depth. Topics include virtual private networks, one-way hashes/message digests, digital signatures, secret-key and public key cryptography processes and algorithms. Prerequisites: IAE-301 and IAE-302.

IAE-400 Special Topics in Information Assurance (1-4 credits)

Research into information assurance subjects. Student primarily works in a guided study format with a mentor. Permission required from the instructor and academic dean. This course may be repeated with different projects.

IAE-402 Introduction to Incident Handling and Malicious Code (3-0-3)

This course provides a detailed understanding of incidents from attacks of malicious software. This course addresses the history and practice of coding that occurs in viruses, worms, spyware, Trojan horses, remote management back doors and root kits. Students learn preventative measures and tools, and explore how to rid systems of malicious software and prevent re-infection. Recovery processes and backup methods are explored. In addition to covering basic incident handling preparation, response and recovery practices, the course goes into detail regarding malicious software. Prerequisites: IAE-301 and IAE-302.

IAE-611 Wireless Security (3)

Emphasizing wireless computing security, this course addresses how to secure mobile wireless computing devices and applications, and wireless network security as it impacts those portable computing devices. Wireless network security is discussed as it pertains to decisions on which network security works best with particular applications loaded into wireless computing devices. The course covers security of CMRS and PCS (Cellular Mobile Radio Service and Personal Communications Service), CMRS and PCS second, third and fourth generations (2G, 3G and 4G), laptops equipped with Wireless Network Interface Cards (WNICs), Personal Digital Assistants (PDAs), Bluetooth and Zigbe devices, and Radio Frequency Identity (RFID) devices. Retail store security and proximity payment application security are also discussed. Prerequisite: IAE-670. Corequisites: IAE-682 and IAE-677.

IAE-621 Applied Wireless Network Security (3)

This 16-week 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 addresses the most popular hacking, cracking and wireless security network analysis tools and trains students to use them to test and secure wireless networks. Current industry best practices for managing wireless networks in a secure environment are addressed. Students need access to a second computer (for hacking) and 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. Students must have access to a computer net-

work they personally own and can modify. Case studies will be used throughout the course. Prerequisite: IAE-670. Corequisite: IAE-682.

IAE-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.

IAE-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, including the legal and regulatory compliance issues critical for chief information security officers. 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: IAE-670. Corequisites: IAE-682 and IAE-677.

IAE-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: IAE-670. Corequisites: IAE-682 and IAE-677.

IAE-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: Completion of at least 24 credit hours, including IAE-670, IAE-677 and IAE-682. Corequisites: IAE-671, IAE-673 and IAE-675. This course is best completed in the last term.

IAE-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: IAE-670. Corequisites: IAE-682 and IAE-677.

IAE-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. Corequisites: IAE-682 and IAE-677.

IAE-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 IAE-674. Prerequisite: IAE-670. Corequisites: IAE-682 and IAE-677.

IAE-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. Prerequisite: Completion of at least 24 credits hours, including IAE-670, IAE-677 and IAE-682. Corequisites: IAE-671, IAE-673 and IAE-675. This course is best completed in the last term.

IAE-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. Corequisite: IAE-670.

IAE-684 Complementary Security (3)

This class explores the overarching security disciplines that are important for a more rounded understanding of information technology. Discussions in this course will give the correct acumen of personnel security, physical security, and technical operational security as these principles relate and interface with information security principles. Segments in this course will further address unethical behaviors, risk management and mitigation, and security liabilities from the trusted insider threat perspective as related to personnel security. Vetting practices to be considered for positions of trust are also discussed. Authentication standards in practice will discuss such things as operational security, the use of such software as Radius or Kerberos and other control software Prerequisite: IAE-670. Corequisites: IAE-682 and IAE-677.

ICP-080 CISSP Review (0)

Public, government and industry recognition of the CISSP credential makes it a valuable professional certification. Organizations now use it as a factor in obtaining qualified expertise for senior information assurance/information security positions. The Department of Defense Directive, DoD 8570.1, identifies the CISSP credential as fulfilling the requirements in both the Information Assurance Technical (IAT) and Information Assurance Management (IAM) Tracks as a Level 3 certification. Level 3 is the highest level and currently fulfills the certification requirements for all levels and tracks. This course will review the entire CISSP common body of knowledge and provide insight into test taking strategies for the examination.

ICP-082 Security+ (0)

Public, government and industry recognition of the Security+ credential makes it a valuable professional certification. Organizations now use it as a factor in obtaining qualified expertise for information assurance/information security positions. The Department of Defense Directive, DoD 8570.1, identifies the Security+ credential as fulfilling the requirements for Information Assurance Technical (IAT) Level II and Information Assurance Management (IAM) Level I certification. This course will review the entire Security+ Common Body of Knowledge (CBK) and provide insight into test taking strategies for the examination.

ICP-084 SSCP (0)

Public, government and industry recognition of the System Security Certified Practitioner (SSCP) credential makes it a valuable professional certification. Organizations now use it as a factor in obtaining qualified expertise for information assurance/information security positions. The Department of Defense Directive, DoD

8570.1, identifies the SSCP credential as fulfilling the requirements for Information Assurance Technical (IAT) Levels I & II certification. This course will review the entire SSCP Common Body of Knowledge (CBK) and provide insight into test taking strategies for the examination.

IE-701 Principles of Designing and Engineering Computer Networks (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.

IE-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.

IE-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.

IE-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.

IE-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.

IE-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; apply 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); learn to evaluate and create corporate policies regarding privacy and information network security. Students who were required to have IA-711 and advised to take IA-712 in its place, will now take IE-712.

IE-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.

IE-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 "any where, any time" 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.

IE-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's 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.

IE-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.

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 Math 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. 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 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, directional derivatives. Gradients, divergence and curl. Stokes theorem, Green's theorem, Gausses theorem. Prerequisite: MA-262.

MA-300 Mathematical Methods for Engineering (3-0-3)

This course covers the use of standard software tools such as Matlab and other applications to the solution of engineering problems. Solutions to linear equations, numerical methods and applications to integration are covered. Prerequisites: MA-261 and junior status.

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. Prerequisite: 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-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: MA-262 and CT-115 or CS-130.

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 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 and Fourier analysis to signal processing, control systems, filters, and AM modulation. Fourier Series and Partial differential equations. Properties and theorems of the Laplace and Fourier transforms. Delta function, expansion of functions in Fourier Series. Inverse transform methods. Prerequisite: MA-340.

MBA-600 Fundamentals of Professional Management (3)

A bridge course designed for students without a degree in business, this course addresses foundations of accounting, finance, statistics, and economics. Students are provided a broad overview of each of these topics for later application in the MBA program. This course is waived for students with an undergraduate degree in business management or business administration.

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. It is preferable to complete MBA-620 before MBA-615. Prerequisite: MBA-600 or undergraduate degree in business.

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. Prerequisite: MBA-600 or undergraduate degree in business.

MBA-625 Organizational Behavior (3)

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. Conducting 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 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: MBA-600 or undergraduate degree in business.

MBA-646 Project Management (3)

This course provides an overview of the theory and practice of managing a project in an organizational setting. Fundamentals concepts are covered to provide a solid understanding and foundation of managing each phase of the project life cycle, adhering to organizational and cost constraints, setting goals for stakeholders, and utilizing best practices to complete the project on time and within budget.

MBA-650 Strategic Management (3)

Examines the objectives, elements and framework of analysis for strategic management. Case studies will be used as the primary tool of learning and analysis. Working well with others, synthesizing information, applying sound business judgment, and communicating crisply are key skills for this class. This class should be taken as the last core class prior to the capstone project.

MBA-658 Legal, Political and Ethical (3)

As the comprehensive business law course, areas of law critical to the success of managers and entrepreneurs are examined. 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-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.

NT-100 Computer Architecture and Construction (1-4-3)

Basic introduction to the design and construction of a current model PC including operating systems and some diagnostic software. Students build, configure, test and troubleshoot PCs in the laboratory. This material can be used as a basis for studying for both the CompTIA A+ exam.

NT-150 Computer Networking (1-4-3)

This course is a continuation of IT-110 into the networking with major emphasis on local network equipment, network software and addressing schemes. Students build, configure, test and troubleshoot a network in the laboratory. Routers and switches are included. This material can be used as a basis for studying for both the CompTIA Network + exam.

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. Contains labs. 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. Prerequisite: 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. Prerequisite: PH-261. Fall-daytime only; Spring-evening only.

PH-263 Engineering Physics III (3-2-4)

Calculus based. Introduction to light, lens and diffraction. Photon and their interaction with matter. Wave-particle duality. Basic quantum discoveries leading the Bohr atom and atomic spectra. Interaction of electrons and photons with matter with special emphasis on the design of detectors and electronic devices that use quantum effects. Prerequisite PH-262.

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)

Students learn user-centered design of computer systems with the goal of high usability. Emphasis is on designing systems that are efficient, easy-to-use, enjoyable, and effective. Explores the selection of interaction style, hardware, and the use of color, font, text, and images. Explores design implications due to user characteristics, such as age, dexterity, experience, and disabilities. Projects are assigned as part of the homework requirements. Prerequisite: CS-220. Offered during the spring semester only.

SE-351 Software Testing (2-2-3)

Covers the techniques and concepts required for software testing. Topics covered include software testing at the unit, module, subsystem and system levels; coverage criteria, manual and automated techniques for test validation and data generation; formal testing processes and standards (with an emphasis on CMMI); rational tools suite; inspections; black box vs white

box testing; functional testing; and testability analysis. Prerequisites: SE-301 and CS-220 or permission of the instructor.

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 status.

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-525 Statistics for Managers (3)

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. This course is best completed after MBA-640.

SM-563 Managing Information Systems (3)

This course provides the student with an understanding of principles, practices, methodologies, and terminology used in planning, designing, implementing, operating, and managing information systems in government and industry. The overall approach is to examine the technology and roles of information systems within the organization, concentrating on how information systems are designed and how they operate. Knowledge of computer concepts will be provided to students new to this field.

SM-567 Business Data Communications and Networking (3)

This course is designed to develop skills and proficiency in information systems which use telecommunications facilities, computer networks, data communications, distributed processing, interactive systems, and the planning, design and analysis of telecommunications-based information systems for systems management.

SM-569 Decision Support and Expert Systems (3)

This course helps the student understand techniques, terminology, principles, concepts and methodologies for using computers in decision making in business, aerospace, and government. The overall approach examines the nature and process of decision making, using a framework of Decision Support Systems (DSS) and Expert Systems, and explores specific computer applications in a variety of management decision situations applying learned techniques in a project.

SM-587 Law and Regulation of E-Commerce (3)

The course is an examination of the complex political, legal and regulatory compliance issues influencing electronic commerce. As electronic commerce becomes increasingly global, complications arise as a result of political pressures, both foreign and domestic. As a result, 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. This course will attempt to make sense of the status quo ante of electronic law and regulation to enable students to conduct business online. The future landscape, based upon developments in technology, applications, proposed legislation and administrative rule making, is discussed.

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. Perquisite or corequisite: 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 for this unit 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 lifespan 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. Perquisite 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. Prerequisite: EN-102.

SS-351 Ethics (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, website technology and terminology.

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. An introduction to the use of simulation software is included. Prerequisites: MA-128 or MA-345 and MA-261 and TC-110 or equivalent.

TC-359 Networking Modeling and Design (2-2-3)

A continuation of TC-309 where students are expected to design model, simulate and analyze networks to meet real-world situations. Networks are designed and tested for traffic handling capabilities and robustness. Alternate network solutions are proposed and tested. Virtual simulation software is used throughout course. Prerequisite: TC-309.

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: Instructor permission.

TC-401 Advanced Topics in Telecommunications (2-2-3)

Layered protocol models. Ethernet, TCP/IP with mathematical throughput analysis. SMTP, POP, HTTP analyzed using Etherial. Number theory, encryption and authentication. The RSA algorithm. Routing algorithms (RIP, OSPF). Optimal capacity assignment. Laboratory exercises performed using actual constructed networks (Windows/Linux) and virtual networks (in VMWare). Prerequisites: CT-152 and MA-128 or equivalent.

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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Calendar

Fall Semester 2008

Undergraduate Classes

Semester-long Classes

Aug. 11-15	Registration for part-time students
Aug. 13-15	Orientation/registration and residence hall check-in for new students
Aug. 15	Final day of registration
	December graduates notify Office of Registration and Records
Aug. 16	Residence hall check-in for returning students
Aug. 18	Classes begin
	Last day for 100% refund
	First tuition installment due
	Library opens
	Co-op work period begins
Aug. 25	Electronics, physics/chemistry and computer labs open
	Tutoring Resource Center opens
Sept. 1	Labor Day – college closed
Sept. 2	Last day for 75% refund
	Last day to add or audit a course
	Last day to drop course without W
Sept. 8	Last day for 50% refund
Sept. 15	Last day for 25% refund
	Second tuition installment due
Sept. 16-22	Financial Aid Disbursement Week/ Pell Census
Sept. 23	Career Day – no classes
Oct. 13	Final tuition installment due
Oct. 22	Last day to drop course with W
	Registration for spring semester begins for continuing students
Nov. 26	Classes canceled – college closes at 5 p.m.
Nov. 27-30	Thanksgiving recess – college closed
Dec. 1	Classes resume
Dec. 5	Classes end
	Electronics and physics/chemistry labs close
	Tutoring Resource Center closes
	All library materials are due
	Last day for co-op work
	Last day to withdraw
Dec. 8-12	Final examinations
Dec. 12	Library, computer labs close
	Residence halls close at 5 p.m.
Dec. 19	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.

Graduate Classes

Semester-long Classes

Aug. 22	Final day of registration
Aug. 25	Classes begin
	Last day for 100% refund
	First 50% tuition installment due
Sept. 1	Labor Day – college closed (Online classes will meet asynchronously.)
Sept. 8	Last day for 75% refund
	Last day to add or audit a course
	Last day to drop course without W
Sept. 15	Last day for 50% refund
Sept. 22	Last day for 25% refund
	Final 50% tuition installment due
Nov. 3	Last day to drop course with W
Nov. 26	College closes at 5 p.m. (Online classes will meet asynchronously.)
Nov. 27-30	Thanksgiving – college closed (Online classes will meet asynchronously.)
Dec. 5	Last day to withdraw
Dec. 12	Classes end
Dec. 19	College closes at 5 p.m. for recess
Dec. 21-Jan. 1	Winter recess – college closed

Fall – Term I

Aug. 22	Final day of registration
Aug. 25	Classes begin
	Last day for 100% refund
	First 50% tuition installment due
Sept. 1	Labor Day – college closed (Online classes will meet asynchronously.)
Sept. 2	Last day for 75% refund
	Last day to add or audit a course
	Last day to drop course without W
Sept. 8	Last day for 50% refund
Sept. 15	Last day for 25% refund
	Last day to drop course with W
Sept. 22	Final 50% tuition installment due
Oct 10	Last day to withdraw
Oct. 17	Classes end

Fall – Term II

Oct. 17	Final day of registration
Oct. 20	Classes begin
	Last day for 100% refund
	First 50% tuition installment due
Oct. 27	Last day for 75% refund
	Last day to add or audit a course
	Last day to drop course without W
Nov. 3	Last day for 50% refund
Nov. 10	Last day for 25% refund
	Last day to drop course with W
Nov. 17	Final 50% tuition installment due
Nov. 26	College closes at 5 p.m. (Online classes will meet asynchronously.)
Nov. 27-30	Thanksgiving – college closed (Online classes will meet asynchronously.)
Dec. 5	Last day to withdraw
Dec. 12	Classes end
Dec. 19	College closes at 5 p.m. for recess
Dec. 22-Jan. 1	Winter recess – college closed

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Spring Semester 2009

Undergraduate Classes

Semester-long Classes

Jan. 8	Residence hall check-in for new students
Jan. 9	Final day of registration
	Graduation applications due for Class of 2009
	Orientation/registration for new students
Jan. 10	Residence hall check-in for returning students
Jan. 12	Classes begin
	Last day for 100% refund
	First tuition installment due
	Library opens
	Co-op work period begins
Jan. 19	Martin Luther King Jr. Day – college closed
Jan. 20	Electronics, physics/chemistry and computer labs open
	Tutoring Resource Center opens
Jan. 26	Last day for 75% refund
Jan. 27	Last day to add or audit a course
	Last day to drop course without W
Feb. 2	Last day for 50% refund
Feb. 9	Last day for 25% refund
	Second tuition installment due
Feb. 10-16	Financial Aid Disbursement Week/ Pell Census
Mar. 9	Final tuition installment due
Mar. 16-20	Spring recess (service offices open)
Mar. 23	Classes resume
Mar. 24	Last day to drop course with W
	Registration for summer session begins
Apr. 6	Pre-registration for fall semester begins for continuing students
May 4	Classes end
	Last day to withdraw
	Electronics and physics/chemistry labs close
	Tutoring Resource Center closes
	All library materials are due
	Last day for co-op work
May 5-11	Final examinations
May 11	Library, computer labs close
May 12	Residence halls close at 5 p.m.
May 16	Commencement

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

Graduate Classes

Semester-long Classes

Jan. 2	Final day of registration
Jan. 5	Classes begin
	Last day for 100% refund
	First 50% tuition installment due
	Graduation applications due for Class of 2009
Jan. 19	Martin Luther King Jr. Day – college closed (Online classes will meet asynchronously.)
Jan. 20	Last day for 75% refund
	Last day to add or audit a course
	Last day to drop course without W
Jan. 26	Last day for 50% refund
Feb. 2	Last day for 25% refund
	Final 50% tuition installment due
Mar. 9	Registration for summer session begins
Mar. 16	Last day to drop course with W
Apr. 17	Last day to withdraw
Apr. 24	Classes end
May 16	Commencement

Spring – Term I

Jan. 2	Final day of registration
Jan. 5	Classes begin
	Last day for 100% refund
	First 50% tuition installment due
Jan. 12	Last day for 75% refund
	Last day to add or audit a course
	Last day to drop course without W
Jan. 19	Martin Luther King Jr. Day – college closed (Online classes will meet asynchronously.)
Jan. 20	Last day for 50% refund
Jan. 26	Last day for 25% refund
	Last day to drop course with W
Feb. 2	Final 50% tuition installment due
Feb. 20	Last day to withdraw
Feb. 27	Classes end

Spring – Term II

Feb. 27	Final day of registration
Mar. 2	Classes begin
	Last day for 100% refund
	First 50% tuition installment due
Mar. 9	Last day for 75% refund
	Last day to add or audit a course
	Last day to drop course without W
Mar. 16	Last day for 50% refund
Mar. 23	Last day for 25% refund
	Last day to drop course with W
Mar. 30	Final 50% tuition installment due
Apr. 17	Last day to withdraw
Apr. 24	Classes end
May 16	Commencement

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

Summer Session 2009

Undergraduate Classes

Session-long Classes

May 22	Final day of registration
	August graduates notify Office of Registration and Records
	Co-op work period begins
May 25	Memorial Day – college closed
May 26	Classes begin
	Last day for 100% refund
	First tuition installment due
	Library opens
June 1	Last day for 75% refund for 8-week courses
	Electronics, physics/chemistry and computer labs open
June 2	Last day to add or audit a course
	Last day to drop course without W
June 8	Second tuition installment due for 8-week courses
	Last day for 50% refund for 8-week courses
	Last day for 75% refund for 11-week courses
June 15	Last day for 25% refund for 8-week courses
	Last day for 50% refund for 11-week courses
June 16	Last day to drop an 8-week course with a W
June 22	Last day for 25% refund for 11-week courses
	Second tuition installment due for 11-week courses
June 23-29	Financial Aid Disbursement Week/ Pell Census
July 3	Independence Day observed-college closed
July 6	Final tuition installment due for 8-week courses
July 13	Last day to withdraw from 8-week courses
July 14	Last day to drop an 11-week course
July 14-20	Final exams for 8-week classes
July 20	Final tuition installment due for 11-week courses
Aug. 3	Last day to withdraw from 11-week classes
	Electronics and physics/chemistry labs close
	All library materials are due
Aug. 4-10	Final exams for 11-week classes

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

Graduate Classes

Session-long Classes

May 1	Final day of registration
May 4	Classes begin
	Last day for 100% refund
	First 50% tuition installment due
May 16	Commencement
May 18	Last day for 75% refund
	Last day to add or audit a course
	Last day to drop course without W
May 25	Memorial Day – college closed (Online classes will meet asynchronously.)
May 26	Last day for 50% refund
June 1	Last day for 25% refund
	Final 50% tuition installment due
July 3	Independence Day observed – college closed (Online classes will meet asynchronously.)
July 13	Last day to drop course with W
Aug. 14	Last day to withdraw
Aug. 21	Classes end

Summer – Term I

May 1	Final day of registration
May 4	Classes begin
	Last day for 100% refund
	First 50% tuition installment due
May 11	Last day for 75% refund
	Last day to add or audit a course
	Last day to drop course without W
May 16	Commencement
May 18	Last day for 50% refund
May 25	Memorial Day – college closed (Online classes will meet asynchronously.)
May 26	Last day for 25% refund
	Last day to drop course with W
June 1	Final 50% tuition installment due
June 1-5	Financial Aid Disbursement Week/ Pell Census
June 19	Last day to withdraw
June 26	Classes end

Summer – Term II

June 26	Final day of registration
June 29	Classes begin
	Last day for 100% refund
	First 50% tuition installment due
July 3	Independence Day observed– college closed (Online classes will meet asynchronously.)
July 6	Last day for 75% refund
	Last day to add or audit a course
	Last day to drop course without W
July 13	Last day for 50% refund
July 20	Last day for 25% refund
	Last day to drop course with W
July 27	Final 50% tuition installment due
July 27-31	Financial Aid Disbursement Week/ Pell Census
Aug. 14	Last day to withdraw
Aug. 21	Classes end

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

Fall Semester 2009

Undergraduate Classes

Semester-long Classes

Aug. 17-21	Registration for part-time students
Aug. 19-21	Orientation/registration and residence hall check-in for new students
Aug. 21	Final day of registration December graduates notify Office of Registration and Records
Aug. 22	Residence hall check-in for returning students
Aug. 24	Classes begin Last day for 100% refund First Tuition installment due Library opens Cooperative education work period begins
Aug. 31	Electronics, physics/chemistry and computer labs open Tutoring Resource Center opens
Sept. 7	Labor Day – college closed
Sept. 8	Last day for 75% refund Last day to add or audit a course Last day to drop course without W
Sept. 14	Last day for 50% refund
Sept. 21	Last day for 25% refund Second Tuition installment due
Sept. 21-25	Financial Aid Disbursement Week/ Pell Census
Sept. 22	Career Day - no classes
Oct. 19	Final tuition installment due
Oct. 28	Last day to drop course with W Registration for spring semester begins for continuing students
Nov. 22	Classes canceled – college closes at 5 p.m.
Nov. 26-29	Thanksgiving recess – college closed
Nov. 30	Classes resume
Dec. 11	Classes end Electronics and physics/chemistry labs close Tutoring Resource Center closes All library materials are due Last day for cooperative education work Last day to withdraw
Dec. 14-18	Final examinations
Dec. 18	Library, computer labs close
Dec. 18	Residence halls close at 5 p.m.
Dec. 23	College closes at 5 p.m. for recess
Dec. 24-Jan 3	Winter recess – college closed

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

Graduate Classes

Semester-long Classes

Aug. 28	Final day of registration
Aug. 31	Classes begin Last day for 100% refund First 50% Tuition installment due
Sept. 7	Labor Day – college closed (Online classes will meet asynchronously.)
Sept. 14	Last day for 75% refund Last day to add or audit a course Last day to drop course without W
Sept. 21	Last day for 50% refund
Sept. 28	Last day for 25% refund Final 50% Tuition installment due
Nov. 4	Registration for spring semester begins
Nov. 9	Last day to drop course with W
Nov. 25	College closes at 5 p.m. (Online classes will meet asynchronously.)
Nov. 26-29	Thanksgiving – college closed (Online classes will meet asynchronously.)
Dec. 11	Last day to withdraw
Dec. 18	Classes end
Dec. 23	College closes at 5 p.m. for recess
Dec. 24-Jan. 3	Winter recess – college closed

Fall – Term I

Aug. 28	Final day of registration
Aug. 31	Classes begin Last day for 100% refund First 50% Tuition installment due
Sept. 7	Labor Day – college closed (Online classes will meet asynchronously.)
Sept. 8	Last day for 75% refund Last day to add or audit a course Last day to drop course without W
Sept. 14	Last day for 50% refund
Sept. 21	Last day for 25% refund Last day to drop course with W
Sept. 28	Final 50% Tuition installment due
Oct. 16	Last day to withdraw
Oct. 23	Classes end

Fall – Term II

Oct. 23	Final day of registration
Oct. 26	Classes begin Last day for 100% refund First 50% Tuition installment due
Nov. 2	Last day for 75% refund Last day to add or audit a course Last day to drop course without W
Nov. 4	Registration for spring begins
Nov. 9	Last day for 50% refund
Nov. 16	Last day for 25% refund Last day to drop course with W
Nov. 23	Final 50% Tuition installment due
Nov. 25	College closes at 5 p.m. (Online classes will meet asynchronously.)
Nov. 26-29	Thanksgiving – college closed (Online classes will meet asynchronously.)
Dec. 11	Last day to withdraw
Dec. 18	Classes end
Dec. 23	College closes at 5 p.m. for recess
Dec. 24-Jan. 3	Winter recess – college closed

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

Spring Semester 2010

Undergraduate Classes

Semester-long Classes

Jan. 7	Residence hall check-in for new students
Jan. 8	Final day of registration
	Graduation applications due for Class of 2009.
	Orientation/registration for new students
Jan. 9	Residence hall check-in for returning students
Jan. 11	Classes begin
	Last day for 100% refund
	First Tuition installment due
	Library opens
	Co-op work period begins
Jan. 18	Martin Luther King Jr. Day – college closed
Jan. 19	Electronics, physics/chemistry and computer labs open
	Tutoring Resource Center opens
Jan. 25	Last day for 75% refund
Jan. 26	Last day to add or audit a course
	Last day to drop course without W
Feb. 1	Last day for 50% refund
Feb. 8	Last day for 25% refund
	Second Tuition installment due
Feb. 8-12	Financial Aid Disbursement Week/ Pell Census
Mar. 8	Final tuition installment due
Mar. 15-19	Spring recess (service offices open)
Mar. 22	Classes resume
Mar. 23	Last day to drop course with W
	Registration for summer session begins
Mar. 29	Registration for summer semester begins for continuing students
Apr. 6	Pre-registration for fall semester begins for continuing students
May 3	Classes end
	Last day to withdraw
	Electronics and physics/chemistry labs close
	Tutoring Resource Center closes
	All library materials are due
	Last day for cooperative education work
May 6 -12	Final examinations
May 12	Library, computer labs close
May 12	Residence halls close at 5 p.m.
May 15	Commencement

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

Graduate Classes

Semester-long Classes

Jan. 4	Final day of registration
Jan. 5	Classes begin Last day for 100% refund First 50% Tuition installment due Graduation applications due for Class of 2007.
Jan. 18	Martin Luther King Jr. Day – college closed (Online classes will meet asynchronously.)
Jan. 19	Last day for 75% refund Last day to add or audit a course Last day to drop course without W
Jan. 25	Last day for 50% refund
Feb. 1	Last day for 25% refund Final 50% Tuition installment due
Mar. 8	Registration for summer session begins
Mar. 16	Last day to drop course with W
Mar. 22	Registration for summer semester begins
Apr. 9	Pre-registration for fall semester begins
Apr. 19	Last day to withdraw
Apr. 26	Classes end
May 15	Commencement

Spring – Term I

Jan. 4	Final day of registration
Jan. 5	Classes begin Last day for 100% refund First 50% Tuition installment due
Jan. 12	Last day for 75% refund Last day to add or audit a course Last day to drop course without W
Jan. 18	Martin Luther King Jr. Day – college closed (Online classes will meet asynchronously.)
Jan. 19	Last day for 50% refund
Jan. 25	Last day for 25% refund
Jan. 26	Last day to drop course with W
Feb. 1	Final 50% Tuition installment due
Feb. 22	Last day to withdraw
Mar. 1	Classes end

Spring – Term II

Feb. 26	Final day of registration
Mar. 2	Classes begin Last day for 100% refund First 50% Tuition installment due
Mar. 9	Last day for 75% refund Last day to add or audit a course Last day to drop course without W
Mar. 15	Last day for 50% refund
Mar. 22	Last day for 25% refund
Mar. 23	Last day to drop course with W Registration for summer semester begins
Mar. 29	Final 50% Tuition installment due
Apr. 9	Pre-registration for fall semester begins
Apr. 19	Last day to withdraw
Apr. 26	Classes end
May 15	Commencement

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

Summer Session 2010

Undergraduate Classes

Session-long Classes

May 21	Final day of registration
	August graduates notify Office of Registration and Records
	Cooperative education work period begins
May 24	Classes begin
	Last day for 100% refund
	First tuition installment due
	Library opens
May 31	Memorial Day – college closed
June 1	Last day for 75% refund for 8-week courses
	Electronics, physics/chemistry and computer labs open
June 2	Last day to add or audit a course
	Last day to drop course without W
June 7	Second tuition installment due for 8-week courses
	Last day for 50% refund for 8-week courses
	Last day for 75% refund for 11-week courses
June 14	Last day for 25% refund for 8-week courses
	Last day for 50% refund for 11-week courses
June 15	Last day to drop an 8-week course with a W
June 21	Last day for 25% refund for 11-week courses
	Second tuition installment due for 11-week courses
June 21-25	Financial Aid Disbursement Week/ Pell Census
July 5	Observance of Independence Day - college closed
July 6	Final tuition installment due for 8-week courses
July 12	Last day to withdraw from 8-week courses
July 13	Last day to drop an 11-week course with a W
July 13-19	Final exams for 8-week classes
July 19	Final tuition installment due for 11-week courses
Aug. 2	Electronics and physics/chemistry labs close
	All library materials are due
	Last day to withdraw from 11-week courses
Aug 3 -9	Final exams for 11-week classes

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

Graduate Classes

Semester-long Classes

Apr. 30	Final day of registration
May 3	Classes begin Last day for 100% refund First 50% Tuition Installment
May 15	Commencement
May 17	Last day for 75% refund
May 18	Last day to add or audit a course Last day to drop course without W
May 24	Last day for 50% refund
May 31	Memorial Day – college closed (Online classes will meet asynchronously.)
June 1	Last day for 25% refund Final 50% Tuition Installment
July 5	Observance of Independence Day - college closed (Online classes will meet asynchronously.)
July 12	Last day to drop course with W
Aug. 13	Last day to withdraw
Aug. 20	Classes end

Summer – Term I

Apr. 30	Final day of registration
May 3	Classes begin Last day for 100% refund First 50% Tuition Installment
May 10	Last day for 75% refund Last day to add or audit a course Last day to drop course without W
May 15	Commencement
May 17	Last day for 50% refund (Online classes will meet asynchronously.)
May 24	Last day for 25% refund Last day to drop course with W
May 31	Memorial Day – college closed
June 1	Final 50% Tuition Installment
June 18	Last day to withdraw
June 25	Classes End

Summer – Term II

June 25	Final day of registration
June 28	Classes begin Last day for 100% refund First 50% Tuition Installment
July 5	Observance of Independence Day - college closed (Online classes will meet asynchronously.)
July 6	Last day for 75% refund Last day to add or audit a course Last day to drop course without W
July 12	Last day for 50% refund
July 19	Last day for 25% refund Last day to drop course with W
July 26	Final 50% Tuition Installment
Aug. 13	Last day to withdraw
Aug. 20	Classes End

Refer to Capitol College's online calendar at www.capitol-college.edu for an updated calendar.

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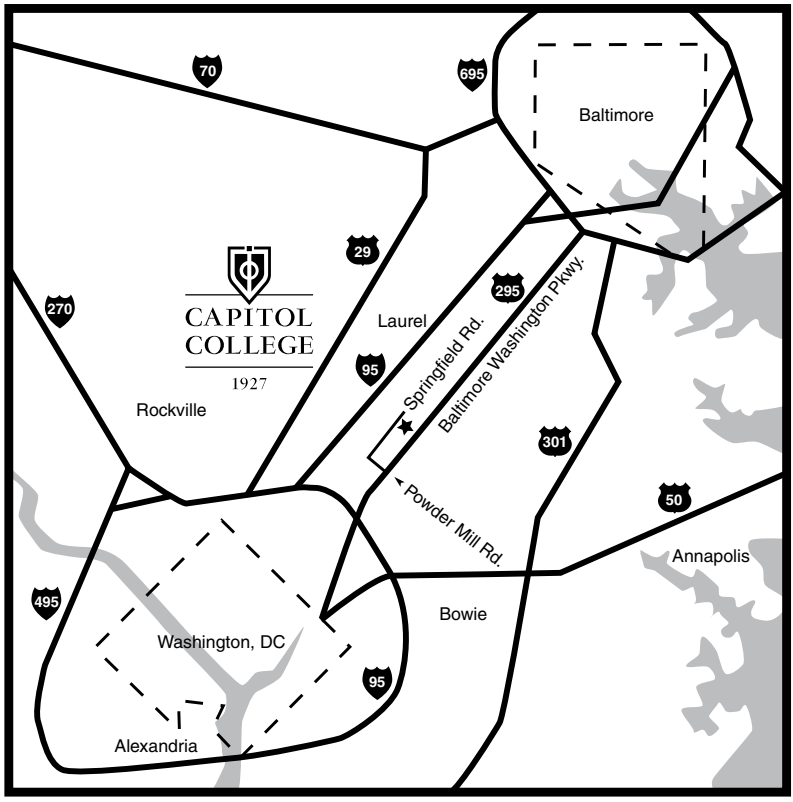

Directions from Washington, DC and points south of Laurel, MD:

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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