

Department of Business Administration and Economics

119 Hartwell Hall
(716) 395-2623

Chairperson: Steven T. Breslawski; *Associate Chairperson:* Jerald Weaver; *Professors:* John D. Chasse, John J. Spitzer; *Associate Professors:* Breslawski, Charles Callahan, III, James J. Cordeiro, William H. Dresnack, Richard J. Fenton, John T. Gardner, Baban Hasnat, Sandeep Singh, Susan Stites-Doe, Jeffrey Strieter; *Assistant Professors:* Inaam A. Al-Hashimi, Ilon Alon, Gary P. Briggs, Edward W. Erasmus, Asri Jantan, D. Donald Kent, Jane Romal, Ralph Trecartin, Melissa Waite, Jerald Weaver; *Emeritus Faculty:* Rawle E. Farley, Yu-Ku Li, Edward F. Van Duzer.

The Department of Business Administration and Economics offers degree programs in (1) accounting, (2) international business and economics, and (3) business administration. Business administration majors may specialize in accounting, finance, management, marketing, and pre-law. Additionally, the department offers minors in business administration and economics. Our programs are designed to (1) prepare students for a wide variety of business careers, and (2) provide excellent preparation for graduate school, including MBA and law degree programs.

Mission Statement

Philosophy: A high quality undergraduate business program continuously improves and prepares students to (1) function well in entry-level business positions, (2) grow in their careers, and (3) pursue graduate education. A high quality program responds to its constituencies; ours include students, alumni, employers, accrediting bodies, and the State University and citizens of New York.

We value faculty contributions in teaching, scholarship, and service to our institutions, disciplines, and communities. Our primary concern is meeting the educational needs of our students. We believe that our teaching efforts benefit from continuous faculty development and scholarly growth. Therefore, scholarship, professional practice, and the advancement of pedagogy are important faculty pursuits. Service activities enhance the reputation of the College and have a positive impact on its programs. Relative emphasis is placed in this order: teaching, scholarship, and service.

Mission and Purpose: In concert with the regional College mission, the department provides access to quality business education for broad spectrum of academically prepared students, including transfer and non-traditional students. This mission is achieved by (1) delivering relevant and contemporary curricula, (2) combining theories of business and economics with business skills, and (3) developing students' professional orientation and social acumen.

Basic Goals: All of our programs share these basic goals:

1. Be recognized by our stakeholders as a high quality program.
2. Foster high placement rates and a lifetime of success for graduates.
3. Recruit and retain capable students.
4. Understand and address the unique needs of adult learners, full- and part-time employed students, and transfer students.
5. Validate and continuously improve program quality using AACSB accreditation standards and other benchmarking processes.
6. Create a culture that fosters and encourages (1) mutually beneficial relationships between students, faculty, alumni, and the business community, and (2) a belief that life-long learning is vital to career success.

Statements of Purpose: Individual Degree Programs. All of our programs build on a comprehensive liberal arts education and provide a broad understanding of business theory and practice in accounting, economics, finance, international business, management, and marketing.

All programs develop proficiencies in written and oral communication, numeracy, critical thinking, and teamwork. Graduates have sufficient academic preparation to pursue graduate business education.

The **Accounting Major Program** provides students with the education and training needed to pursue professional accounting positions in CPA firms, industry, and government. The degree qualifies students for admission to the Uniform CPA Examination in New York.

The **Business Administration Major Program** provides students with the skills and knowledge necessary to assume entry-level positions in an organization's accounting, financial, marketing, and management systems. The Pre-law track within the management specialty provides a solid foundation for students pursuing law school.

The **International Business Program** provides an interdisciplinary education that includes foreign language proficiency and cross-cultural awareness. Students gain knowledge and develop skills relevant to conducting business in the international domain. Graduates are prepared for careers with organizations with international operations.

Business Administration Major

Degree Requirements

Students majoring in business administration must complete four groups of courses: (1) prerequisites, (2) corequisites, (3) the business core, and (4) a specialization of their choosing (accounting, finance, management, marketing, or pre-law). See *Course Requirements for the Business Administration Major and Course Grade and GPA requirements for the Major in Business Administration* below for details. Additionally, students are required to participate in program assessment activities as described in *Participation in Assessment Activities* below. Students without significant work experience relevant to business administration are strongly encouraged to also complete at least one internship experience.

Declaring the Business Administration Major

Admission to the business administration major is competitive and based on GPA in the *prerequisite* courses. (See *Prerequisite Course Requirements* below.) Students must complete all prerequisite courses, with an overall prerequisite GPA of at least 2.5, and no prerequisite course grade lower than “C–,” to be guaranteed admission to the program. Students not meeting the 2.5 GPA standard may, under certain conditions, be admitted to the program on a space-available basis; contact the department for details. Forms for declaring a major are available in 119 Hartwell Hall.

Students must formally declare a major in Business Administration immediately after completing the prerequisite course requirements. Full-time students are expected to complete their prerequisite requirements by the end of their sophomore year, and no later than the first semester of their junior year. Transfer students with an associate's degree in business should complete the prerequisites in their first semester at SUNY Brockport. Part-time students should, when possible, complete prerequisite courses before progressing into the business core courses.

Students Who Intend to Major in Business Administration, but who have not yet completed the prerequisite courses, must indicate their intent by filing an *Intent to Major* form, available in 119 Hartwell Hall. Freshmen students intending to major in business should complete the *Intent to Major* form by the beginning of their second semester at Brockport. Transfer students complete the *Intent to Major* form when they first register at SUNY Brockport.

Course-Grade and GPA Requirements for the Major in Business Administration

Students pursuing the business administration major must satisfy four course-grade and GPA requirements as follows:

- (1) A student's cumulative GPA in the prerequisite courses is used to determine whether a student will be *admitted* to the major. Students must earn a minimum GPA of 2.5 in the prerequisite courses, with no grade lower than “C–,” to be guaranteed admission to the major in business administration.

- (2) Students must earn a grade of at least “C–” in each SUNY Brockport course used to satisfy a business administration major requirement. This applies to the prerequisite, corequisite, business core, and specialization course requirements described in *Course Requirements for the Business Administration Major* below. To satisfy this grade requirement, students may take a course up to three times. *Students who are unable to earn a grade of “C–” after the third attempt will no longer be eligible for program matriculation.*
- (3) Students must earn an overall cumulative GPA of at least 2.0 in the SUNY Brockport courses used to satisfy the corequisite, business core, and specialization course requirements described in *Course Requirements for the Business Administration Major* below.
- (4) All general education, upper division coursework, and GPA requirements of the College must be met, including an overall cumulative GPA of at least 2.0 in all SUNY Brockport course work used to meet bachelor’s degree requirements.

Transfer Course and Grade Policy: Business administration students may request transfer credit for (1) any prerequisite course, and (2) any 300-level business course not restricted by residency requirements. The College and the department must approve transferred courses as equivalent to required courses, and the number of courses transferred is subject to the residency requirements of the College and department. A grade of “C–” or higher is required for transferred courses used to satisfy prerequisite, corequisite, business core, and specialty course requirements.

In general, 400-level courses cannot be transferred. After matriculating at SUNY Brockport, students must take all 400-level accounting, business, and economic courses at SUNY Brockport. *Freshman-level* courses taken at two-year colleges generally cannot be transferred as equivalent to 300-level courses, and no two-year college coursework will be transferred as equivalent to any 400-level course. Students must complete BUS 475 Strategic Management at SUNY Brockport.

Time Limitation: Courses completed more than 10 years prior to matriculation (admission) to the College cannot be used to satisfy business program requirements. Courses completed more than 10 years prior to matriculation must be repeated. Under some circumstances, students may request the opportunity to earn course credit by exam rather than repeat the course; contact the department for details. This policy applies both to courses taken at SUNY Brockport and other institutions.

Internships: The Department of Business Administration and Economics encourages student participation in internship experiences relevant to their degree. However, the Department limits its support for internship experiences to two internship experiences with a maximum of 15 total credits. Students interested in completing an internship should contact the Department’s internship coordinator several weeks prior to beginning the internship and complete the appropriate registration forms.

Advisement: Students will be assigned a business faculty advisor when their *Intent to Major* form is processed (see *Students Who Intend to Major in Business Administration* paragraph above). Business faculty advisors *assist* students in academic and career planning, but each student is ultimately responsible for knowing and understanding the degree requirements as specified in this catalog. Advisors assist students by reviewing the courses that the student selects each semester and by answering questions about degree requirements, course sequencing, transfer coursework, electives, careers, and graduate school. In order to support working and non-traditional students, the department also provides academic advisement in the evening and for students whose work or class schedule conflicts with their advisor’s office hours. Students who are having difficulty scheduling a meeting with their advisor should call (716) 395-2623 to schedule an appointment with the department’s advisement staff.

Evening Students: Complementing the day program is an extensive offering of evening courses. All of the courses required to complete the **business administration degree** with a specialization in finance, management, or marketing are offered in the evening at the main campus on a rotating basis. A list of anticipated evening course offerings, projected for the next two years, is available in 119 Hartwell Hall.

Participation in Assessment Activities: The Department of Business and Economics administers various assessment instruments throughout the curriculum. Assessment instruments, which may take the form of exams, exercises, or surveys, are used for quality control and program improvement. Business administration majors are required to participate in all assessment exercises administered by the department. Additionally, satisfactory performance on the two exams described below is required by the department.

- (i) The first exam, which assesses a student's knowledge and skills in key topics covered in prerequisite courses, should be taken soon after completing the prerequisite courses described in *Course Requirements for the Business Administration Major* below. Students are expected to take this exam before, or concurrent with, taking BUS 325 Principles of Finance.
- (ii) The second exam, which assesses a student's knowledge and skills in key topics covered in the 300-level business core courses, should be taken soon after completing the 300-level core courses described in *Course Requirements for the Business Administration Major* below. Students are expected to take this exam before, or concurrent with, taking BUS 475 Strategic Management.

There are several opportunities for students to take the aforementioned assessment exams each semester, and students have an opportunity to retake exams if they perform poorly. Additional information, including exam scheduling and sign-up procedures, is available from the student's business advisor or from the department office.

Course Requirements for the Business Administration Major

Students must satisfy prerequisite, corequisite, business core, and specialization course requirements as specified below. Students may complete multiple specializations, but should remember that a maximum of 54 credits of coursework with a BUS prefix, including transferred courses, internships, and independent studies, can be applied towards the 120 hours required to graduate.

1. Prerequisite Course Requirements (21 credits. Must be completed before declaring the major)

Prerequisite courses provide a foundation for upper-division coursework. As described in *Course Grade and GPA Requirements for the Major in Business Administration* above, grades in prerequisite courses are used to determine admission to the major.

		Credits
CIS 106	End User Computing	3
ECN 201	Principles of Economics (Micro)	3
ECN 202	Principles of Economics (Macro)	3
ECN 204	Introduction to Statistics	3
ACC 281	Introduction to Financial Accounting	3
ACC 282	Introduction to Managerial Accounting	3
MTH 2XX	Math requirement	3
	Total:	21

Notes:

- (1) It is expected that full-time students will complete all prerequisite courses no later than the first semester of their junior year. Part-time students should complete prerequisites before undertaking a substantial number of 300-level business courses.
- (2) The MTH 2XX requirement is typically satisfied by taking Calculus I (MTH 201), Business Calculus (MTH 221), or Finite Math (MTH 245). However, any mathematics course at or above the level of MTH 201 can be used to satisfy the math requirement (excluding MTH 243, 313, and 441).
- (3) An introductory statistics course from another discipline (e.g. psychology) may be substituted for ECN 204. However, credit towards graduation will be allowed for only one introductory statistics course.

2. Major Course Requirements

Completion of the business major requires a minimum cumulative GPA of 2.0 in the **corequisite**, **core**, and **specialty area** courses requirements specified in 2a, 2b, and 2c below. Students must earn a grade of at least “C–” in *each* course to satisfy degree requirements.

2a. Corequisites Requirements (9 credits)		Credits
ENL 308	Business Writing	3
ECN 304	Intermediate Statistics	3
	and <i>one</i> of the following four analysis courses:	3
ECN 301	Intermediate Microeconomics	
ECN 302	Intermediate Macroeconomics	
ECN 305	Managerial Economics	
BUS 461	Production and Operations Management	3
Total:		9

Notes:

- (1) ECN 301 and ECN 305 may not both be taken for credit.
- (2) ECN 302 is required for students that elect the finance specialty area.
- (3) BUS 461 is also a management specialty elective. It may be used by management students to satisfy the corequisite requirement, or as a management specialty course, but not both.

2b. Business Core Requirements (21 credits)		Credits
BUS 325	Principles of Finance	3
BUS 335	Principles of Marketing	3
BUS 345	International Business Environment	3
BUS 366	Organizational Behavior	3
BUS 375	Business Law I	3
BUS 378	Business, Government, and Society	3
BUS 475	Strategic Management	3
Total:		21

Note: BUS 475 must be taken at SUNY Brockport.

2c. Business Specialty Options (12–15 credits)

A minimum of four courses must be successfully completed in one of the specialty areas described below. Students may take additional specialty courses on an elective basis. If the accounting or pre-law specialization is selected, at least five courses must be completed. Regardless of which area of specialization is selected, students should consult with their business advisor to determine which combination of specialty area courses is most consistent with the student’s professional goals. After matriculating at SUNY Brockport, students must take all 400-level business and economics courses at SUNY Brockport.

Accounting Specialty (15 credits)

The accounting specialization is intended for students who have an interest in an accounting related career, but who are also certain that they do not wish to pursue licensing as a Certified Public Accountant. Students with an interest in accounting should give serious consideration to completing the *Major in Accounting*. The *Major in Accounting* satisfies the educational requirements to sit for the Uniform CPA exam in New York State and also provides a general business education similar to that provided by the Business Administration degree. To complete the accounting specialty, students must successfully complete a minimum of five courses from the list below.

Accounting Specialty Courses		Credit
ACC 385	Intermediate Accounting I	3
ACC 386	Intermediate Accounting II	3
ACC 388	Cost Accounting	3
ACC 485	Federal Income Tax	3
ACC 486	Advanced Accounting	3

ACC 487	Auditing	3
ACC 488	Federal Income Tax II	3
ACC 489	Accounting for Non-profit Entities	3

Note: (1) A minimum of 12 credits of upper-level accounting must be taken at SUNY Brockport, including all 400-level accounting courses.

Finance Specialty (12 credits)

Finance specialty courses are appropriate for students that have an interest in a finance related career, including corporate financial analysis, cash management, brokerage, banking, investment banking, marketing financial instruments and insurance, and personal financial and estate planning. In addition to providing a sound foundation for graduate work in business and finance, the specialty also prepares students to pursue professional certification, including the Certified Cash Manager (CCM®) exam, required for the CCM® designation. To complete the finance specialty, students must take four courses as described below.

Finance students *must* take the following two courses:

		Credits
BUS 421	Investment Analysis and Portfolio Management	3
BUS 422	Corporate Financial Policy	3

Finance students must also select two electives from the list below. At least one elective course must be in Group A.

Group A Finance Electives

		Credits
BUS 420	Short-term Financial Management	3
BUS 428	Seminar in Finance	3
BUS 445	International Financial Management	3

Group B. Finance Electives

		Credits
ACC 385	Intermediate Accounting I	3
ACC 388	Cost Accounting	3
ECN 321	Money and Banking	3
ECN 425	Financial Institutions	3

Notes: (1) Finance students must take ECN 302 to satisfy their corequisite requirement.

(2) Only one course from *Group B* may be used to satisfy finance specialty requirements.

However, finance students are encouraged to take additional *Group B* courses as electives or to complete the economics minor.

Management Specialty (12 credits)

The management specialization prepares students for success in a wide variety of management related careers. These include general management, retail management, operations management, human resource management, information management, and small business management. The specialty is also ideal for students seeking a general management degree in preparation for graduate school or in support of a promotion in their current career.

To complete the management specialty, students must take the following two courses:

		Credits
BUS 368	Management Skills	3
BUS 369	Survey of Current Topics in Management	3
	AND two electives from the list below	
BUS 317	Management Information Systems	3
ECN 361	Labor Market Analysis	3
BUS 417	Systems Analysis and Design	3
BUS 461	Production and Operations Management	3
BUS 462	Quality Management Systems	3
BUS 463	Small Business Management	3
BUS 464	Electronic Entrepreneurship and Commerce	3
BUS 465	Human Resources Management	3

BUS 467	Employment Law and Compliance	3
BUS 468	Advanced Human Resources Management	3

Marketing Specialty (12 credits)

The marketing specialty prepares students for successful careers in business or marketing. Career opportunities in marketing include opportunities in consumer and industrial sales, supply chain management, direct marketing, marketing management, marketing research, merchandising, promotion, public relations, sales management, and retail management. In addition, the marketing specialty provides an excellent foundation for students pursuing graduate studies in business or marketing. To complete the marketing specialty, students must successfully complete a minimum of four courses from the list below.

		Credits
BUS 432	Sales Management	3
BUS 433	International Marketing	3
BUS 434	Direct Marketing	3
BUS 435	Consumer Behavior	3
BUS 436	Marketing Research	3
BUS 437	Integrated Marketing Communications	3
BUS 438	Marketing Channels and Logistics	3
BUS 439	Retail Management	3
BUS 440	Business-to Business-Marketing	3
BUS 441	Marketing Management	3

Pre-law Specialty (15 credits)

Business administration is one of the most popular pre-law degrees. The pre-law specialization is designed specifically for business students interested in attending law school. Students completing the specialization are able to make informed decisions about pursuing a law degree, elevate skills and cognitive abilities that are key to success in a law degree program, and develop a fuller understanding of various aspects of the law, the legal profession, and the legal environment. Students who choose not to enter a law program are able to pursue business-related careers and graduate programs.

To complete the pre-law specialty, students must take the following three courses:

		Credits
BUS 376	Business Law II	3
PLS 320	Law and the Legal Process OR	
CRJ 305	The Adjudication Process	3
CRJ 311	Criminal Law	3
	and <u>at least</u> two electives from the list below	
ECN XXX:	Any upper level economics course not used to meet corequisite requirements	3
BUS 467	Employment Law and Compliance	3
CRJ 313	Constitutional Criminal Procedure	3
CRJ 315	Constitutional Law of the Detained	3
CRJ 438	Security Law	3
ENL 305	Advanced Composition	3
PHL 305	History of Modern Philosophy	3
PHL 342	Business Ethics OR	
PHL 321	Medical Ethics	3
PLS 324	Constitutional Law I	3
PLS 326	Constitutional Law II OR	
CRJ 483	Fair Trial/Free Press Conflicts	3

Notes:

(1) Students may substitute an approved six credits (or greater) internship for **one** of the elective courses listed above. PLS 492, PLS 493, PLS 495, and OAP 413 (in law practice),

are all approved internship experiences. Other experiences may be used, provided that they are approved, in writing, by the student's business advisor.

(2) Students completing this specialty should take PHL 102, PHL 104, or PHL 202 to satisfy a general education humanities requirement. Students should consider taking all three courses on an elective basis.

(3) Students in the pre-law specialty are encouraged to complete a minor in economics, criminal justice, philosophy, or political science. Students may also wish to complete a second specialization in the business administration program.

Major in Accounting

Students completing the Major in Accounting will have met the educational requirements to sit for the Uniform CPA exam in New York State and the Certified Management Accountant (CMA) exam. In completing the accounting degree, students must satisfy the degree requirements of (1) the College, (2) the Major in Accounting, and (3) New York State. *In particular, accounting students should understand that, in addition to required accounting and business courses, they must complete 60 credits of non-business, non-accounting liberal arts coursework in order to meet the state requirements for taking the CPA exam.* Students must work closely with their advisor to determine the applicability of both their accounting and non-accounting courses towards the New York state requirements for this degree.

Degree Requirements

Students majoring in accounting must complete four groups of courses in the major: (1) prerequisites, (2) corequisites, (3) business core courses, and (4) a prescribed series of upper level accounting courses. See *Course Requirements for the Accounting Major* below for details. Students without significant work experience relevant to accounting are strongly encouraged to also complete at least one internship experience.

Students Who Intend to Major in Accounting, but who have not yet completed the prerequisite courses, should indicate their intent by filing an *Intent to Major* form, available in 119 Hartwell Hall. Freshmen students intending to major in accounting should complete the *Intent to Major* form by the beginning of their second semester at Brockport.

Course-Grade and GPA Requirements for the Major in Accounting

Students pursuing an accounting major must meet six course-grade and GPA requirements as follows:

- (1) Any course with an ACC prefix, which is counted toward degree requirements, must be completed with a grade no lower than "C."
- (2) Students must earn a grade of at least "C-" in all other courses used to satisfy a corequisite or business core requirement within the accounting major.
- (3) A student's cumulative GPA in the prerequisite courses is used to determine whether a student will be admitted to the major. Currently, accounting students must earn a minimum GPA of 2.5 in the prerequisite courses, with no grade in an ACC-prefix course lower than "C" and no other grade lower than "C-" to be guaranteed admission to the major in accounting.
- (4) Students must earn an overall cumulative GPA of at least 2.0 in the SUNY Brockport courses used to satisfy corequisite, business core, and upper-level accounting course requirements specified in *Course Requirements for the Accounting Major* below.
- (5) All general education, upper division coursework, and GPA requirements of the College must be met, including an overall cumulative GPA of at least 2.0 in all SUNY Brockport coursework used to meet bachelor's degree requirements.
- (6) No courses graded "Pass/Fail" or "Satisfactory/Unsatisfactory" may be counted toward the accounting degree requirements.

To satisfy course grade requirements (1) and (2) above, students may take a course up to three times. Students who are unable to earn a grade of "C-" after the third attempt will no longer be eligible for program matriculation.

Transfer Course and Grade Policy: Accounting students may request transfer course credit for (1) any prerequisite course, and (2) any 300-level accounting, business, or economics course not restricted by residency requirements. The College and the department must approve transferred courses as equivalent to required courses, and the number of courses transferred is subject to the residency requirements of the College and department. A grade of “C–” or higher is required for any course transferred to satisfy a course requirement with an ACC prefix. A grade of “C–” or higher is required for transferred courses used to satisfy any other prerequisite, corequisite, or business core.

In general, 400-level courses cannot be transferred. After matriculating at SUNY Brockport, students must take all 400-level accounting, business, and economics courses at SUNY Brockport. Accounting students must complete all 400-level accounting courses and BUS 475 Strategic Management at SUNY Brockport. *Freshman-level* two-year college courses generally cannot be transferred as equivalent to 300-level courses, and no community college coursework will be transferred as equivalent to any 400-level course.

Time Limitation: Courses completed more than 10 years prior to matriculation (admission) to the College cannot be used to satisfy accounting program requirements. Courses completed more than 10 years prior to matriculation must be repeated. Under some circumstances, students may request the opportunity to earn course credit by exam rather than repeat the course; contact the department for details. This policy applies both to courses taken at SUNY Brockport and other institutions.

Internships: The Department of Business Administration and Economics encourages student participation in internship experiences relevant to their degree. However, the Department limits its support for internship experiences to two internship experiences with a maximum of 15 total credits. Students interested in completing an internship should contact the department’s internship coordinator several weeks prior to beginning the internship and complete the appropriate registration forms.

Advisement: Students will be assigned an accounting faculty advisor when their *Intent to Major* form is processed (see *Students Who Intend to Major in Accounting* paragraph above). Accounting faculty advisors assist students in academic and career planning, but each student is ultimately responsible for knowing and understanding the degree requirements as specified in this catalog. Students must also develop an understanding of the additional educational requirements imposed by New York State on students of New York state registered accounting programs. Advisors assist students by reviewing the courses that the student selects each semester and by answering questions about degree requirements, course sequencing, transfer coursework, electives, careers, and graduate school. In order to support working and non-traditional students, the department also provides academic advisement in the evening and for students whose schedule conflicts with their advisor’s office hours. Students who are having difficulty scheduling a meeting with their advisor should call (716) 395-2623 to schedule an appointment with our advisement staff.

Course Requirements for the Accounting Major

1a. Prerequisite Course Requirements (21 credits)

Students must earn a minimum GPA of 2.5 in the following seven prerequisite courses, with no grade lower than “C” in courses with an ACC prefix and no grade below “C–” in the other courses, before admission to the major will be considered.

	Credits	
CIS 106	End User Computing	3
ECN 201	Principles of Economics (Micro)	3
ECN 202	Principles of Economics (Macro)	3
ECN 204	Introduction to Statistics	3
ACC 281	Introduction to Financial Accounting	3
ACC 282	Introduction to Managerial Accounting	3
MTH201	Calculus I (or MTH 221 Calculus for Business)	3
Total:		21

Note: An elementary statistics course from another discipline may be substituted for ECN 204. However, credit will be allowed for only one statistics course.

2. Major Course Requirements

Completion of the accounting major requires a minimum cumulative grade point average of 2.0 in the courses taken under 2a, 2b, and 2c below, with no grade less than “C” in ACC-prefix courses and no grade less than “C-” in all other courses.

2a. Corequisites Courses (12 credits)

Professional Skills Corequisites		Credits
ENL 308	Business Writing	3
ACC 283	Introduction to Accounting Systems and Software	3
Analytical Skills Corequisites		
ECN 304	Intermediate Statistics	3
AND	one of the following four courses:	3
ECN 301	Intermediate Microeconomics	
ECN 302	Intermediate Macroeconomics	
ECN 305	Managerial Economics	
BUS 461	Production and Operations Management	
Total		12

Note: (1): ECN 301 and 305 may not both be taken for credit.

2b. Business Core Courses (24 credits)

Business Core Courses (24 credits)		Credits
BUS 325	Principles of Finance	3
BUS 335	Principles of Marketing	3
BUS 345	International Business Environment	3
BUS 366	Organizational Behavior	3
BUS 375	Business Law I	3
BUS 376	Business Law II	3
BUS 475	Strategic Management	3
AND	one of the following four finance electives:	3
BUS 420	Short-Term Financial Management	
BUS 421	Investment Analysis and Portfolio Management	
BUS 422	Corporate Financial Policy	
ECN 321	Money and Banking	
Total		24

Note: BUS 475 Strategic Management must be taken at SUNY Brockport.

2c. Upper-level Accounting Courses (21 credits)

Upper-level Accounting Courses (21 credits)		Credits
ACC 385	Intermediate Accounting I	3
ACC 386	Intermediate Accounting II	3
ACC 388	Cost Accounting	3
ACC 485	Federal Income Tax	3
ACC 486	Advanced Accounting	3
ACC 487	Auditing	3
ACC 488	Federal Income Tax II	3
Total		21

Note: A minimum of 12 credits of upper-level accounting must be taken at SUNY Brockport, including all 400-level accounting courses.

3. Other Requirements: In addition to the major coursework described above, accounting majors must meet all of the General Education requirements of the College. Further, in order to meet the New York state requirements for sitting for the CPA exam, and for a degree to be conferred, accounting majors must complete 60 hours of non-business, non-accounting coursework. Students need to work closely with their advisor to understand which of their

courses count toward the required 60 hours of liberal arts coursework. Because of the 60 hour liberal arts requirement, accounting majors are limited in the number of additional (elective) business or accounting courses that can be used toward the 120 hours required for a degree. At most, a total of 60 hours of business and accounting coursework will count towards the 120 hours required for a degree. Again, it is important for students, especially transfer students, to work with their advisor to understand limitations on the number of business and accounting electives that can be counted towards the 120 hour graduation requirement.

Major in International Business and Economics

Degree Requirements

The international business and economics major requires completion of a minimum of 57 semester credit hours, consisting of 15 credits of prerequisite courses (I below), 27 credits of international business core courses (II below), at least three credits of foreign language at the 212 level or higher (III below), 12 credits of cross-cultural core courses (IV below), and a significant foreign experience (V below). See *Course Requirements for the International Business and Economics Major* and *Course Grade and GPA Requirements for the International Business and Economics Major* below for details.

Declaring the International Business and Economics Major

Students declare a major in International Business and Economics immediately after completing the prerequisite course requirements described in *Course Requirements for the International Business and Economics Major* below. It is expected that full-time students will complete their prerequisite requirements by the end of their sophomore year. Transfer students with an associate degree should complete the prerequisites in their first semester at SUNY Brockport. Admission to the program is competitive and based on GPA in the prerequisite courses. Currently, students need to complete all prerequisite courses with a prerequisite GPA of at least 3.0 to be guaranteed admission to this program. The forms required to declare the major are available in 119 Hartwell Hall.

Students Who Intend to Major in International Business and Economics, but who have not yet completed the prerequisite courses, should indicate their intent by filing an *Intent to Major* form, available at 119 Hartwell Hall. Freshmen students intending to major in international business should complete the *Intent to Major* form by the beginning of their second semester at Brockport.

Course Grade and GPA Requirements for the International Business and Economics Major

Students pursuing the international business and economics major must satisfy four course-grade and GPA requirements as follows:

- (1) A student's cumulative GPA in the prerequisite courses is used to determine whether a student will be *admitted* to the major. Students must earn a minimum GPA of 3.0 in the prerequisite courses, with no grade lower than "C-", to be guaranteed admission to the major in international business and economics.
- (2) Students must earn a grade of at least "C-" in each course used to satisfy prerequisite and international business core courses specified in *Course Requirements for the International Business and Economics Major* below.
- (3) Completion of the International Business and Economics major requires an overall cumulative GPA of 2.0 in the courses used to satisfy the international business core, foreign language, cross-cultural core, and foreign experience requirements specified in *Course Requirements for the International Business and Economics Major* below.
- (4) All general education, upper division course work, and GPA requirements of the College must be met, including an overall cumulative GPA of at least 2.0 in all SUNY Brockport coursework used to meet bachelor's degree requirements.

Transfer Course and Grade Policy: Students may request transfer credit for (1) any prerequisite course, (2) the 300-level international business core requirements, and (3) any course satisfying cross-cultural core and language requirements. A grade of "**C-**" or **higher** is required

for all transferred coursework applied to the international business core requirements. A grade of “C–” or higher is also required for transferred prerequisite courses. Transferred courses must be approved as equivalent by the College and the relevant department, and are subject to the residency requirements of the College and Department of Business Administration and Economics. In general, 400-level business and economics courses cannot be transferred. After matriculating at SUNY Brockport, students must take all 400-level business and economics courses at SUNY Brockport. *Freshman-level* two-year college courses generally cannot be transferred as equivalent to 300-level courses, and no two-year college coursework will be transferred as equivalent to any 400-level course.

Time Limitation: Courses completed more than 10 years prior to matriculation (admission) to the College cannot be used to satisfy accounting program requirements. Therefore, courses completed more than 10 years prior to matriculation must be repeated. Under some circumstances, students may request the opportunity to earn course credit by exam rather than repeat the course; contact the department for details. This policy applies both to courses taken at SUNY Brockport and other institutions.

Internships: The Department of Business Administration and Economics encourages student participation in internship experiences relevant to their degree. However, the department limits its support for internship experiences to two internship experiences with a maximum of 15 total credits. Students interested in completing an internship should contact the department’s internship coordinator several weeks prior to beginning the internship and complete the appropriate registration forms.

Advisement: Students will be assigned an international business faculty advisor when their *Intent to Major* form is processed (see *Students Who Intend to Major in International Business and Economics* paragraph above). International business faculty advisors assist students in academic and career planning, but each student is ultimately responsible for knowing and understanding the degree requirements as specified in this catalog. Advisors assist students by reviewing the courses that the student selects each semester and by approving proposals to meet the foreign experience requirement for the international degree. The advisor also answers questions about degree requirements, course sequencing, transfer course work, electives, careers, and graduate school. In order to support working and non-traditional students, the department also provides academic advisement in the evening and for students whose work or course schedule conflicts with their advisor’s office hours. Students who are having difficulty scheduling a meeting with their advisor should call (716) 395-2623 to schedule an appointment with our advisement staff.

International Business Institute: SUNY Brockport’s award-winning International Business Institute is an outstanding resource for international business students and the companies that employ them. Through its many activities and programs, the International Business Institute pursues grant funding, trains executives from companies that are first-time exporters, and helps students to develop a better expertise in international business through market research. Through the Institute’s *Global Export Marketing Services* (GEMS) program, students carry out market research for area companies, under close supervision of their faculty advisor. GEMS students have traveled the globe, helping Rochester area businesses to penetrate foreign markets, including Eastern Europe, Southeast Asia, and Latin America. For more information, call (716)395-5467 or visit 110 Hartwell Hall.

Course Requirements for the International Business and Economics Major

Students must satisfy (1) prerequisite, (2) international business core, (3) cross-cultural, (4) language, and (5) foreign experience requirements as specified below.

I. Prerequisite Course Requirements (15 credits, completed before declaring the major)

Prerequisite courses provide a foundation for upper division coursework. As described in *Course Grade and GPA Requirements for the Major in International Business* above, grades in prerequisite courses are used to determine admission to the major. Students must complete the prerequisite courses with an average prerequisite GPA of at least 3.0 and no grade below “C–” to be certain that they will be admitted to the major.

		Credits
ECN 201	Principles of Economics (Micro)	3
ECN 202	Principles of Economics (Macro)	3
ECN 204	Introduction to Statistics	3
ACC 280	Introduction to Accounting	3
MTH 2XX	Calculus-level math requirement	3
Total:		15

Notes:

- (1) It is expected that full-time students will complete all prerequisite courses no later than the first semester of their junior year. Part-time students should complete prerequisites before undertaking a substantial number of 300-level business courses.
- (2) The MTH 2XX requirement is typically satisfied by taking Calculus I (MTH 201), Business Calculus (MTH 221), or Finite Math (MTH 245). However, any mathematics course at or above the level of MTH 201 (excluding MTH 243, 313, and 441) can be used to satisfy the math requirement.
- (3) Students may elect to substitute the ACC 285/286 sequence for ACC 280. Students considering graduate school (e.g., MBA) are advised to take ACC 281/282.
- (4) An introductory statistics course from another discipline (e.g., psychology) may be substituted for ECN 204. However, credit towards graduation will be allowed for only one introductory statistics course.

II. International Business Core Requirements (27 credits)		Credits
BUS 317	Introduction to Management Information Systems	3
BUS 325	Principles of Finance	3
BUS 335	Principles of Marketing	3
BUS 345	International Business Environment	3
BUS 433	International Marketing	3
BUS 445	International Financial Management	3
ECN 443	International Economics	3
ECN 453	Economic Development and Planning	3
BUS 462	Quality Management Systems	3
Total:		27

III. Foreign Language (3 or more credits)	Credits
One 212 (fourth semester) level or higher course in a foreign or second language.	3

IV. Cross-cultural Core (12 credits)	Credits
Four cross-cultural courses	12

Cross-cultural courses are typically upper division, internationally focused, social science courses focusing on current cultural issues. With the *written* approval of the student's advisor, an appropriate internship may also be used to satisfy up to six hours of this requirement. See *Suggested Cross-Cultural Courses* below.

V. Additional Requirement: Significant Foreign Experience

Students are required to participate in a significant foreign experience. Subject to *written* approval of the student's advisor and the department, this requirement can be satisfied by (1) completing an overseas (foreign country) internship, (2) participating in a study abroad program, (3) completing an appropriate domestic internship (typically with a local business heavily engaged in international commerce), or (4) completion of two 300-level courses in a foreign language with a grade of "C–" or better in each course. *International business majors may not graduate without completing the foreign experience requirement.*

In completing the foreign experience requirement, international business and economics majors can take advantage of one of SUNY Brockport's many opportunities to study abroad. Overseas

programs may take the form of traditional studies or an internship program. With one of the largest study abroad programs in the nation, SUNY Brockport has programs in England, France, Costa Rica, Mexico, Australia, Ghana, Jamaica, Russia, Germany, The Netherlands, Oxford, and many other locations. Summer programs include countries such as Greece, Australia, Mexico, England, and Costa Rica. Internship opportunities are available with many organizations and businesses in Australia, Canada, England, Mexico, Costa Rica, Scotland, and Germany. Students may also use the GEMS program (see *International Institute* above) to satisfy the foreign experience requirement. Students should consult their advisor to ensure that a particular study abroad program or internship program will count toward completion of the major.

For more information on study abroad, contact Office of International Education, 3102 Morgan III, at (716) 395-2119, 1-(800)-298-SUNY and on international internships, call at (716) 395-5500.

Suggested Cross-cultural Courses

The following courses are approved for use in satisfying cross-cultural core requirements. Additional and/or alternative courses may be approved by the department for inclusion in the cross-cultural core.

AAS 302	History of South Africa
AAS 317	Prejudice, Personality and Culture
AAS 360 (AJWD)	Africa Today
AAS 404	Cultures of Sub-Saharan Africa
AAS 408	Pan-Africans
ANT 321 (AJWE)	Culture Change
ANT 322	Culture and Power
ANT 330 (AJ)	World Poverty and Underdevelopment
ANT 332 (AJ)	China in Transition
ANT 402	Latin America
ANT 404	Cultures of Sub-Saharan Africa
CMC 418	Cross-cultural Communication
ENL 365	Asia and the West
ENL 366	Arabic Culture and the West
FCE 420	Multiculturalism in the USA
HST 300	Modern Europe
HST 325	Modern Irish History
HST 341	Middle East Crisis
HST 343 (AJ)	History of the Soviet Union
HST 356	War Since 1945
HST 361	History of Japan
HST 363	Islam
HST 364	History of Britain
HST 387	Asian Survey
HST 388	Traditional China
HST 424	American Foreign Relations
HST 431	History of Canada
HST 432	20th Century Latin America
HST 435	U.S.-Latin American Relations
HST 449	Europe in the 20th Century
HST 456	Modern France
HST 460 (AJ)	Modern Africa
HST 463	Revolution and Communism in China
HST 470	Capitalism and Culture
HST 494	History of Mexico
PLS 304	International Organization Simulations

PLS 305	Politics of European Integration
PLS 333	American Foreign Policy
PLS 338 (AIW)	Global Issues
PLS 342	Latin American Politics
PLS 343	Canadian Politics and Society
PLS 348	Politics of the Pacific Rim
PLS 364	Politics of Developing Countries
PLS 383	Middle East in World Politics
PLS 410	International Political Economy
PLS 445	International Law and Organization
PLS 447	Russia in Transition
PLS 470	Nationalism
PLS 475	Political Geography
SOC 306	Social Change in the Third World
SOC 317	Prejudice, Personality and Culture
SWO 321	Cultural Diversity
SOC 325	Social Class, Status and Power
SOC 427	Power in Human Societies
WMS 422	Women's Education In Developing World

Minor in Business Administration

A minor in business consists of 21 credits of selected business and economics course work as described in *Course Requirements* below, with a minimum of 12 credits of coursework completed at SUNY Brockport. A student's cumulative GPA, in the Brockport courses used to satisfy requirements of the minor, must be at least 2.0.

Declaring the Minor in Business

Students should declare the minor in business immediately after completing any one of the required courses. It is important to declare a minor as soon as possible as it will allow the department to plan for enrollments and ensure that an adequate number of course seats are available for students minoring in business. The forms required to declare the minor are available in 119 Hartwell Hall.

Course Requirements

	Credits
ECN 201, 202 or 1001	3
ACC 280	3
ECN 204	3
BUS 325	3
BUS 335	3
BUS 365	3
Principles of Finance (prerequisites include MTH 121 or equivalent)	3
Principles of Marketing	3
Principles of Management	3
one additional BUS/ECN course at the 300/400 level, <u>excluding BUS 366</u>	3
Total:	21

Notes:

- (1) Students may substitute the ACC 281/282 sequence for ACC 280.
- (2) An introductory statistics course from another discipline (e.g., psychology) may be substituted for ECN 204. However, credit toward graduation will be allowed for only one introductory statistics course.

¹ ECN 100 is a one semester course in micro- and macro-economics. ECN 100 does NOT meet the requirements for any major in the department.

- (3) Students must complete the minor with an overall GPA of 2.0 in the courses taken at SUNY Brockport.
- (4) Students majoring in accounting or international business and economics may not declare a business minor.
- (5) The number of minors may be limited to ensure an adequate number of seats for business majors; students should declare the minor as soon as possible to ensure admission.

ADVISEMENT: The student's MAJOR advisor provides pre-registration approval for courses in the minor. Business and Economics faculty can serve as informal advisors in the selection of the required upper division elective.

Minor in Economics

A. Economics Minor with a Liberal Arts Major

Eighteen credits must be successfully completed, including: ECN 201, 202, 301, 302, and two additional upper-division economics courses. ECN 305 may be substituted for ECN 301, but both courses may not be taken for credit. A minimum of nine credits of coursework must be completed at SUNY Brockport. A student's cumulative GPA, in the Brockport courses used to satisfy requirements of the minor, must be at least 2.0.

B. Economics Minor with a Business Administration Major

ECN 201, 202, 302, 304, and 301 or 305, plus one additional upper-division economics course must be successfully completed. A minimum of nine credits of coursework must be completed at SUNY Brockport. A student's cumulative GPA, in the Brockport courses used to satisfy requirements of the minor, must be at least 2.0.

Course Descriptions

Note: Whenever the terms "MTH 121 or higher" or "MTH 201 or higher" are used, the following math courses are excluded: **MTH 243, 313 and 441.**

Accounting Courses

ACC 280 Introduction to Accounting (B). *Prerequisite: MTH 121 or higher.* Surveys aspects of both financial and management accounting from a user's perspective. Includes the accounting cycle, and preparation and analysis of financial statements and management reports. This course does not meet any requirements for accounting and business administration majors. 3 Cr. Every Semester.

ACC 281 Introduction to Financial Accounting (B). *Prerequisite: MTH 121 or higher.* Provides an introduction to financial statements prepared under generally accepted accounting principles and how such statements are used. Includes preparation and analysis of financial statements and related footnote disclosures, and examines recording and reporting elements of financial statements. 3 Cr. Every Semester.

ACC 282 Introduction to Managerial Accounting (B). *Prerequisites: ACC 281, and MTH 121 or higher.* Provides an introduction to accounting information used by business managers to make short- and long-term decisions. Addresses cost accumulation and product costing, and survey of cost/volume/profit analysis, budgeting, standard costing and variance analysis, choice of business entity, forms of business financing, and

introduction to basic income taxation. 3 Cr. Every Semester.

ACC 283 Introduction to Accounting Systems and Software (B). *Prerequisites: ACC 281 and CIS 106.* Provides an introduction to accounting information systems used by businesses to accumulate accounting data, and the software used to manage the process. Includes the accounting cycle, sales and cash receipts, purchases and cash payments, inventory management, and payroll. Software used includes general ledger and financial statement applications, spreadsheets, word processing, and an Internet browser. 3 Cr. Every Semester.

ACC 385 Intermediate Accounting I (B). *Prerequisites: ACC 282 and MTH 201 or higher.* Covers the accounting cycle in depth, generally accepted accounting principles, and preparation of general purpose financial statements and accounting measurements for cash, receivables, current liabilities, inventories, plant assets, and intangible assets. 3 Cr. Every Semester.

ACC 386 Intermediate Accounting II (B). *Prerequisites: ACC 385, ECN 204, and MTH 201 or higher.* Emphasizes in-depth reporting for stockholders' equity and accounting for corporate bonds and long-term investments, revenue recognition, leases, pensions, statement of cash flows, and income tax allocations. 3 Cr. Every Semester.

ACC 388 Cost Accounting (B). *Prerequisites:* ACC 282, and MTH 201 or higher. Analysis and reporting of internal accounting problems of a business dealing with cost behavior, cost accounting systems, budgeting, and performance measurement. Includes cost-volume-profit analysis, variance analysis, standard costing procedures, and managerial decisions analysis. 3 Cr. Every Semester.

ACC 389 Accounting Profession Seminar (B). *Prerequisites:* ACC 281 and ACC 282. *Corequisite:* ACC 385. Develops the professional acumen of accounting students, consistent with the expectations of accounting firms. Examines accounting as a profession, focusing on expected professional comportment and work behaviors of accounting professionals. Students are required to conform to a mandatory dress code and to participate in events sponsored by professional accounting organizations. Accounting majors should complete this seminar in their junior year. 1 Cr. By Arrangement.

ACC 485 Federal Income Tax (B). *Prerequisite:* ACC 385. Covers fundamental income tax principles such as gross income, personal and business deductions, capital gains and losses, depreciation methods, and credits against the tax. Discusses tax-free exchanges for residential and commercial property. 3 Cr. Every Semester.

ACC 486 Advanced Accounting (B). *Prerequisite:* ACC 386. Studies accounting for partnerships, branch operations, consolidated financial statements, and multi-national corporations. 3 Cr. Every Semester.

ACC 487 Auditing (B). *Prerequisite:* ACC 386. Studies the theory and practice of auditing, including the accountant's methods and procedures used to obtain the necessary evidence upon which to base an opinion regarding the fair representations of a client's financial statements. 3 Cr. Every Semester.

ACC 488 Federal Income Tax II. *Prerequisite:* ACC 485 or permission of instructor. Examines the Federal income taxation of corporations and partnerships. Includes corporate organization, dividend and other distributions, partial and complete corporate liquidation, the accumulated earnings tax, the personal holding company tax, taxation of S Corporations, and taxation of partnership interests. 3 Cr.

ACC 489 Accounting for Non-profit Entities (B). *Prerequisite:* ACC 386. Examines the unique characteristics of government and not-for-profit entities, including their use of funds and account groups. Emphasizes the accounting of various funds and account groups as well as other

budgeting, classification, and financial reporting issues. 3 Cr. Spring.

ACC 498 Accounting Internship (A). *Prerequisite:* At least 12 hours of accounting coursework completed; 2.75 in major, 2.5 overall. Provides supervised experience in an accounting environment, with an opportunity to apply concepts learned in accounting coursework. An opportunity for students to better understand (1) accounting career opportunities, (2) the accounting work culture, (3) the high level of professional acumen required to be successful in accounting. Recommended for all accounting students without accounting work experience. 1–6 Cr. Every Semester.

ACC 499 Independent Study in Accounting (A). *Prerequisites:* ACC 281, ACC 282 and ACC 385 or instructor's permission. Students pursue accounting topics and/or projects beyond those covered in regularly scheduled accounting courses. Arranged in consultation with the instructor/sponsor who will supervise and direct the student. Registration requires completion of forms prior to the beginning of the semester. 1–6 Cr. Every Semester.

Business Administration Courses

BUS 317 Introduction to Management Information Systems (A,T). *Prerequisite:* CIS 106, ACC 280 or A CC 281, or instructor's permission. Explores the use of information systems in organizations. Examines how different types of information systems are used to enhance performance of organizations, management, and employees. Introduces the system development process and the management of information system resources, including data, hardware, software, infrastructures and personnel. Develops an intermediate level of end-user computing skill, and assumes introductory-level knowledge of MS Office applications. 3 Cr. Every Semester.

BUS 325 Principles of Finance (A). *Prerequisites:* ACC 280 or A CC 281; ECN 201, 202, and 204; MTH 121 or higher. *Corequisites:* CIS 106 (or ability to use spreadsheets), ENL 308 or instructor's permission. Provides a foundation in corporate financial decision making. Covers the business environment, time value of money, risk and diversification, market efficiency and valuation. Applies these concepts to financial analysis and planning, capital budgeting, and financing. (Note: Declared minors in business may enroll in the course with ECN 100 or ECN 201 or ECN 202.) 3 Cr. Every Semester.

BUS 335 Principles of Marketing (A). Helps students develop an understanding of marketing in an organization through analyses of role,

structure and processes, as they relate to proprietary and public organizations; and covers selection of markets, service/products, and analysis of consumer needs and wants. *3 Cr. Every Semester.*

BUS 345 International Business Environment (A). Analyzes the environmental aspects of foreign countries, the ability to promote trade with other countries, and the sovereign rights of other nations and their people. *3 Cr. Every Semester.*

BUS 365 Principles of Management (A). An introductory course designed to acquaint students with an overall understanding of management. Discusses and explores the classic function of management including motivating, planning, organizing, influencing and controlling. Uses various methods to present the material. *3 Cr. Every Semester.*

BUS 366 Organizational Behavior (A). *Prerequisites: BUS 335, ECN 201, and ECN 202. Ability to use a word processor is assumed. Completion of ENL 308 is advised.* Examines the interaction between micro-level individual behavior and characteristics and the macro-level dynamics of an organization, highlighting management functions that facilitate motivation, control, and success of the organization. Topics include human motivation, performance appraisal, group dynamics, communications, organizational development, organizational culture, cross-cultural and global issues. (*Open to majors and intents only, business and accounting.*) *3 Cr. Every Semester.*

BUS 368 Management Skills (A). *Prerequisites: Declared business intent or major, ENL 308 and [BUS 366 or instructor's permission].* Develops skills that are key to effective management. Including interpersonal, leadership, time management, conflict resolution, communication, team, and presentation skills. Covers basic administrative skills; e.g., how to hire, how to fire, discussing performance evaluations, coaching, motivation, man aging meetings. Topics include diversity, self-awareness, ethical decision making, and business etiquette. *3 Cr. Every Semester.*

BUS 369 Management Topics Seminar (A). *Prerequisites: Declared major, BUS 366, ENL 308 or instructor's permission.* Covers key issues important to any individual interested in a management career. Topics evolve and currently include quality, reengineering, diversity, compliance, downsizing, out sourcing, supplier development, compliance issues, trends in management education, etc. Helps students identify areas of specific interest within management and aid them in selecting their remaining electives. *3 Cr. Every Semester.*

BUS 375 Business Law I (A). Provides basic knowledge of the legal environment of business,

including, but not limited to, the judicial system of jurisprudence and the substantive laws of torts, contracts and agency. *3 Cr. Every Semester.*

BUS 376 Business Law II (A). *Prerequisite: BUS 375 or instructor's permission.* Includes topics such as sales, negotiable instruments, secured transactions, bankruptcy, personal property, business entity concepts, real property, wills and trusts. *3 Cr. Spring.*

BUS 378 Business, Government and Society (A). *Prerequisites: BUS 375, declared major, minor, or intent. Completion of ENL 308 is advised.* Investigates the balance between competitiveness, ethics, and various societal issues, developing the student's ability to critically analyze complex ethical and societal topics. Topics include identification and management of public issues, ethical frameworks and their relevance to business, social responsibility, ecology and the environment, public policy, and the justification for and current status of government regulation and oversight of business. *3 Cr. Every Semester.*

BUS 417 Systems Analysis and Design (A). *Prerequisite: BUS 317 or instructor's permission.* Examines the phases within the systems life cycle for development of an information system application. Emphasizes the standards, tools and techniques required in the analysis of information requirements and in logical design. *3 Cr. Spring.*

BUS 420 Short-Term Financial Management (A). *Prerequisites: BUS 325, ENL 308, MTH 2XX, ACCM® Associate course.* Comprehensive introduction to short-term financial management and working capital management, including cash management systems, management of corporate liquidity, receivables and payables management, banking and payments systems. Students successfully completing the course with a grade of "B" or better are currently eligible to take the Certified Cash Manager's (CCM®) exam and acquire the CCM® designation. *3 Cr. Fall.*

BUS 421 Investment Analysis and Portfolio Management (A). *Prerequisites: BUS 325 and ECN 304.* Provides an introduction to modern investment theory and analysis. Covers the organization and functioning of securities markets, risk and return relationships, modern portfolio theory, asset pricing models, efficient markets and arbitrage concepts, stocks, bonds, options, futures, mutual funds, convertibles, and warrants. *3 Cr. Every Semester.*

BUS 422 Corporate Financial Policy (A). *Prerequisites: BUS 325, ENL 308, and completion of departmental math prerequisites. Corequisite: ECN 304.* Provides an in-depth coverage of corporate financial analysis and policy stressing agency theory, valuation and market efficiency, capital

budgeting under conditions of certainty and uncertainty, capital structure, dividend structure, dividend policy, corporate restructuring and leasing. Extensive data and spreadsheet analysis. 3 Cr. Every Semester.

BUS 428 Seminar in Finance (A). *Prerequisites:* ENL 308, BUS 421, BUS 422, and departmental math requirement or instructor's permission. Addresses recent developments in the area of corporate financial policy and/or investment analysis. Reviews recent literature, analysis of cases and situations, and use of software packages as appropriate. Topics rotate, so students should check with instructor to confirm interest in the subjects to be addressed. Offered every year, typically in the spring. 3 Cr.

BUS 431 GEMS Seminar (A). *Prerequisites:* Permission by instructor, BUS 335. Survey course designed to give students hands-on exposure to a wide variety of specific, business-related topics that must be considered when conducting business in other countries. Topics include marketing, logistics, data bases and other information sources, the internet, political and economic factors, legal considerations, banking and financial implications. Primarily a seminar format. 3 Cr. Spring.

BUS 432 Sales Management (A). *Prerequisite:* BUS 335. Considers responsibilities and challenges of managing the sales function. Analytical and interpersonal skills are stressed, including planning, organizing, directing, motivating, and controlling a sales organization. Legal and ethical issues are examined. 3 Cr. Spring.

BUS 433 International Marketing (A). *Prerequisite:* BUS 335. Examines and analyzes the similarities and differences among domestic and foreign markets. Includes analysis of the consumers, 4 P's (product, price, place, promotion), uncontrollable variables, and implementation of the marketing concept in a foreign market. Investigates the coordination and integration of a firm's national marketing program with its foreign marketing program. 3 Cr. Spring.

BUS 434 Direct Marketing (A). *Prerequisite:* BUS 335. Discusses one of the fastest growing marketing sectors. Covers database creation and management, direct mail, catalogs, telemarketing, and use of the media as stand-alones or integrated into a marketing mix. 3 Cr. Fall.

BUS 435 Consumer Behavior (A). *Prerequisite:* BUS 335. Explores how individual and group behavior affects marketing decisions, and how to market the right product/service to proper market segments. Relates behavior characteristics to product, price, place and promotion. 3 Cr. Fall.

BUS 436 Market Research (A). *Prerequisites:* BUS 335 and ECN 304. Covers marketing information; proper techniques for problem identification, and use of research methodology and techniques to define problems, using primary and secondary data sources. 3 Cr. Spring.

BUS 437 Promotional Policy (A). *Prerequisites:* BUS 335 and 435. Provides an overview of promotional policies, the relationship between promotional policy and marketing process, and the promotional policy in the context of the behavioral sciences. Discusses how to evaluate, select and implement integrated forms of communication to the publics served by the organization. 3 Cr. Spring.

BUS 438 Supply Chain Management (A). *Prerequisites:* BUS 335. Discusses the management of resource transformations between raw material and end user, via value added in manufacturing, marketing, or logistics. 3 Cr. Fall.

BUS 439 Retail Management (A). *Prerequisite:* BUS 335. Covers basic marketing functions of merchandising, promotion, control, and organization as they relate to retail organizations. 3 Cr. Spring.

BUS 440 Business-to-Business Marketing (A). *Prerequisite:* BUS 335. Studies industrial organizations, policy formation, and the use of buying and selling in industrial and governmental organizations, as well as buyer-seller relationships. 3 Cr. Fall.

BUS 441 Marketing Management (A). *Prerequisites:* Marketing specialty major and senior status. Provides an introduction to marketing problems as they relate to proprietary and public organizations, and decisions needed in product and service pricing, distribution and promotional strategy. Uses case analyses. 3 Cr. Spring.

BUS 445 International Financial Management (A). *Prerequisite:* BUS 345 or instructor's permission. Covers the theories and practical aspects of international financial management. Includes topics such as international payments mechanism, ex change market operations, arbitrage and hedging, spot and forward exchange, long-term international capital movements, international financial institutions, accounting, and taxation. 3 Cr. Spring.

BUS 461 Production and Operations Management (A). *Prerequisites:* ECN 304, CIS 106, and one of the following: MTH 201, 221, or 245. Completion of ENL 308 is advised. Focuses on issues and techniques associated with managing the day-to-day operations of the firm. Topics include decision-making, forecasting, project management, quality, inventory management, production

planning, production methods, product design, location planning, facilities layout, scheduling, purchasing, and capacity planning. *3 Cr. Every Semester.*

BUS 462 Quality Management Systems (A). *Prerequisite: CIS 106, ECN 204, BUS 335, and BUS 345. Completion of ENL 308 is advised.* Discusses and contrasts various organizational systems and behaviors that promote product and service quality. Investigates micro-level individual behaviors and macro-level organizational issues and policies that impact quality. Helps students understand how some management and organizational systems represent barriers to quality. Explores how approaches to quality differ across the international business community. Topics include TQM, continuous improvement, process reengineering, benchmarking, statistical process control, and ISO standards. *3 Cr. Spring.*

BUS 463 Small Business Management (A). *Prerequisite: CIS 106 and declared business major or minor.* For the prospective small business manager who needs the tools and techniques essential for starting, building and maintaining a successful enterprise. Includes topics helpful to the successful operation of the small business, especially finance, marketing, production, personnel, inventory control, purchasing, planning, cost control, computer systems and entrepreneurial leadership. *3 Cr. Fall.*

BUS 464 Electronic Commerce (A). *Prerequisites: CIS 106, BUS 368, BUS 317, ENL 308 or instructor's permission.* Explores issues, methods, and opportunities associated with electronic forms and methods of business., focusing on web-based commerce. Topics include business models, transactions and payments, processing, marketing issues, legal issues, security concepts and issues, creativity and idea generation, establishment of channel partnerships, hardware and software support and business resources available on the web. Students learn various aspects of designing, creating, and running an Internet business. *3 Cr. Spring.*

BUS 465 Human Resources Management (A). *Prerequisites: BUS 365 or 366. Ability to use a word processor and the internet is assumed. Completion of ENL 308 is advised.* Undertakes a broad survey of the human resources management issues faced by contemporary organizations. Topics include human resource planning, recruitment, selection, orientation, training and development, performance management, compensation and benefits, employment law, unions, and collective bargaining. Students should take BUS 465 before enrolling in BUS 467 or 468. *3 Cr. Every Semester.*

BUS 467 Employment Law and Compliance (A). *Prerequisites: CIS 106, ENL 308, BUS 366, BUS 375, and BUS 368.* Examines the relationship between public policy and current human resource management practices. Major emphasis on developing and understanding of the legal rights and responsibilities of employees and employers in the employment relationship. The content, enforcement, interpretation, and day-to-day application of employment laws are considered. It is recommended that students complete BUS 465 prior to taking this course. *3 Cr. Fall.*

BUS 468 Advanced Human Resources Topics (A). *Prerequisite: BUS 465 or instructor's permission.* Designed to explore and further elaborate on key topics introduced in BUS 465. Topics include recruitment and selection, performance management and development, and compensation and benefits administration. Particular emphasis placed on developing skills and knowledge necessary for entry-level positions in human resources management. *3 Cr. Spring.*

BUS 475 Strategic Management (A). *Prerequisites: BUS 325, 335, 345, 366, ENL 308, declared business major, and senior status.* The student's ability to use spreadsheet and word-processing software is assumed. Emphasizes the use of theories and models to solve complex business problems and prepare comprehensive case analyses. *3 Cr. Every Semester.*

BUS 490 Senior Thesis Research (A). *Prerequisites: GPA of 3.25, declared major, and 18 credits of upper-division business courses.* Part of a two-semester course of study aimed at providing students an opportunity to acquire in-depth knowledge in a specialized area. Allows students to select a faculty member willing to serve as their thesis advisor. Requires students to identify a research topic, and conduct background research to include the preparation of an introduction and bibliography. The data should be collected by the end of the semester. *3 Cr. By arrangement.*

BUS 491 Senior Thesis (A). *Prerequisite: Completion of BUS 490.* Provides a continuation of BUS 490. Requires students to analyze collected data, explain the results and prepare conclusions. Requires the thesis to be in proper thesis format according to departmental procedures. *3 Cr. By arrangement.*

BUS 498 Internship (A). *Prerequisites: 2.75 GPA in major and 2.5 GPA overall.* Provides supervised experience in a business environment. *By arrangement through the department's internship coordinator. 3 or 6 Cr.*

BUS 499 Independent Study in Business Administration (A). Entails special projects in business under the direction of individual staff

members. Arranged in consultation with the instructor/sponsor and in accordance with the procedures of the Office of Academic Advisement prior to registration. *1–6 Cr. By arrangement.*

Economics Courses

ECN 100 Contemporary Economic Problems (A,S). Covers economic reasoning through the application of essential economic principles, basic principles underlying competing economic systems, and differences between macro- and micro-economic theory as applied to current issues confronting the American economic system. *3 Cr. Every Semester.*

ECN 201 Principles of Economics—Micro (A). *Prerequisite: MTH 121 or equivalent or instructor's permission.* Covers determination of prices, demand and supply, behavior of the firm, and resource allocation. *3 Cr. Every Semester.*

ECN 202 Principles of Economics—Macro (A). Covers problems of the aggregate economy and the policies used to control those problems. *3 Cr. Every Semester.*

ECN 204 Introduction to Statistics (A). Covers basic concepts of statistical analysis, including descriptive statistics, probability and expected value, sampling, and estimation. Note: Students who have received credit for BIO 431, MTH 243, PSH 202, PLS 300, SOC 200, or transfer credit for an elementary statistics course at another institution may waive ECN 204. Students will not receive credit for both ECN 204 and another elementary statistics course. *3 Cr. Every Semester.*

ECN 301 Intermediate Microeconomics (A). *Prerequisites: MTH 121, ECN 201 and 202.* Covers the basic tools and techniques of microeconomic analysis, the theory of consumer behavior and demand, theory of the firm and market equilibria, and input markets. *3 Cr. Every Semester.*

ECN 302 Intermediate Macroeconomics (A). *Prerequisites: MTH 121, ECN 201 and 202.* Covers the basic tools of macroeconomic analysis, including the determination of national income, employment and price levels, and an analysis of macroeconomic stabilization policies. *3 Cr. Every Semester.*

ECN 304 Intermediate Statistics (A). *Prerequisite: MTH 121, ECN 204 or equivalent.* Includes inferential statistics, index numbers, regression and correlation analysis, time series analysis, and chi-square tests. Emphasizes both the proper use and possible abuse of statistical methods in the context of business and economic applications. *3 Cr. Every Semester.*

ECN 305 Managerial Economics (A). *Prerequisites: MTH 121, ECN 201, 202 and 204.* Provides an introduction to the economic analysis of business decisions. Includes decision theory, demand theory, and the economic theory of production and costs. *3 Cr. Every Semester.*

ECN 321 Money and Banking (A). *Prerequisites: ECN 201 and 202.* Covers the role of money in the modern economy, emphasizing the role of depository institutions, and the evolution of the central banking structure together with domestic and inter national monetary policy. *3 Cr. Fall.*

ECN 333 Health Economics (A). *Prerequisite: ECN 201 or 111.* Analyzes both narrow questions, such as the distribution, efficiency and equity of health delivery systems, and broader issues of the relation between public health and economic activity. *3 Cr. Spring*

ECN 361 Labor Market Analysis (A). *Prerequisites: ECN 201 or 111 and instructor's permission.* Focuses on the issues and the analysis of labor markets. Includes wage determination and income distribution, skill structure of the workforce, unionism and unemployment. *3 Cr.*

ECN 425 Financial Institutions (A). *Prerequisite: ECN 302.* Covers financial institutions, their operations, and the interrelationships among those that operate in the domestic and international money and capital markets, with emphasis on current problems and issues. *3 Cr. Every Year.*

ECN 443 International Economics (A). *Prerequisites: ECN 201 and ECN 202.* Uses basic economic tools to study pure trade theory and interrelations between the domestic and the international economy. Examines the basis of trade; gains from trade; theory and practice of protection; nature, disturbance, and readjustment of the balance of payments; international monetary systems; internal and external balance; macroeconomic coordination; exchange rate variation; and other topics. *3 Cr. Spring.*

ECN 453 Economic Development and Planning (A). *Prerequisites: ECN 201 and ECN 202.* Includes topics such as the characteristics of developing countries; the meaning of development; the issues relating to population growth, migration, employment; theories of growth and development; issues in agriculture and industrial development; the objectives, principles, techniques, and problems of economic planning; case studies in development and planning; and other topics. *3 Cr.*

ECN 461 Human Resource Economics (A). *Prerequisites: ECN 201 and 202.* Covers the development and utilization of labor as a productive resource. Has a policy emphasis. *3 Cr.*

ECN 485 Economics Research (A). *Prerequisites:* ECN 301, ECN 302, ECN 304 and one additional upper division economics course. Emphasizes the skills of inquiry, analysis, and communication required of a professional economist. Students learn to find information, analyze it, and communicate the results of their analysis. 3 Cr.

ECN 490 Senior Thesis Research (A). *Prerequisites:* GPA of 3.25, declared major, and 15 credits of upper-division economics courses. Part of a two-semester course of study aimed at providing students with an opportunity to acquire in-depth knowledge in a specialized area. Allows students to select a faculty member willing to serve as their thesis advisor. Requires students to identify a research topic, and conduct background research to include the preparation of an introduction and bibliography. The data should be collected by the end of the semester. 3 Cr. *By Arrangement.*

ECN 491 Senior Thesis (A). *Prerequisite:* Completion of ECN 490. Provides a continuation of ECN 490. Requires students to analyze collected data, explain the results, and prepare conclusions.

Requires the thesis to be in proper thesis format according to departmental procedures. 3 Cr. *By Arrangement.*

ECN 498 Economics Internship (A). *Prerequisite:* At least 12 hours of economics coursework completed; 2.75 in major, 2.5 overall. Provides supervised experience in a work environment, with an opportunity to apply concepts learned in economics coursework. An opportunity for students to better understand career opportunities in the field of economics, including careers related to economic development, economic planning, international trade, banking systems, and banking policy. Helps students understand the professional expectations of employers and the work culture. 1–6 Cr. *Every Semester.*

ECN 499 Independent Study in Economics (A). Entails special projects in economics under direction of individual staff members. Arranged in consultation with the instructor/sponsor and in accordance with procedures of the Office of Academic Advisement prior to registration. 1–6 Cr. *By Arrangement.*

Department of Chemistry

230 Smith Hall
(716) 395-2182

Chairperson: Thomas W. Kallen; *Professors:* K. Thomas Finley, Kallen, J. Emory Morris; *Associate Professors:* Kenneth D. Schlecht; *Assistant Professors:* Mark P. Heitz, Markus M. Hoffman; *Lecturer:* Carolyn J. Greene.

Chemistry Programs

Chemists study atoms and molecules with the goal of understanding the composition, properties and changes that substances undergo. They identify individual components of materials found in nature, and measure how much of them are present. They also recombine atoms and molecules to deduce the rules of combination and to make new substances. Chemistry is also central to understanding other branches of science—the biological, earth, medical, and materials sciences, along with aspects of physics and astronomy. Knowledge of chemistry is crucial to understanding the manufacture and uses of many common materials such as metals, plastics, fibers, paper, glasses and ceramics; food products and food supplements, flavors and cosmetics; detergents and household chemicals; and pharmaceuticals, pesticides, paints, dyes and inks.

Chemistry is used in medical and criminal investigations, and in studying causes, effects, and cures for pollution. Finally, chemistry is central to authenticating, conserving, restoring, and preserving cultural treasures including rare books and documents, fine art, architectural works, and artifacts of the recent and distant past.

Students who major in chemistry and who choose appropriate electives are well prepared for advanced study in chemistry or related sciences such as biochemistry and molecular biology, computer sciences (with appropriate undergraduate work in computer science), engineering (especially chemical or environmental), environmental studies, forensic science, information

science, materials science, neuro-science, pathology, pharmacology, physiology, or technical writing, and for advanced study in the health care professions: medicine, dentistry, and veterinary medicine. Students who major in chemistry are also well prepared to enter careers in:

1. Commerce and industry: quality control, research and development, manufacturing, marketing and sales, and management.
2. Education: teaching at the primary or secondary level or, after advanced study, at the university level.
3. Government: laboratories, regulatory agencies and legislative staffs.
4. Private and foundation-supported organizations conducting any of these kinds of activities.

Students at SUNY Brockport interested in the study of chemistry may choose: a major in chemistry; a major in chemistry with American Chemical Society Certification; a major in chemistry following the biochemistry track; dual majors in chemistry and another science, mathematics or computer science; chemistry and teacher certification; chemistry and business administration; or chemistry and a non-science discipline. They may also enter the 3 +2 program leading to BS degrees in chemistry and chemical engineering. Some of these dual programs may require more than eight semesters and 120 credits to complete. Minors in chemistry can be designed to emphasize organic chemistry (synthesis and mechanisms), biochemistry, or analytical and physical chemistry. All minors require a minimum of 18 credits.

Students interested in the study of chemistry should speak with their chemistry instructors, the department chairperson, or the departmental advisor as early in their careers at SUNY Brockport as possible, since the study of chemistry is highly sequential. Some advanced courses require previous courses in chemistry, physics, or calculus.

Major in Chemistry

The student must earn a minimum of 34 credits in chemistry, complete three semesters of calculus and one year of calculus-based physics with lab.

Required Courses (34 credits)

The following courses are required of all majors:		Credits
CHM 205–206	College Chemistry I, II	8
CHM 301	Chemical Safety	1
CHM 303	Quantitative Analysis	4
CHM 305–306	Organic Chemistry I, II	8
CHM 400–401	Seminar I, II	2
CHM 405–406	Physical Chemistry I, II	6
CHM 408–409	Physical Methods Laboratory I, II	2
	*Elective(s)	3
	Credits in Chemistry	Total: 34
MTH 201–202–203	Calculus I, II, III	9
PHS 201–202	College Physics I, II	8
	Credits in Math and Physics	Total: 17

*Three credits of electives from the 300/400-level in chemistry, excluding Contemporary Issues courses (suffix I).

Students completing two majors may, by petition to the Department of Chemistry, substitute a relevant upper-division course in another natural or mathematical science for three credits of chemistry elective.

To make normal progress in the major, a student should complete CHM 205–206 in the freshman year, and CHM 301, 303, 305–306, PHS 201–202, and MTH 201, 202, 203 before entering the junior year.

American Chemical Society (ACS) Certification

The American Chemical Society, through its Committee on Professional Training, establishes a professional standard for the undergraduate curriculum in chemistry. This committee also

evaluates undergraduate programs and approves those departments which meet its standards. The SUNY Brockport Department of Chemistry is on the list of approved departments. Students whose goal is employment as a chemist or entry into chemistry graduate programs are advised to complete the program outlined below, which meets the requirements of the Committee on Professional Training for certification. Graduates who complete the program are also eligible for immediate election to membership in the ACS.

ACS Certified Major in Chemistry

Required courses for the major in chemistry (first 31 credits listed previously), plus:

Credits

CHM 341	Advanced Organic Chemistry Laboratory I	1
CHM 414	Instrumental Methods II	3
CHM 416	Instrumental Laboratory	1
CHM 431	Inorganic Chemistry	3
CHM 432	Inorganic Chemistry Laboratory	1
CHM 467	Biochemistry I	3
CHM 342	Advanced Organic Laboratory II	
	OR	
CHM 470	Biochemistry Laboratory	1
	*Electives	3
	Credits in Chemistry	Total: 47
MTH 201–202–203	Calculus I, II, III	9
PHS 201–202	College Physics I, II	8
	Credits in Math and Physics	Total: 17

*Three credits of electives chosen from the 300/400-level in chemistry, excluding courses with the suffix I (CHM 372, CHM 373). This elective credit requirement may be satisfied either by an advanced course in mathematics or physics (for which calculus is a prerequisite) or, by petition to the Department of Chemistry, a relevant upper-division course in another of the natural and mathematical sciences. It is strongly recommended that the student also develop a reading knowledge of scientific German and proficiency in computer programming.

Major in Chemistry: Biochemistry Track

		Credits
	Required courses for the major in chemistry (first 31 credits listed previously), and additional courses listed below:	31
CHM 467–468	Biochemistry I, II	6
CHM 470	Biochemistry Laboratory	1
	Credits in Chemistry	Total: 38
BIO 201	Biology I	4
BIO 202	Biology II	4
BIO 301	Cell Biology (spring only)	4
BIO 302	Genetics (fall only)	4
BIO 415	Molecular Biology	3
	Credits in Biology	Total: 19
MTH 201–202–203	Calculus I, II, III	9
PHS 201–202	College Physics I, II	8
	Credits in Math and Physics	Total: 17

Minor in Chemistry

The student must complete CHM 205–206 and a minimum of 10 additional credits of chemistry chosen from courses having CHM 206 as a prerequisite. Normally 10 credits chosen from CHM 301, 303, 305–306, 405–406, and 408–409 are included in this program. Contemporary Issues courses (I) are excluded.

Chemistry Courses

CHM 111 Introduction to Chemistry (A). *Prerequisite:* QNT 110 or waiver for QNT 110. For persons who need to upgrade their chemistry skills in preparation for a technically related career or for enrollment in CHM 205. No prior knowledge of chemistry is assumed. Includes introduction to structure and bonding, the application of basic algebra to frequently used chemical calculations, and formula and chemical equation writing. Illustrated with in-class demonstrations. Three hours lecture and demonstrations per week. 3 Cr. Spring.

CHM 121 Women and Men Do Science: Explorations and Explanations (A,L,W). *Prerequisites or corequisites:* QNT 111 and ENL 112. A physical science Breadth Component course with laboratory which deals with the methods of science in intellectual and practical spheres. Examines contributions of both women and men in the development of current understandings and explanations. Considers the proper roles of citizens and government as related to scientific questions. Provides practice in correct use of scientific terminology and standard English in written and oral communication. Three hours of lecture/discussion and two hours of lab per week. 4 Cr. Every semester.

CHM 171 Elements of Forensic Science (A,N). *Prerequisite:* QNT 111 or equivalent math background. Shows how principles and techniques of biology, chemistry and physics are used to develop evidence for legal proceedings. Includes topics such as types and handling of physical evidence; finger prints; impressions; chromatography; spectroscopy; microscopy; toxicology; and serology (including blood and DNA typing). (Closed to students who have completed CRJ 371.) DOES NOT FULFILL ELECTIVE REQUIREMENTS FOR CHEMISTRY MAJOR OR MINOR. Three hours of lecture/discussion per week. 3 Cr. Fall.

CHM 205 College Chemistry (A,L). *Prerequisite:* QNT 111 or equivalent. Covers atomic structure, chemical periodicity, inorganic nomenclature, chemical bonding, molecular orbitals, molecular structures, properties of solids, liquids, gases, and solutions, chemical equations, and quantitative problems. Three hours lecture and three hours lab per week. 4 Cr. Every Semester.

CHM 206 College Chemistry II (A). *Prerequisite:* CHM 205. Covers strong and weak electrolytes, reactions, buffer systems, structure and bonding of coordination complexes, kinetics, homogeneous and heterogeneous equilibrium,

thermodynamics, chemical equations and quantitative problems. Three hours lecture and three hours lab per week. 4 Cr. Spring.

CHM 260 Chemistry for the Health Professions (A,L). *Prerequisite:* QNT 111 or equivalent and HS Chemistry or CHM 111. Emphasizes the thoughts and actions of modern chemists as they seek a broader understanding of the molecular basis of living systems. Theory and mathematics appropriate for beginning students is directed towards an appreciation of the relationships between molecular structure and the ability to diagnose and treat disease. The notion of decision making in the intellectual discourse of science will be developed. Three hours lecture and two hours lab per week. 4 Cr. Every Semester.

CHM 301 Chemical Safety (A). *Prerequisite:* CHM 206. Covers safety measures for prudent conduct of chemical lab work, hazardous properties of general and specific classes of chemicals, conditions for safe storage of chemicals, fire control and other emergency response measures. One hour lecture per week. 1 Cr. Fall.

CHM 303 Analytical Chemistry I (A). *Prerequisite:* CHM 206. Introduction to analytical methods with emphasis on statistical evaluation of quantitative data and sampling strategies, analytical applications of acid-base equilibria, and chromatographic separations. Topics will also include a survey of classical volumetric methods, quantitative absorption spectrophotometry, and an introduction to ion selective electrode potentiometry. Three hours lecture and four hours lab per week. 4 Cr. Spring.

CHM 305 Organic Chemistry I (A). *Prerequisite:* CHM 206. Presents the chemistry of carbon compounds: structures, stereochemistry, nomenclature, functional groups, acids and bases, reaction mechanisms, spectroscopy, and chromatography, with emphasis on synthesis and reactions of hydrocarbons, alkyl halides and arenes. Three hours lecture and four hours lab per week. 4 Cr. Fall.

CHM 306 Organic Chemistry II (A). *Prerequisite:* CHM 305. Continuation of CHM 305. Covers nomenclature, spectroscopy, synthesis, and reactions including qualitative analysis of alcohols, ethers, aldehydes, ketones, carboxylic acids and derivatives, amines, carbohydrates, and natural products. Three hours lecture and four hours lab per week. 4 Cr. Spring.

CHM 341 Advanced Organic Chemistry Laboratory I (A). *Prerequisite:* CHM 306. Extends lab techniques and the scope of reactions encountered in CHM 305/306. Covers vacuum and fractional distillation, catalytic hydrogenation, organometallic reagents, phase transfer reagents, and other

advanced experiments. Four hours lab per week. *1 Cr. Spring.*

CHM 342 Advanced Organic Chemistry Laboratory II (A). *Prerequisite:* CHM 341. Continuation of advanced techniques begun in CHM 341. Four hours lab per week. *1 Cr. Spring.*

CHM 372 Environmental Issues (A,I). Covers a wide range of environmental issues such as air pollution, acid rain, the greenhouse effect, pesticides, food additives and nuclear power. Also examines risk assessment methods, and the psychological factors and personal values that shape public attitudes. DOES NOT FULFILL ELECTIVE REQUIREMENTS FOR THE CHEMISTRY MAJOR OR MINOR. Three hours of lecture/discussion per week. *3 Cr. Spring.*

CHM 373 American Women Scientists in Contemporary Society (A). *Prerequisite:* Completion of Breadth Component courses. Examines the contributions women have made in scientific fields. Also seeks to determine the validity of the claims of looming deficiencies of scientists in the near future. Finally, assesses the roles that women scientists can and should play in meeting this problem. DOES NOT FULFILL ELECTIVE REQUIREMENTS FOR CHEMISTRY MAJOR OR MINOR. Three hours of lecture/discussion per week. *3 Cr. Spring.*

CHM 399 Independent Study in Chemistry (A). *Prerequisites:* Junior or senior status, and 2.00 GPA overall with a 2.50 GPA in chemistry. To be defined in consultation with the professor-sponsor prior to registration. *1-6 Cr. Every Semester.*

CHM 400 Seminar I (A). *Prerequisite:* Permission of the departmental major's advisor or the course instructor; permission normally requires completion of 20 credits of the chemistry major. Includes attendance at seminars, critique writing, and participation in career and employment workshops. *One hour per week. 1 Cr. Fall.*

CHM 401 Seminar II (A). *Prerequisite:* CHM 400. Continuation of CHM 400. Includes preparation and presentation of a technical speech by each registrant. *One hour per week. 1 Cr. Spring.*

CHM 405 Physical Chemistry I (A). *Prerequisites:* CHM 303, MTH 203 and P HS 202. Covers the laws of thermodynamics and their application to chemical equilibria, phase equilibria, solution chemistry, electrochemistry and surface chemistry. Three hours lecture per week. *3 Cr. Fall.*

CHM 406 Physical Chemistry II (A). *Prerequisites:* CHM 405. Covers chemical kinetics, quantum chemistry, bonding, spectroscopy, statistical mechanics and photochemistry. Three hours lecture per week. *3 Cr. Spring.*

CHM 408 Physical Methods Laboratory I (A). *Prerequisite:* MTH 203, PHS 202, CHM 206. Covers the statistical treatment of data, propagation of errors, graphs, and report writing. Students conduct experiments using modern physical measurement techniques and produce written scientific reports describing and analyzing the methods and their results. Three hours lab per week. *1 Cr. Fall.*

CHM 409 Physical Methods Laboratory II (A). *Prerequisite:* CHM 408. Students conduct experiments using modern physical measurement techniques and produce written scientific reports describing and analyzing the methods and their results. Three hours lab per week. *1 Cr. Spring.*

CHM 413 Instrumental Methods I: Spectral Interpretation (A). *Prerequisite:* CHM 306. Covers proton and carbon-13 nuclear magnetic resonance, ultraviolet and visible, infrared, and mass spectrometry data for the identification and structural elucidation of organic compounds. One hour lecture/discussion per week. *1 Cr. Spring Alternate Years 2001, 2003.*

CHM 414 Instrumental Methods II: Quantitative Spectrometry and Electro-analytical Methods (A). *Prerequisites:* CHM 303, CHM 406. Covers strategies for chemical instrumentation and data acquisition, as well as theory and applications of spectrometric and electrochemical techniques for quantitative determinations and optimization of analytical parameters. Three hours lecture per week. *3 Cr. Fall.*

CHM 416 Instrumental Methods Laboratory (A). *Prerequisites or corequisites:* CHM 414 or both CHM 413 and 415. Covers the operation and application of electro-chemical, spectrometric, and chromatographic instruments with emphasis on optimization of selectivity, sensitivity, and resolution with real samples. Requires written reports. Four hours lab per week. *1 Cr. Fall.*

CHM 431 Inorganic Chemistry (A). *Prerequisite or corequisite:* CHM 406. Studies trends within the periodic table, atomic structure, ionic and covalent bonding models, weak chemical forces, acid-base chemistry, chemistry in aqueous and nonaqueous solutions, and coordination compound bonding, structure, and reactivity. Three hours lecture per week. *3 Cr. Spring.*

CHM 432 Inorganic Chemistry Laboratory (A). *Prerequisite or corequisite:* CHM 431. Explores use of classical synthetic methods to prepare coordination compounds. Applies advanced physical theory and instrumental methods to the problems of defining the composition, structure, bonding, and reactivity of these compounds. Four hours lab per week. *1 Cr. Spring.*

CHM 457 Geochemistry (A). *Prerequisites:* CHM 205, CHM 206 and GEL 101. *Cross-listed as GEL 457.* Applies basic chemical principles of thermodynamics, kinetics, and equilibrium to the investigation of common geologic problems ranging from crystallization of silicate melts to surface reactions on soil minerals. The laboratory exercises will focus on application of good laboratory practices to wet chemical and instrumental techniques involving geologic materials. Three hours lecture and three hours lab per week. 4 Cr. Fall Alternate Years.

CHM 467 Biochemistry I (A). *Prerequisites:* CHM 306; a college course in biology is strongly recommended. *Cross-listed as BIO 467.* Covers the chemistry of proteins, lipids, carbohydrates, nucleic acids and other biomolecules, energy production pathways, biosynthesis, and the deduction of structures, functional roles and mechanisms from experimental data. Three hours lecture per week. 3 Cr. Fall.

CHM 468 Biochemistry II (A). *Prerequisites:* CHM 467 or BIO 467. *Cross-listed as BIO 468.* Continuation of CHM 467. Covers additional metabolic pathways, protein biosynthesis, nucleic acid metabolism, immunochemistry, molecular physiology. Emphasizes experimental evidence for the structures and functions studied. Three hours lecture per week. 3 Cr. Spring.

CHM 470 Biochemistry Laboratory (A). *Prerequisite or corequisite:* CHM 467 or BIO 467. *Cross listed as BIO 470.* Requires the preparation and characterization of biochemicals from a variety of biological sources, enzymology, and experiments designed to measure changes inherent

in the dynamics of living systems. Four hours lab per week. 1 Cr. Fall.

CHM 480 Practical Chemistry Lab Pedagogy (B). *Prerequisites:* CHM 301 or NAS 468, CHM 303 and 306, and at least one semester as a chemistry lab assistant at SUNY Brockport (*this experience carries no credit but is paid*). For students working toward teacher certification in secondary chemistry and general science. Requires students to develop preparation notes, solutions, and reagents for lab experiments. Requires each student to develop a lesson plan, lead a class in the experiment, develop a grading scheme and do the actual grading for a selected experiment. Introduces troubleshooting of simple instruments. Requires a hands-on experience in the practical aspects of lab instruction. Does not satisfy the elective requirement for students not seeking teacher certification. 3 Cr. By arrangement.

CHM 499 Independent Study in Chemistry (A). *Prerequisite:* Senior standing, 2.00 overall GPA, 2.50 GPA in chemistry. To be defined in consultation with the professor-sponsor prior to registration. 1–6 Cr. Every Semester.

NAS 273 Investigation in the Physical Sciences (A,L). *Corequisites:* ENL 112, QNT 111. Provides a study of fundamental aspects of physics and chemistry using processes commonly employed by scientists to probe nature. Gives particular attention to those areas of physical science from which elementary school science topics are drawn. Required for candidates for certification in elementary education. Requires three hours of lecture/discussion and one two-hour lab per week. 4 Cr. Every Semester.

Department of Communication

227 Holmes Hall
(716) 395-2511

Chairperson: Virginia Bacheler; *Professor:* Floyd D. Anderson; *Associate Professor:* Fredric Powell; *Assistant Professors:* Matthew Althouse, Joseph Chesebro, Alice Crume, Carvin Eison, Donna Kowal, Katherine Madden, Bill W. Reed.

Two major curricula are available to students through the Department of Communication: the major in communication and the journalism major.

Students majoring in Communication must choose one of three tracks: (1) Studies, (2) Applications, or (3) Broadcasting.

Communication majors concentrating in the studies track are required to complete two of five course specialties: communication and persuasion; interpersonal and organizational communication; public communication; media in society; and political communication.

In addition to the major, the department offers an 18-credit minor in the Communication Studies Track. Students who wish to minor in Communication must select one of the five specialties offered in the Studies Track in addition to CMC 201 and CMC 202.

Major in Communication BA or BS

Communication Studies Track

The communication studies track deals with communication ranging from interpersonal communication to mass media. This track allows extensive sampling of these various human communication activities with learning experiences in theory, application of theory and performance. The available specialties with the track permit students to develop a program of study in those aspects of communication studies that most interest them. In order to maximize the individual benefit for each student, it is strongly recommended that students discuss the 12-hour course specialties and course choices with their academic advisors.

The communication studies track may serve as an academic major for elementary education certification.

Requirements

Students must complete 36 credits for the program, with at least 21 credits in courses numbered 300–499. The student concentrating in communication studies, in addition to the six-credit core consisting of CMC 201 *Public Speaking* and CMC 202 *Principles of Communication*, selects two 12-hour specialties from the five specialties offered, and six credits of communication electives which may be met by enrolling in any six credits of communication courses for which the student has met the prerequisite, if any. At least 15 of the 36 credits in communication studies must be taken at SUNY College at Brockport.

I. Communication Studies Core

II. Two Specialties

- A. Communication and Persuasion
- B. Interpersonal and Organizational Communication
- C. Media in Society
- D. Political Communication
- E. Public Communication

III. Electives

I. Communication Studies Core (6 credits)

	Credits
CMC 201 Public Speaking	3
CMC 202 Principles of Communication	3

(Must be taken at SUNY Brockport and passed with a grade of “C” or better.)

II. Specialties (two must be selected)

A. Communication and Persuasion Specialty (12 credits)

The communication and persuasion specialty focuses on the study of persuasive transactions in public communication contexts. The anticipated general outcome of such study is an increased understanding of the processes and theoretical principles involved in persuasive human symbolic interaction. Students examine the theories of persuasion, participate in critical examination of practicing persuaders, and examine the context of persuasion. Students interested in pursuing graduate programs or having a specific interest in persuasion/communication theory are attracted to this sequence.

Required Courses:

	Credits
CMC 219 Advertising, Mass Persuasion and the Consumer	3
CMC 319 Propaganda and Persuasion	3
CMC 411 Rhetorical Criticism	3
CMC 492 Theories of Persuasion	3

B. Interpersonal and Organizational Communication Specialty (12 credits)

The interpersonal and organizational communication specialty focuses on the study of communication transactions in dyadic, small group, and organizational contexts. The anticipated general outcome of such study is an increased understanding of the principles, processes, and barriers involved in face-to-face human symbolic interaction.

Students interested in pursuing careers in human resources management, sales, and marketing will find this specialty particularly helpful.

Required Courses:		Credits
CMC 273	Interpersonal Communication	3
CMC 316	Interpersonal Communication in Business and the Professions	3
CMC 473	Theories of Communication	3
CMC 477	Organizational Communication	3

C. Media in Society Specialty (12 credits)

The media in society specialty focuses on the study of media in public and mass communication contexts. The anticipated general outcome of such study is an increased understanding of the interrelationships between communication media and sociocultural, political and intellectual environments. Any student interested in electronic or print media in his or her professional or business career would benefit from this specialty.

Required Courses:		Credits
CMC 210	The Communications Revolutions	3
CMC 372	Film as Social Commentary	3
CMC 463	Mass Communication and Society	3
CMC 467	Theories of Mass Communication	3

D. Political Communication Specialty (12 credits)

The political communication specialty focuses on the study of communication transactions in political contexts. The anticipated general outcome of such study is an increased understanding of the principles and processes of political communication. This is an ideal specialty for students interested in politics, government, history or political science.

Required Courses:		Credits
CMC 211	Protest and Public Opinion	3
CMC 312	Argumentation and Debate	3
CMC 417	20th-century Political Rhetoric	3
CMC 419	Problems in Freedom of Speech	3

E. Public Communication Specialty (12 credits)

The public communication specialty focuses on the study of communication transactions in public settings. The anticipated general outcome of such study is an increased understanding of the principles and processes of speaker-to-audience interactions. Students anticipating work in public relations, sales, law, politics, and public service of any type will find this specialty valuable.

Required Courses:		Credits
CMC 209	Speech Composition and Presentation	3
CMC 410	Speakers, Campaigns and Movements	3
CMC 415	Public Communication in Business, Administration and the Professions	3

III. Electives

All students in the communication studies track are to select a minimum of six credits of electives from communication courses for which they have met prerequisites.

Minor in Communication (18 credits)

(Available in the Studies Track only)

A minor in communication studies track consists of any one of the 12-credit specialties in the communication studies track, plus CMC 201, Public Speaking and CMC 202 Principles of Communication.

Broadcasting Track

The track in broadcasting prepares students for employment with television and radio stations, cable companies, independent production studios and corporate media centers. The broadcasting major consists of 36 credits of coursework, including 15 credits in liberal arts core courses and 21 credits in specialization courses (nine required credits and 12 credits of electives). At least 15 credits in communication must be taken at SUNY Brockport.

In addition, students pursuing the broadcasting track are required to complete a second major or minor at this college in a discipline other than communication.

Successful completion of the broadcasting track requires that students complete, with a grade of “C” or better, the following two courses:

- CMC 202 Principles of Communication (must be taken at Brockport)
- CMC 242 Fundamentals of Radio/Television

Liberal Arts Core (15 credits)		Credits
CMC 202	Principles of Communication (must be taken at Brockport)	3
CMC 242	Fundamentals of Radio and Television	3
CMC 243	Radio and TV Writing I	3
CMC 467	Theories of Mass Communication	3
CMC 496	Contemporary Broadcast Issues	3

Specialization Courses (9 credits)		Credits
CMC 343	Broadcast Announcing	3
CMC 346	Radio Production	3
CMC 348	Television Production	3

Recommended Electives		Credits
(12 credits required; must be selected from the following):		
CMC 312	Argumentation and Debate	3
CMC 319	Propaganda and Persuasion	3
CMC 345	Radio/TV Writing II	3
CMC 353	Broadcast Sales and Marketing	3
CMC 358	ENG/EFP Field Production	3
CMC 366	Broadcast Journalism	3
CMC 446	Advanced TV Production	3
CMC 454	Advanced TV Directing	3
CMC 456	Professional Broadcast Internship	3
CMC 465	Radio Practicum	3
CMC 466	Advanced Broadcast Journalism	3
CMC 468	Law of Mass Communication	3
CMC 495	Senior Honors in TV/Radio Production	3
ART 311	Introduction to Video	3
ART 412	Video Production II	3
THE 124	Voice and Diction	3

Communication Applications Track

The Communication Applications track program emphasizes application of communication theory and principles to an array of communication contexts such as: interpersonal relationships, small group interaction (includes the family), and communication in organizations. Drawing on interrelated principles from the fields of communication, computer science, English, psychology, and sociology, the student develops a holistic view that shows how human communication serves as the connecting force in interpersonal, group and organization contexts. In turn, this prepares students for careers in personnel administration, training and development, marketing, sales, human services, student services, and related careers that require excellent oral communication, written communication, and relationship skills. This track also develops the students' ability to (1) analyze (2) recommend improvements and (3) implement change in complex communication systems.

The track consists of a minimum of 45 credits (27 within the department and 18 outside of the department); 30 of the 45 credits must be taken in courses numbered 300–499. At least 15 credits in communication must be taken at SUNY Brockport.

Required Communication Courses (18 credits)		Credits
CMC 202	Principles of Communication (must be taken at SUNY Brockport and passed with a grade of "C" or better)	3
CMC 273	Interpersonal Communication	3
CMC 316	Interpersonal Communication in Business and the Professions	3
CMC 415	Public Communication in Business, Administration, and the Professions	3
CMC 473	Theories of Communication	3
CMC 477	Organizational Communication	3
Cognate Requirements (9 credits, with not more than 3 credits from one department)		
CSC 304	Office Information Systems (prerequisite CSC 104)	3
ENL 305	Advanced Composition	3
PSH 331	Personality (prerequisite PSH 101, 110 or 112)	3
	or	
PSH 332	Social Psychology (prerequisite PSH 101, 110 or 112)	3
SOC 427	Power in Human Societies	3
	or	
SOC 361	Sex, Marriage and the Family (prerequisite: any lower-division sociology course)	3
Communication Electives (9 credits)		Credits
To be selected by advisement from the following:		
CMC 312	Argumentation and Debate	3
CMC 314	Small Group Communication	3
CMC 317	Interviewing	3
CMC 418	Inter-cultural Communication	3
CMC 319	Propaganda and Persuasion	3
CMC 332	Public Relations Principles & Practices (prerequisite: CMC 224, Newswriting & Reporting)	3
CMC 413	Nonverbal Communication	3
CMC 475*	Communication Applications Internship I	3
CMC 479	Conflict Management	3
CMC 483	Communication Training and Development	3

*Open only to seniors majoring in communication applications track who have a minimum GPA of 2.8 in their major.

Outside Specialization (9 credits)

After selecting a related area of academic study that most closely supports their educational and career goals, students will consult with their advisors to elect courses in that department. All three courses must be taken in one department and at least two must be at the 300–499 level. The disciplines are: Business Administration, Computer Science, Economics, English, Political Science, Psychology, and Sociology. If the student can demonstrate that some other academic area more clearly relates to his or her educational and career goals, this area can be used to meet this requirement. No course can be used to fulfill more than one requirement in this program.

Major in Journalism

The BA or BS in Journalism, administered by the Department of Communication, prepares students for careers in newspaper, magazine, broadcast and wire service journalism; public and community relations; public information; advertising; corporate communications and government service.

The major in journalism consists of at least 36 credit hours of coursework in journalism and communication within the Department of Communication, **together with a requirement that students complete a minor or second major (or with department approval other contractual program of study not constituting a minor or second major) in a disciplinary area outside the Department of Communication.** Completion of all requirements for the major in journalism thus requires a minimum of 54 credit hours of prescribed and elective coursework. At least 15 of the 36 credit hours required in journalism and mass communication courses must be taken at SUNY College at Brockport.

Successful completion of the major in journalism requires students to complete, *with a grade of “C” or better*, CMC 202, Principles of Communication (required of all majors in the Department of Communication and must be taken at Brockport); and both CMC 262, *Introduction to Mass Communication*, and CMC 224, *Newswriting and Reporting* (or their approved transfer equivalents). In addition, students are expected to successfully complete a Journalism Skill Qualifying Examination prior to their acceptance into the major in journalism.

Journalism and Mass Communication Requirements		Credits
I. Journalism/Mass Communication Core (21 credits)		
CMC 202	Principles of Communication	3
CMC 210	The Communication Revolutions	3
CMC 224	Newswriting and Reporting	3
CMC 262	Introduction to Mass Communication	3
CMC 468	Mass Media Law and Ethics	3
CMC 493	Current Journalism Issues and Problems	3
CMC 494	Journalism Thesis/Project	3
<i>AND any one of the following, selected by advisement:</i>		
CMC 438	History of American Journalism	3
CMC 463	Mass Communication and Society	3
CMC 467	Theories of Mass Communication	3

In addition, students pursuing the journalism major must select, with advisement, one of the following 15 credit hour specialization sequences:

II. News-Editorial Sequence (15 credits)		Credits
CMC 226	Advanced Newswriting and Reporting	3
CMC 322	Editorial Methods	3
CMC 325	Feature Writing	3
<i>AND any two of the following, selected by advisement:</i>		
CMC 243	Radio and Television Writing I	3

CMC 228	Public Relations Writing	3
CMC 323	Newspaper Layout and Design	3
CMC 326	Public Affairs Reporting	3
CMC 328	Editorial and Opinion Writing	3
III. Electronic Journalism Sequence (15 credits)		Credits
CMC 243	Radio and Television Writing I	3
CMC 343	Broadcast Announcing	3
CMC 366	Broadcast Journalism	3
CMC 466	Advanced Broadcast Journalism	3
<i>AND any one of the following, selected by advisement:</i>		
CMC 346	Radio Production	3
CMC 348	Television Production	3
CMC 358	ENG Field Production	3
IV. Public Relations and Public Information Sequence (15 credits)		Credits
CMC 228	Writing for Public Relations	3
CMC 332	Public Relations Principles and Practices	3
CMC 334	Public Relations Methods and Cases	3
<i>AND any two of the following, selected by advisement:</i>		
CMC 201	Public Speaking	3
CMC 243	Radio and Television Writing I	3
CMC 325	Feature Writing	3
CMC 432	Public Relations Campaigns	3
CMC 477	Organizational Communication	3
Total Journalism Credits:		36

Non-Communication Minor or Second Major

All students pursuing the major in journalism must also complete a minor (normally 18 credit hours) or a second major (normally 30–36 credit hours) in a discipline other than communication.

In lieu of a minor or second major, students may elect, *with department approval*, a contractual program consisting of a minimum of 18 credit hours of coursework in an area of study not identified as a formal minor or major at Brockport. Study of a foreign language other than Spanish or French (in which minors are offered), bilingual-multicultural studies or foreign cultural studies is encouraged as such a program.

Communication Courses

CMC 111 Oral Communication and Information Literacy (A). Develops proficiency in oral discourse through giving prepared speeches and evaluating oral presentations of others. Provides instruction in basic library and database information acquisition and research techniques, evaluating arguments in written and oral presentations, and reinforces writing skills in preparing speeches and a research paper. Should be completed in the freshman year. Minimum grade of “C” required to satisfy course requirement. Under development for Fall 2002. 3 Cr.

CMC 201 Public Speaking (A). Develops effective informational, persuasive and special-occasion speaking. Gives special attention to analyses of audience and speaking occasion, effective oral delivery styles and techniques, and development of critical listening skills. 3 Cr. *Every Semester.*

CMC 202 Principles of Communication (A).

Introduces students to selected concepts, principles and theories of human communication. Includes study of verbal and nonverbal messages in the contexts of intrapersonal, interpersonal, group, public, and mediated communication. Required of all students majoring in communication studies or inter-disciplinary communication. Transfer courses will not be accepted to meet this requirement. 3 Cr. *Every Semester.*

CMC 209 Speech Composition and Presentation (A).

Prerequisite: CMC 201 or instructor's permission. For students who wish to go beyond the basics of public speaking. Assists the speaker who wishes to overcome the apathetic or hostile audience, and helps the speaker learn how to motivate those who express sympathy, but are without commitment to an idea. Examines ethics and ghostwriting. 3 Cr.

CMC 210 The Communications Revolutions (A,H,E). Examines the role and influence of communication and communication media in the development of the social, political, intellectual and artistic milieus of world cultures. Gives attention to the relationship between forms of communicative expression and the historical periods in which they were produced. 3 Cr.

CMC 211 Protest and Public Opinion (A,H,W,D). Examines rhetorical transactions of group conflict; persuasive use of symbols; effects of mass media; and the process of theory-building in rhetorical studies. 3 Cr.

CMC 219 Advertising, Mass Persuasion and the Consumer (A,H). Explores the role and influence of advertising and mass persuasion in today's society, theories of persuasion and persuasive techniques commonly employed in advertising and mass persuasion, techniques of persuasive manipulation and its neutralization, and ethics in persuasion. 3 Cr.

CMC 224 Newswriting and Reporting (A). Instruction in the elements of news; types, style and structure of news stories; the lead. Fundamentals of news gathering, newswriting and news judgment for all media. Study of news sources, field work, research and interview techniques. Orientation to and practice in the use of electronic newswriting and production systems. 3 Cr.

CMC 226 Advanced Newswriting (A). *Prerequisite:* CMC 224. Advanced instruction and practice in gathering, writing and processing news for publication. Emphasis on background necessary for reporting and newswriting in specialized areas of coverage. Study of newsgathering and writing ethics and responsibilities. 3 Cr.

CMC 228 Writing for Public Relations. Instruction and practice in all aspects of public relations, publicity and institutional advertising writing for print and broadcast media. Covers writing news releases, backgrounders, brochures and flyers, speeches, radio and television materials, and reports. 3 Cr.

CMC 242 Fundamentals of Radio and Television (B). Provides an introduction to radio and television broadcasting. Studies basic principles and historical, economic and technological aspects of broadcasting. Requires readings in fundamental theory and current practices. 3 Cr.

CMC 243 Radio and Television Writing I (A). *Prerequisite:* CMC 242. Covers beginning writing for broadcast media. Concentrates on non-dramatic radio and TV continuity, commercials, public service announcements, news etc. Contrasts radio and TV writing styles. 3 Cr.

CMC 273 Interpersonal Communication (A,S). Introduces students to the theory and process of interpersonal communication, examining and applying the concepts and principles basic to inter-personal encounters. Acquaints students with the essentials of communication transactions in experiential learning opportunities that lead to effective skills in social, intimate, inter-gender, family, professional and intercultural relationships. 3 Cr.

CMC 312 Argumentation and Debate (A). Provides for the preparation and defense of logical argument, response to attacks by opponents, construction of cross-examination, undergoing cross-examination, research and support of arguments, and recognition and refutation of fallacies. 3 Cr.

CMC 314 Small Group Communication (A). Explores phases of the problem-solving process within a small-group setting, and the role-behavior required for effective group functioning. Requires students to lead a group problem-solving session; and participate in and observe small group problem-solving sessions. 3 Cr.

CMC 316 Interpersonal Communication in Business and the Professions (A). Covers the principles of interpersonal communication in organizations, facts and principles of organizational communication, participation in and analysis of lab learning experiences, and the synthesis and use of facts and principles to analyze the communication patterns illustrated in reality-based case studies and in data gathered through field observations. 3 Cr.

CMC 317 Interviewing (A). Provides an introduction to principles of effective interviewing. Focuses on specific purposes, types, and the skills applied to different interview situations. Includes assignments for analysis, preparation, conducting and assessing of interviews. 3 Cr.

CMC 319 Propaganda and Persuasion (A). Explores the theories, principles and methods of persuasion; the role and function of persuasion and propaganda in contemporary society; the preparation and presentation of persuasive messages; and concepts of ethical persuasion. 3 Cr.

CMC 322 Editorial Methods and Practices (B). *Prerequisite:* CMC 224. Examines the editing process, with emphasis on copy fitting and editing, and on editorial judgment. Includes preparation of copy for publication, headline writing, correction of copy, evaluation of news and news value, condensation of material, news display and makeup, and use of wire copy. Requires participation on student campus-community newspaper. 3 Cr.

CMC 323 Newspaper Layout and Design (B). *Prerequisite:* CMC 322. Provides an advanced study of editing principles and techniques to develop editorial judgment and skills in preparing materials for publication. Surveys graphic arts principles and their relationship to newspaper design and the total editing function. Studies layout, typography, design and printing requirements in planning and production of newspapers. Requires participation on student campus-community newspaper. 3 Cr.

CMC 325 Feature Writing (A). *Prerequisite:* CMC 224. Provides for the study and writing of various forms of feature and opinion articles for newspapers. Requires participation on student campus community newspaper. 3 Cr.

CMC 326 Public Affairs Reporting (A). *Prerequisite:* CMC 226. Instruction and practice in reporting of local, state and national public affairs and issues. Reporting the courts, politics, labor, finance, municipal, county, state and federal administrations and legislative bodies. Emphasis on interpretative and investigative writing that documents and analyzes critical events and questions. 3 Cr.

CMC 328 Editorial and Opinion Writing. *Prerequisite:* CMC 325. Introduction to, study of and practice in writing print editorials, opinion pieces and columns. Emphasis on identifying appropriate subjects and issues, audience analysis, the principles of persuasive argumentation in writing, including logic, organization, coherence and treatment. 3 Cr.

CMC 332 Public Relations Principles and Practices (A). *Prerequisite:* CMC 262 or permission of instructor. Covers the principles, practices, media and methods of public relations and information. Emphasizes public relations functions, communication and publicity techniques. Analyzes relations with such publics as the press, employees, stockholders, and consumers. 3 Cr.

CMC 334 Public Relations Methods and Cases (A). *Prerequisite:* CMC 332. Introduction to, demonstration in, and application of public relations techniques, tools and procedures to both hypothetical and actual public relations cases. Emphasizes action and communication techniques and practices used in public relations planning, production of informational and persuasive messages, and evaluation of action and communication activities. 3 Cr.

CMC 343 Broadcast Announcing (B). *Prerequisite:* CMC 242. Covers basic broadcast announcing with an emphasis on preparation and presentation of news, editorial content, commercials, public service announcements, and dramatic and narrative content. 3 Cr.

CMC 345 Radio and Television Writing II (A). *Prerequisite:* CMC 243. Provides specific focus on writing advertising copy for radio and television. Requires students to develop advertising and promotional campaigns, as well as scripts for corporate in-house video and audio projects. 3 Cr.

CMC 346 Radio Production (B). *Prerequisite:* CMC 243. Covers the principles and practices of radio productions while providing practical experience. Includes assigned projects on production of music, news and public affairs programming, and remote taping and audio editing. 3 Cr.

CMC 348 Television Production (B). *Prerequisites:* CMC 243 and CMC 346. Continuation of CMC 346. Covers the principles and practices of television production, with projects designed for television broadcast. Requires students to produce and direct both in-studio and field projects. 3 Cr.

CMC 353 Broadcast Sales and Marketing (B). Explores techniques and problems of modern broadcast sales and marketing. Requires projects to develop skills in broadcast commercial marketing and planning, and audience analysis. 3 Cr.

CMC 358 ENG Field Production (B). *Prerequisites:* CMC 348 and instructor's permission. Provides principles and practical experiences in single camera video production including electronic news gathering techniques. Includes numerous lighting, shooting, interviewing, and editing problems. Students finish the course with work that could be used in their video resume tape or portfolio. 3 Cr.

CMC 365 Newspaper Practicum (B). *Prerequisite:* Instructor's permission. Open to students serving on editorial or executive board of, or in designated positions of major editorial, advertising, managerial or production responsibility with, the student campus-community newspaper. May not be used to satisfy requirement for completion of major. May be repeated for maximum of 12 credits. 1-3 Cr.

CMC 366 Broadcast Journalism (B). *Prerequisites:* CMC 224 or CMC 243. Covers current practices and issues in radio-television news. Provides supervised practice in gathering, writing and presenting broadcast news. Emphasizes responsibility in news preparation and presentation. Requires reporting with audio and videotape recorders; broadcast of news programs over the campus radio station and campus cable channel. 3 Cr.

CMC 372 Film as Social Commentary (A,U,D). Explores the film as persuasive communication, the explicit and hidden messages of films, the inherent messages of specific film genres, and rhetorical analysis as a means to discover film messages. 3 Cr.

CMC 399 Independent Study in Communication (A). Prerequisite: Instructor's permission. To be decided in consultation with the instructor-sponsor and in accordance with the procedures of the Office of Academic Advisement prior to registration. 1–6 Cr.

CMC 410 Speakers, Campaigns and Movements (A,U,W,D). Surveys significant historical and contemporary speakers, persuasive campaigns and rhetorical movements, with special attention to the introduction of women to the speaking platform and to historical and contemporary spokespersons and movements on behalf of racial and gender equality. 3 Cr.

CMC 411 Rhetorical Criticism (A,U). Explores methods of rhetorical criticism, application of methods of criticism to rhetorical discourse, and recognition of critical methods in critical studies. 3 Cr.

CMC 413 Nonverbal Communication (A). Explores multisensory communication codes for human interaction through channels such as paralinguistic, space, time, body, and artifacts. Takes a functional approach considering purpose and context to determine the situational characteristics and codes. 3 Cr.

CMC 415 Public Communication in Administration, Business and the Professions (A). Prerequisite: CMC 316 or CMC 332. Covers communication in business and professional settings, business and professional community needs, and reading, understanding and interpretation for audiences of business and professional statements and data. 3 Cr.

CMC 417 20th-century Political Rhetoric (A,W). Surveys major 20th-century political speakers, campaigns and movements with emphasis on contemporary movements for racial and gender equality. 3 Cr.

CMC 418 Inter-cultural Communication (A). Explores cultural similarities and differences affecting communication and intercultural competencies for interaction between cultural groups and individuals along gender, ethnic, and national lines. 3 Cr.

CMC 419 Problems in Freedom of Speech (A,J,W,D). Covers the historical development of the freedom of speech law, theoretical foundations of freedom of expression, and problems and conflicts in freedom of expression. 3 Cr.

CMC 432 Public Relations Campaigns (B). Prerequisite: CMC 332. Focuses on the treatment of an organization's public relations and information, including situation analysis and research, program and campaign planning, development of communications materials and activities, and program

management. Provides experience in planning and executing public relations campaigns and programs. 3 Cr.

CMC 438 History of American Journalism (A,U). Prerequisite: CMC 210. Covers the evolution and development of the media of American journalism from their beginnings in England and Colonial America to the present, and the dominant personalities which helped shape them, relating them to their social, political and economic environments. 3 Cr.

CMC 439 Professional Journalism Internship (B). Prerequisites: Senior status and instructor's permission. Provides a supervised practicum in professional journalism, public relations and mass communications in off-campus media and organizations appropriate to student's academic program. Also provides practical experience not otherwise available in the curriculum. Application for internship must be made during semester preceding internship. 3 Cr.

CMC 446 Advanced Television Production (B). Prerequisite: CMC 348. Students write, produce and direct advanced problems for television. Students work individually and in small production units. The prime focus is on the development and execution of professional television production problems. Students gain practical skills and finish the course with work that could be used in their video resume tape or portfolio. 3 Cr.

CMC 454 Advanced TV Directing (B). Prerequisites: CMC 348, CMC 446, and instructor's permission. Allows students to direct studio productions as part of campus television services and supervise studio set-up, recording session and studio strike. 2 Cr.

CMC 456 Professional Broadcast Internship (B). Prerequisites: Senior status and instructor's permission. Provides a supervised practicum in professional organizations appropriate to student's academic program. Application for internship must be made during semester preceding internship. 3 Cr.

CMC 460 Media Research Methods (A). Prerequisites: CMC 262 and junior or senior status. Explores concepts and techniques of media research, and introduces the strategy and content of research in mass communication. Covers techniques of research design, sampling, data collection, hypothesis testing, polling, data analysis and interpretations in mass media research. Allows for the application of research methods in restricted problems. 3 Cr.

CMC 463 Mass Communication and Society (A,U). Prerequisites: CMC 210, and senior status. Covers significant phases, issues and controversies

in the historical development of mass communication in the United States. Emphasizes contemporary media relationships with, and impact on intellectual, socio-political, economic and technological aspects of, culture and society. Considers daily and other periodical press, radio, television and film. *3 Cr.*

CMC 465 Radio Practicum (B). *Prerequisites: CMC 346 or CMC 343, and instructor's permission.* Provides students with an opportunity to work in the programming, promotion, news, public affairs and technical aspects of running a radio station. Requires students to assume specific duties at the college radio station and a significant role in its day-to-day operation. *3 Cr.*

CMC 466 Advanced Broadcast Journalism (B). *Prerequisite: CMC 366.* Provides experience in gathering, writing and producing news broadcasts for campus cable channel. Covers broadcast principles and practices with an emphasis on news and public affairs programming. *3 Cr.*

CMC 467 Theories of Mass Communication (A,U). *Prerequisites: CMC 210 or CMC 242, and junior or senior status.* Examines and critiques the theoretical and research literature describing mass communication processes, message, audience and effects. *3 Cr.*

CMC 468 Mass Media Law and Ethics (A,U). Study of the legal, regulatory and ethical aspects of mass communication and mass media practice. Emphasis on libel, privacy, privilege, contempt, fairness and obscenity in media law. Examination of government regulations and media self-regulatory codes. Consideration of ethical principles and precepts governing contemporary media practice. *3 Cr.*

CMC 472 Group Leadership (A,U). Examines group processes, relationships and leadership in task-oriented groups, such as committees, task forces, teams, and problem-solving groups. Includes topics such as analysis of group processes, agenda planning, motivation of participation, conflict management, team building, and group leadership styles and techniques. *3 Cr.*

CMC 473 Theories of Communication (A,U). *Prerequisite: CMC 202.* Covers classical and contemporary theories of human communication, research and practical applications of theory, relation of theoretical concepts to instances of communication behavior, and identification of salient communication theses. *3 Cr.*

CMC 475, Applied Communication Internship I, (B). *Prerequisites: Instructor's permission and senior status.* Emphasizes applying communication skills in work environments, use of communication background to analyze communication

patterns and problems in a field setting, and development of improved insight into one's own communication styles and techniques. Application for internship must be received by midterm of the preceding semester. *3 Cr.*

CMC 477 Organizational Communication (A,U). *Prerequisite: CMC 273 or 316.* Integrates communication theories with practice of communication in organizations. Emphasizes communication roles and culture of organizations as a force in organizational philosophy and world view. Provides practice in diagnosing and improving organizational communication systems. *3 Cr.*

CMC 479 Conflict Management (A,U). Covers interpersonal conflict and its essential characteristics; evolution of the study of social conflict; perspectives from which social conflict is viewed, including psychological, social-psychological, sociological, economic, political and mathematical; the sources, conditions and consequences of social conflict in a given social setting; and skills of conflict management. *3 Cr.*

CMC 483 Communication Training and Development (A,U). *Prerequisite: Instructor's permission.* Introduces communication training with emphasis on practice in designing, facilitating, and evaluating a workshop presentation in an organizational setting. *3 Cr.*

CMC 490 Special Studies (A). Subject matter to be defined by the instructor to address a topic or topics not covered in other communication courses. Additional information may be obtained at the department office. *1-3 Cr.*

CMC 492 Theories of Persuasion (A). Provides an intensive study of classical and contemporary theories of persuasion and social influence. Gives attention to the application of theory to the practice of social influence. *3 Cr.*

CMC 493 Contemporary Journalism Issues and Problems (A). *Prerequisites: CMC 210, junior or senior status.* An in-depth study of one or more instructor-selected contemporary issues or problems in journalism, public relations and/or mass communication. Issues and problems selected will vary with each offering and may be either conceptual or applied. May be repeated for maximum of six credits. *3 Cr.*

CMC 494 Journalism Thesis/Project (A). *Prerequisites: Journalism major, senior status.* Open only to senior students in the journalism major. Requires students to undertake a major thesis or project with faculty guidance. Thesis or project is publicly presented and defended. *3 Cr.*

CMC 495 Senior Honors in Radio-TV Production (B). *Prerequisites: Senior status, and instructor's permission.* Open only to students in the

broadcasting track. Requires students to produce and direct, with supervision, a radio or TV project for which they are solely responsible. Projects are publicly presented and evaluated. 3 Cr.

CMC 496 Contemporary Broadcast Issues (B).

Prerequisites: Broadcasting major and senior status. Allows for a supervised study of selected contemporary issues or problems in broadcasting. Se-

lected issue or problem may be either conceptual or applied. 3 Cr.

CMC 499 Independent Study in Communication (A).

Prerequisite: Instructor's permission. To be decided prior to registration in consultation with the instructor-sponsor and in accordance with the procedures of the Office of Academic Advisement. 1–6 Cr.

Communications Meteorology— Interdisciplinary Minor

A minor in the area of meteorological communications is available to students who wish to become informed interpreters and communicators of weather information to mass audiences via electronic and print media. The minor consists of 19 or more credits selected from courses in the Departments of Communication and the Earth Sciences and elsewhere as appropriate to individual goals.

Courses will be selected, by advisement, in various combinations depending on the individual's background and major program. Typical courses that may be included are:

Broadcasting	Meteorology	Journalism
CMC 343	ESC 211	CMC 224
CMC 346	ESC 311	CMC 226
CMC 348	ESC 312	CMC 325

Additional electives from these departments or others may be chosen to complete the concentration. At least 12 of the credits must be at the 300/400 level. The program should be supplemented by electives to represent a balance of one of the communication concentrations and the meteorology area. Courses applied toward a major or any other minor may not also be counted toward this minor.

Advisor: Jose A. Maliekal, Department of the Earth Sciences

Department of Computational Science

249 Faculty Office Building

(716) 395-2021, <http://www.cps.brockport.edu>

Professor/Chair: Osman Yasar. *Assistant Professors:* Leigh J. Little, Robert E. Tuzun.

Along with traditional experimental and theoretical methodologies, advanced work in all areas of science and engineering has come to rely critically on computation. Computer modeling combined with visualization represents a new paradigm for scientific exploration and technological research and development. It permits a new approach to problems that were previously inaccessible.

The computational approach is used in nearly all areas of science and engineering. For example, it is used by the automotive and aerospace industries to design safe and efficient vehicles, by the pharmaceutical industry to design new drugs, by meteorologists to predict the weather and long-term climactic changes, by biologists and ecologists to study the environment and population dynamics, by economists to predict the behavior of financial systems such as the stock market, and so on. Computer modeling is used to help direct research and to study systems before they are put into production; this has saved billions of dollars and years of development time.

The Department of Computational Science has received equipment support from Intel and Silicon Graphics and works closely with local industry, particularly Xerox and Kodak. Students learn computational and mathematical skills that can be applied to a wide variety of problems. The program is flexible so as to allow students to follow their particular interests and continue, if desired, with advanced degrees. Graduates can expect employment in industry, government, business, academia, and at major research and development laboratories.

Major in Computational Science

The CPS undergraduate major requires 36 credits of the following courses from the Departments of Computational Science, Computer Science, and Mathematics and from the department of an application area of interest. Six additional credits of elective courses are required.

(a) Required Courses	Credits
MTH 203 Calculus III	3
MTH 243 Elementary Statistics	3
MTH 424 Linear Algebra	3
CSC 205 Fundamentals of Computer Science II	4
CPS 201 Computational Tools I	3
CPS 202 Computational Tools II	3
CPS 303 High Performance Computing	3
CPS 304 Simulation and Modeling	3
CPS 404 Applied and Computational Mathematics	3
(b) Application Sciences (8 credits)	
200-level and higher non-CPS courses from an area of application chosen under advisement	8
(c) Elective Courses (6 credits)	
upper-division courses	6
TOTAL Credits (including electives)	42

(d) Prerequisites:

Calculus I and II (MTH 201 and 202—6 credits)

Discrete Mathematics I (MTH 281—3 credits)

Introduction to Computer Science (CSC 120—3 credits)

Fundamentals of Computer Science I (CSC 203—4 credits)

Minor in Computational Science

(a) Required Courses (12 credits):		Credits
CPS 201	Computational Tools I	3
CPS 202	Computational Tools II	3
CPS 303	High Performance Computing	3
CPS 304	Simulation and Modeling	3
(b) Elective Courses (8 credits)		
200 and higher-level non-CPS courses		8
TOTAL Credits (including electives)		20

(c) Prerequisites:

Introduction to Computational Science (CPS 101—3 credits)

Calculus III (MTH 203—3 credits)

Note: For additional and updated information on the Department of Computational Science, see the *Computational Science Handbook*, which is available in the Department office, 112 Faculty Office Building.

Computational Science Courses

CPS 101 Introduction to Computational Science (A,N,E). *Prerequisite:* MTH 121. Provides an introduction to computation as used in science and engineering. Emphasis on practical applications of formulas to real-life problems and on tools for their solution. Course content includes three distinct areas: 1) techniques (linear regression for data-fitting, determination of areas and volumes, rate changes (differentiation), use of graphical calculator), 2) programming in FORTRAN and C, 3) UNIX operating system (basic commands, editors, input/output). 3 Cr. Fall.

CPS 102 Functions and Their Uses (A). Technology-based course to serve general education to the elementary college algebra level. Modeling, using graphing calculators and software presented for non-math majors to initiate them in problem-solving processes that are an integral part of nature and society. Provides entry-level students with college algebra skills; namely to acquire facility with graphs, tables of values, linear algebraic manipulations, and a qualitative understanding of rates of change. General Education course. 3 Cr.

CPS 201 Computational Science Tools I (A). *Prerequisites:* CPS 101 or 120. Provides an introduction to the use of computers in science, engineering and business applications for prospective computational science, computer science, mathematics and other majors. Includes an introduction of the impact computers have on our lives; examples that help us understand how computation is recognized as a third way of doing science besides theory and experiment; examples of common applications and related industry and job market; brief introduction to high performance computing; common computation techniques in a variety of science, engineering, and business fields; examples and brief introduction to visuali-

zation as it relates to applications and the job market. Also includes topics 1) computer performance (speed), architecture and super-computers, 2) data representation, algorithms, programming, and compiler directives (all in FORTRAN 77), 3) visualization basics. 3 Cr. Fall.

CPS 202 Computational Science Tools II (A). *Prerequisite:* CPS 201. Techniques and software tools commonly used in scientific computing applications. Topics include high-level programming languages such as Fortran 90 and C/C++; the UNIX operating system; general strategies for scientific computing; graphics, symbolic manipulation, and multi-purpose software packages such as MAPLE, MATLAB, and MACSYMA; numerical libraries such as BLAS, ScaLAPACK, problem solving-environments such as NetSolve, industrial benchmarks, grid-generation techniques, and communication libraries such as PVM, MPI. Applications in chemistry, physics and other fields are discussed. Extensive programming in F90 and C is required. 3 Cr. Spring.

CPS 303 High Performance Computing (A). *Prerequisites:* CPS 202 and MTH 203. Computational methods commonly used in scientific applications. Parallel programming strategies and general principles of scientific computing are illustrated in the context of numerical methods. Use of parallel supercomputers on the campus is covered. Computing topics to include are: modern computer architectures, understanding parallelism, evaluating benchmarks, parallel computing, language support for performance. Mathematical topics to include are: differentiation, integration, and interpolation; solution methods for linear systems; calculation of eigenvalues and eigenvectors; error analysis; data fitting, regression and smoothing. Programming is required. 3 Cr. Fall.

CPS 304 Simulation and Modeling (A). *Prerequisite:* CPS 303. An introduction to continuous and discrete simulation methods used in scientific applications. Includes steps required to model and simulate a system, including discussion of generic partial differential equations and governing equations, discretization of these equations (finite difference, finite-element, spectral methods), generation of computational grid to solve these governing equations, basic numerical schemes to solve the discretized equations, specification of initial conditions, and the formulation and development of simulation problems, programming strategies, and data analysis. Representative applications include scheduling problems, molecular dynamics, weather prediction, engine combustion modeling, groundwater flow and others. Students will be exposed to recently developed techniques using finite element and particle based modeling approaches in groundwater modeling. In the finite element component, strategies such as Eulerian-Lagrangian Adjoint Schemes, structured and unstructured matrix computation and assembly, element by element approaches, sparse matrix solution methods (e.g. multigrid, PCG, BiCGSTAB, GMRES, QMR) will be introduced. In the particle method component new innovative strategies such as lattice Boltzmann method for porous media flow and reactive transport will be introduced. Use of methods such as genetic algorithms and neural networks for optimization and inverse problem solution will be briefly introduced. Extensive programming is required. 3 Cr. Spring.

CPS 404 Applied and Computational Mathematics (A). *Prerequisite:* MTH 202. This course will provide the mathematical skills for the development of efficient computational methods for several topics including: elementary numerical methods and their computer implementation, linear and nonlinear equations, ordinary differential equations, initial and boundary value problems, modeling of data, statistical distributions, generation of random numbers, discrete-event simulations, and statistical analysis of the output of simulations; introduction to stochastic processes, Markov decision chains and applications from transportation, inventory control, and health care; Discrete Fourier transforms and its application to digital signal processing. 3 Cr.

CPS 433 Scientific Visualization (A). *Prerequisites:* MTH 424 and CSC 205. This course provides concepts and techniques for visualization and its implementation. Specifically, use of visualization tools in mathematical simulation modeling such as data entry and data integrity, code debugging and code performance analysis,

interpretation and display of final results will be emphasized. Hands-on experience with visualization software packages in X-Windows environment will be provided. Students may be required to develop a new visualization software designed to aid in the analysis of a chosen problem. Knowledge of programming in a high-level language is essential. 3 Cr.

CPS 488 Instrument Interfacing Laboratory I (A). *Corequisite:* CPS 404. This course provides theoretical and practical knowledge of instrument interfacing techniques. Students will conduct experiments using modern instrument interfacing techniques to collect data. Includes experiments such as A/D-D/A feedback Control, A/D workstation and temperature measurement, measurement of D/A Resolution, IEEE interfacing using a digital multi meter, and IEEE interfacing using a digital electrometer. Three hours of laboratory per week. 1 Cr.

CPS 489 Instrument Interfacing Laboratory II (A). *Prerequisite:* CPS 406. This course provides theoretical and practical knowledge of instrument interfacing techniques. Students will conduct experiments using modern instrument interfacing techniques to collect data. Includes experiments such as measurement of chemical luminescence, digital acquisition of spectrophotometer and gas chromatography data, digital acquisition of analog CCD (video) signal, Fourier transform infrared spectrometry, modern autosampling technology and robotics. Three hours of laboratory per week. 1 Cr.

CPS 433 Scientific Visualization (A). *Prerequisites:* MTH 424 and CSC 205. This course provides concepts and techniques for visualization and its implementation. Specifically, use of visualization tools in mathematical simulation modeling such as data entry and data integrity, code debugging and code performance analysis, interpretation and display of final results will be emphasized. Hands-on experience with visualization software packages in X-Windows environment will be provided. Students may be required to develop a new visualization software designed to aid in the analysis of a chosen problem. Knowledge of programming in a high-level language is essential. 3 Cr.

PHS 302 Dynamical Systems. Prerequisite: CPS 404 (A). An introduction to dynamical systems. Topics include conservation laws, phase space, Lagrange's and Hamilton's formulation of dynamics. Applications include linear and nonlinear oscillators, perturbation theory, and coupled oscillators. Chaotic dynamics is studied in computational problems, appropriate programming

language such as C, C++, and software packages such as Mathematica will be used for problem solving and for determining equations of motion.

A solid understanding of differential equations is essential. 3 Cr.

Department of Computer Science

211 Faculty Office Building

(716) 395-2194

Fax: 395-2304

URL: www.cs.brockport.edu

Chairperson: Professor: Thambrahalli M. Rao; Professor: Kadathur B. Lakshmanan; Associate Professor: Joan M. Lucas; Assistant Professors: Sandeep Mitra, Anthony Scime .

Computer science is the study of the theory and practice of computation. It incorporates aspects of several other fields: mathematics, to analyze the properties of algorithms and data structures; engineering, to design and construct practical programs and machines; the experimental sciences, both to investigate the behavior of programs running on real machines and to use programs for modeling scientific phenomena; and the cognitive sciences, to develop “intelligent” programs and to study computation in relation to human intelligence.

Computer science is a young and rapidly developing field. Presently its chief areas, reflected in regular course offerings at SUNY Brockport, are: programming methodology, design and analysis of algorithms, software engineering, programming languages, database systems, graphics, computer architecture, systems programming, modeling and simulation, artificial intelligence, and networking. Other areas are covered in independent study and topics courses. In addition, students can gain valuable job experience through the Computer Science Internship program and the Brockport Co-operative Education program.

The computer science major provides students with an excellent basis for a variety of careers and for graduate study. Possible careers include programming, system analysis and design, maintenance, management and user support of software in areas such as business, science, engineering, and computer systems. Fields of graduate study, for which a double major with mathematics is advisable, include not only computer science, but mathematics, information management, and various areas of science and engineering.

The student interested in computer science has several options to choose from: a major in computer science in the software development (SD) track, the more rigorous advanced computing (AC) track, which is accredited by the Computer Science Accreditation Board (CSAB), or the information systems (IS) track; a double major in computer science and another discipline such as mathematics or business administration; a 3 + 2 program leading to a BS in computer science from SUNY Brockport and a bachelor’s degree in engineering from some other institution; and a minor in computer science and a minor in computer information systems. Students majoring in computer science have the option of switching from one track to another at any time.

Major in Computer Science

1. Advanced Computing Track of the Computer Science Major

(67 credits; Accredited by the Computer Science Accreditation Commission [CSAC] of the CSAB)

For a major in computer science in the AC track a student must complete the following 67 credits of computer science and mathematics and science courses with an average grade of “C” or better. In addition, the grade for each of CSC 203, 205, and 311 must be “C” or better.

(a) Core Courses (37 credits)		Credits
CSC 203	Fundamentals of Computer Science I	4
CSC 205	Fundamentals of Computer Science II	4
CSC 303	Digital Logic and Computer Design	3
CSC 311	Computer Organization and Assembly Language Programming	4
CSC 401	Theory of Programming Languages	3
CSC 406	Algorithms and Data Structures	4
CSC 411	Computer Architecture	3
CSC 412	Operating Systems	3
CSC 427	Software Engineering	3
CSC 483	Theory of Computation	3
CSC 486	Junior/Senior Seminar	3

(b) Elective courses (9 credits)

300/400-level CSC courses selected under advisement
Restrictions apply. See notes below. 9

(c) Mathematics Corequisites (9 credits)

MTH 202	Calculus II*	3
MTH 346	Probability and Statistics I	3
MTH 481	Discrete Mathematics II*	3
*Prerequisites for MTH 202 and MTH 481 are		
MTH 201	Calculus I (3 credits)	
MTH 281	Discrete Mathematics I (3 credits)	

(d) Science Corequisites (12 credits)

(i) A two-semester sequence in a lab science for science/engineering majors. For example, PHS 201–202, CHM 205–206, BIO 201–202, ESC 211–311, GEL 101–302.

(ii) Each remaining course must be a course in science or a course that enhances the student's abilities in the application of the scientific method. Each course must be a course for science/engineering majors or a course with a strong emphasis on quantitative methods.

Notes:

1. A student must take at a minimum of 30 credits in non mathematics, non-science courses, a minimum of 15 credits in mathematics courses, and a minimum of 30 credits in mathematics and science courses.
2. At most, three credits from any course numbered CSC 490 or above may be used to satisfy the major elective requirement.
3. At least 18 of the credits used to satisfy the core or elective requirements in the major must be earned at SUNY Brockport.
4. A maximum of six credits can be earned by "credit by portfolio assessment," and a maximum of six credits can be earned by "departmental credit by examination." (Total credits including prerequisites CSC 120, MTH 281, MTH 201 = 76)

2. Software Development Track of the Computer Science Major

(43 credits)

For a major in computer science in the SD track a student must complete the following 43 credits of computer science and mathematics courses with an average grade of "C" or better. In addition, the grade for each of CSC 203, 205 and 311 must be "C" or better.

(a) Core Courses (28 credits)		Credits
CSC 203	Fundamentals of Computer Science I	4
CSC 205	Fundamentals of Computer Science II	4
CSC 303	Digital Logic and Computer Design	3

CSC 311	Computer Organization and Assembly Language Programming	4
CSC 401	Theory of Programming Languages	3
CSC 406	Algorithms and Data Structures	4
CSC 411	Computer Architecture	3
CSC 486	Junior/Senior Seminar	3
(b) Elective courses (12 credits)		
300/400-level CSC courses selected under advisement		
Restrictions apply. See Notes below.		12
(c) Mathematics Corequisite (3 credits)		
MTH 481	Discrete Mathematics II*	3
*Prerequisites for MTH 481 are		
MTH 201	Calculus I (3 credits)	
MTH 281	Discrete Mathematics I (3 credits)	
Total		43

(Total credits including prerequisites CSC 120, MTH 281, MTH 201 = 52)

Notes:

- (1) At most, three credits from courses numbered 490–499 may be counted toward the elective requirement. In addition, at most, one of MTH 461, MTH 462 and MTH 471 may be counted toward elective requirements.
- (2) At least 18 of the credits used to satisfy the core or elective requirements for the computer science major must be earned at SUNY Brockport.
- (3) A maximum of six credits can be earned by portfolio assessment, and departmental credit by examination.

3. Information Systems Track in the Computer Science Major

(47 credits)

For a major in computer science in the IS track, a student must complete the following 47 credits of computer science, computer information systems, accounting, business and mathematics courses with an average grade of “C” or better. In addition, the grade for each of CSC 203, CSC 205, CIS 202, and CIS 303 must be “C” or better. Other restrictions apply; see Notes below.

(a) Core Courses (41 credits)		Credits
CSC 203	Fundamentals of Computer Science I	4
CSC 205	Fundamentals of Computer Science II	4
CSC 486	Junior/Senior Seminar	3
CIS 202	Fundamentals of Information Systems	3
CIS 303	Information Technology Hardware and Software	3
CIS 304	Computers and Office Productivity (or BUS 317)	3
CIS 317	Analysis and Logical Design of Information Systems (or BUS 417)	3
CIS 419	Computer Networks and Internet Applications	3
CIS 422	Physical Design and Implementation with DBMS	3
CIS 427	Project Management and Practice	3
ACC 280	Introduction to Accounting	3
MTH 243	Elementary Statistics (or ECN 204)	3
MTH 281	Discrete Mathematics I	3
(b) Elective Courses (6 credits)		
CIS 334	Decision Support and Expert Systems	3
CIS 404	Multimedia Applications	3
MTH 441	Statistical Methods I	3
MTH 461	Math Models for Decision Making I	3

BUS 461	Production and Operations Management	3
BUS 464	Electronic Commerce and Entrepreneurship	3
	300/400-level CSC courses selected under advisement	
	Restrictions apply. See Notes below.	
Total:		47

(Total credits including prerequisites CSC 120, CSC 104, MTH 122 = 56)

Notes:

- (1) At most, three credits from the following group of courses can be counted towards the major elective requirement: MTH 441, MTH 461, BUS 461, BUS 464, and any CIS course numbered 490 or above.
- (2) The following CSC courses are NOT allowed as CIS electives: all 100/200-level CSC courses, CSC 303, CSC 304, CSC 311, CSC 411, CSC 419, CSC 422, CSC 427, CSC 434, and all CSC courses numbered 490 and above.
- (3) At least 18 of the credits used to satisfy the core or elective requirements in the major must be earned at SUNY Brockport.
- (4) A maximum of six credits can be earned by “credit by portfolio assessment,” and a maximum of six credits can be earned by “departmental credit by examination.”

Minor in Computer Science

For a minor in computer science, a student must complete the following 20 credits of computer science courses, of which at least half of the credits must be taken at SUNY Brockport. Note that the prerequisite courses are CSC 120, MTH 122, and MTH 281.

(a) Core courses (8 credits)		Credits
CSC 203	Fundamentals of Computer Science I	4
CSC 205	Fundamentals of Computer Science II	4
(b) Elective Courses (12 credits)		
Four CSC courses at the 300 level or above		12
Total		20

Note: For additional and updated information on the computer science program, see the *Computer Science Handbook*, available in the Department of Computer Science office.

Minor in Computer Information Systems

For a minor in computer information systems, a student must complete the following 19 credits of CSC and CIS courses, of which at least half of the credits must be taken at SUNY Brockport (according to College policy). Note that the prerequisite courses are MTH 122, CSC 120, and CSC 104.

(a) Core courses (13 credits)		Credits
CSC 203	Fundamentals of Computer Science I	4
CIS 202	Fundamentals of Information Systems	3
CIS 304	Computers and Office Productivity (or BUS 317)	3
CIS 317	Analysis and Logical Design of Information Systems (or BUS 417)	3
(b) Elective courses (6 credits)		
Any 300 or higher CIS course		
CSC 205		
Any elective CSC course allowed for IS track majors		6
Total:		19

Computer Science Courses

Generally, SD-track core courses are offered both fall and spring semesters, and SD-track electives are offered every other semester. Exceptions and late changes are possible; check the most recent registration schedule, or call the Department of Computer Science at (716) 395-2194.

CSC 104 Computers in the Business World (A,T). Provides a general introduction to the different uses of computers in business. Includes these topics: computer system concepts, data representation and storage, processor and peripheral hardware, data processing and word processing systems, spreadsheets, report generation, database queries, and management packages. *3 Cr. Every Semester.*

CSC 105 INTERNET and WEB Publishing (A). *Prerequisite: CSC 104 or CIS 106 or equivalent.* A general introduction to cyberspace. Topics include Internet, E mail, Lists, Newsgroups, Gopher, Telnet, FTP, World Wide Web, Net Browsers, and creating Web home pages using HTML. *3 Cr.*

CSC 120 Introduction to Computer Science (A,T). *Prerequisite: MTH 121 or equivalent by permission of instructor.* Provides an introduction to problem solving and computers for prospective computer science majors or minors, or other students wishing to take CSC 203. Includes these topics: computer system orientation; data representation; algorithms and their properties, representations, and structure; designing and testing algorithms; assembly language concepts; syntax notation; elementary C++ programming; and history, uses, and social effects of computers. Requires extensive programming. (Closed to students who have successfully completed preparation for CSC 203.) *3 Cr. Every Semester.*

CSC 203 Fundamentals of Computer Science I (A,T). *Prerequisites: MTH 122 and CSC 120 or equivalent by permission of instructor.* Covers fundamental computer science concepts and programming in C++. Includes these topics: computing system concepts, problem solving, algorithm design, top-down development, program testing and documentation, data types (built-in and enumerated), data manipulation, sequences, selection, loops, modules, parameters, arrays, records, strings, files, introduction to sorting and searching techniques and other basic algorithms. Requires extensive programming and supervised lab sessions. *4 Cr. Every Semester.*

CSC 205 Fundamentals of Computer Science II (A). *Prerequisites: CSC 203 and MTH 281.* Covers abstract data structures and their operations, and software engineering concepts. Includes

these topics: program development (interpreting specifications, top-down development, information hiding, structured testing), implementation of built-in data types and structures, files, pointers, stacks, queues, linked lists, recursion, trees, graphs, searching and sorting algorithms, and an introduction to complexity analysis of algorithms. Requires extensive programming and supervised lab sessions. *4 Cr. Every Semester.*

CSC 212 Programming in VISUAL BASIC (A,T). *Prerequisite: MTH 121.* A general introduction to computer programming and applications for non majors using the VISUAL BASIC language. Topics: computer terminology, programming concepts, language features, and algorithm design. A survey of computer applications is introduced using the following programming techniques: structured design concepts, decisions, loops, functions, subroutines, arrays, and files. Extensive programming. *3 Cr.*

CSC 295 Topics in Computer Science (A). *Prerequisite: Published prior to registration each semester.* Addresses current topics in the field at an introductory level. Each offering of the course is motivated by the expertise of the instructor and by students' interests. Descriptions and prerequisites are published prior to the registration period for the course. Example topic: Windows NT. *3 Cr.*

CSC 303 Digital Logic and Computer Design (A). *Prerequisite: MTH 281.* Provides an introduction to digital logic and design of computers. Includes these topics: number systems, Boolean algebra and logic gates, simplification of Boolean functions, combinational and sequential logic design, registers, counters and memory units, register transfer logic, ALU and control unit design. Includes hands-on experience with hardware circuit components. *3 Cr. Every Semester.*

CSC 311 Computer Organization and Assembly Language Programming (A). *Prerequisite: CSC 205.* Basic hardware organization and architecture of digital computer systems: data representation and digital arithmetic. Processor, memory, and I/O organization. Fetch-and-execute cycle. Instruction encoding and addressing modes. I/O techniques. Interrupt logic and interrupt handling. Assembly language programming, macros, subroutines and linkage, basic concepts of two-pass assemblers linking and loading of external modules. Extensive programming and supervised laboratory sessions. *4 Cr. Every Semester.*

CSC 319 Introduction to UNIX Programming (A). *Prerequisite: CSC 205.* Provides a comprehensive study of the C programming language and the UNIX operating system from the programmer's point of view. Covers language features,

program development, modularization, low-level I/O, system function calls, UNIX-specific library functions, UNIX commands, programming environment and utilities. Requires extensive programming. Recommended preparation for CSC 412. *3 Cr. Every Semester.*

CSC 321 Introduction to UNIX System Administration (A). *Prerequisite: CSC 319 or instructor's approval.* This course will cover administration of a UNIX system. Emphasis will be placed on UNIX system V.4 hosts (Solaris 2.5), but information about other systems will also be discussed. Topics include: system setup, automating routine tasks, user account setup, file system management, configuring TCP/IP services, performance monitoring and tuning, trouble shooting, security, and accounting. Extensive programming. *3 Cr. Spring.*

CSC 339 Web Programming (A). *Prerequisites: CSC 319.* Study of programming techniques and tools to create dynamic and active Web documents. Topics include: designing Web pages and HTML 4.0 static, dynamic and active Web documents, lists, tables and fill-out forms; hypermedia links and frames; DHTML and style sheets; client-server paradigm and interaction, HTTP protocol; CGI programming, simple Perl scripts; understanding JavaScript, specification, objects, validating forms; introduction to Java applets. Extensive programming. *3 Cr.*

CSC 401 Theory of Programming Languages (A,U,E). *Prerequisite: CSC 311.* Covers programming language concepts, description, design, and evaluation. Includes these topics: language families and history; design principles; BNF and other syntax notations; compilation vs. interpretation; implementation concepts; comparison of features and conventions of various languages, including: data types, structures, declaration, abstraction, binding, scope, conversion, and protection; computational primitives; control structures; subprograms; I/O; exceptions; concurrency; preprocessors; and programming environments. Requires extensive programming. *3 Cr. Every Semester.*

CSC 406 Algorithms and Data Structures (A). *Prerequisites: CSC 205 and MTH 481.* Covers design and analysis of data structures and associated algorithms. Includes these topics: arrays, strings, stacks, linear and generalized lists, multilists, multirings, queues, sets, hashing, trees, graphs, recursion, searching and sorting, and applications such as text processing, polynomials, sparse matrices, storage management, and unlimited-precision arithmetic. Requires extensive programming and supervised lab sessions. *4 Cr. Every Semester.*

CSC 411 Computer Architecture (A). *Prerequisite: CSC 303 and CSC 311.* Covers design and organization of digital computers. Includes these topics: digital logic and circuit design, data representation, registers, memories and memory management, CPU and ALU architectures, instruction sets, busses and I/O systems, interrupt structure, and microprogramming. Covers additional topics such as virtual machines, parallelism, pipelining, and data flow machines. *3 Cr. Every Semester.*

CSC 412 Operating Systems (A). *Prerequisites: CSC 303 and CSC 311. Recommended: CSC 319 or knowledge of C and UNIX.* Covers basic principles of operating systems. Includes these topics: file systems, CPU scheduling and context switching, memory management and virtual memory, disk scheduling, deadlock, concurrent processes and programming, protection mechanisms, design principles, and attempts at standardization. Includes an in-depth study of the UNIX operating system. Requires extensive programming. *3 Cr. Spring.*

CSC 419 Computer Networks (A). *Prerequisites: CSC 303 and CSC 311 and CSC 319.* Provides a comprehensive study of the field of computer communications, with emphasis on the theoretical aspects of local area networks. Compares specific LANs. Includes these topics: the ISO model, protocols, topologies, error detection and correction, routing, packet-switching, virtual circuits, and datagrams. *3 Cr. Fall.*

CSC 422 Relational Database Design (A). *Prerequisite: CSC 205.* Provides a study of the theory and practice of the relational approach to database design. Includes these topics: DBMS vs. a traditional file processing, relational algebra, normalization, lossless and/or dependency preserving decomposition, query languages such as SQL and a language that is available on the system, query optimization, integrity and security, and database project design. Requires extensive programming. *3 Cr. Fall.*

CSC 427 Software Engineering (A). *Prerequisites: CSC 311 and instructor's permission.* Provides an introduction to software engineering and programming-in-the-large. Includes these topics: life-cycle models, development standards, project organization, requirements engineering, configuration management, quality assurance, cost and manpower estimates, specification techniques, design methods and representations, human factors, structured programming, object-oriented programming, testing and integration, validation, maintenance, and documentation. Requires the class to work as a project team developing a system for an actual customer. Communication and

writing skills are essential. Requires extensive programming. 3 Cr. Fall.

CSC 429 Object-Oriented Programming (A).

Prerequisite: CSC 205. Introduction to basic concepts in object-oriented programming (OOP) and how to apply OOP techniques using an appropriate OOP language such as Java or C++. Topics include: the OOP programming paradigm including analysis and design, a survey of related languages, data hiding and encapsulation, inheritance, and polymorphism. Implementation of these concepts using appropriate programming language constructs. Extensive programming. 3 Cr. Spring.

CSC 432 Simulation (A). *Prerequisites:* CSC 203 and MTH 281. Covers computer modeling of complex systems with an emphasis on discrete stochastic models. Includes these topics: brief review of random variables, distributions and statistical tests, random number generation, mathematical model of a simple queue, simulation of discrete systems (with SIMSCRIPT), and continuous system simulation. 3 Cr. Fall.

CSC 433 Computer Graphics (A). *Prerequisite:*

CSC 311. Provides a hands-on approach to computer graphics, emphasizing interactive 2D raster techniques. Includes these topics: graphics models, drawing primitives and clipping, color models, user interaction, 2D geometrical transformations, animation, curve and surface representations, introduction to 3D projections, solid modeling and rendering. Requires extensive programming. 3 Cr. Spring.

CSC 434 Artificial Intelligence (A). *Prerequisite:*

CSC 205. Provides an introduction to artificial intelligence. Includes these topics: history and state of the art in AI; programming techniques in the languages LISP and PROLOG; fundamental methods in AI including heuristic search, knowledge representation using predicate logic, and production systems; classic basic problems involving games, graphs, theorem-proving, symbolic algebra, expert systems, natural language, etc. Requires extensive programming. 3 Cr. Fall.

CSC 437 Computer-Human Interface Design

(A). *Prerequisite:* CSC 205. Provides a hands-on introduction to design and implementation of software for streamlined computer-human interaction, emphasizing graphical user interfaces. Includes these topics: theoretical models; design guidelines; implementation and evaluation methodologies; interaction paradigms, e.g., command-line, menus, hypertext, multimedia; case studies of graphical environments, e.g., Microsoft Windows, Macintosh, X-Windows; and application areas, e.g., online help, data entry/editing, query processing, programming, instruction, process

control, communication. Extensive programming. 3 Cr. Spring.

CSC 444 Introduction to Parallel Computing

(A). *Prerequisites:* MTH 481 and CSC 406. Deals with design and analysis of parallel algorithms. Includes these topics: parallel models of computation, measures of complexity, parallel algorithms for selection, searching, sorting, merging, matrix algorithms, transitive closure, connected components, shortest path, minimum spanning tree and routing algorithms. Hands-on experience in a parallel programming environment. 3 Cr. Spring.

CSC 483 Theory of Computation (A). *Prerequisites:*

CSC 203 and MTH 481. Provides a study of formal languages and theory of automata with an emphasis on Church's thesis and the "algorithm = machine" point of view. Includes these topics: regular expressions and context-free languages, finite and pushdown automata, Turing machines, computability, undecidability, and complexity of problems. 3 Cr. Spring.

CSC 486 Junior/Senior Seminar (A,U,E). *Prerequisites:*

CSC 205, junior or senior status, and computer science majors only. Provides an overall view of the professional field of computing, emphasizing development of communication skills for the profession. Includes these topics: detailed history of computing technology, social effects of computing, ethics in the field, professional literature, organizations and related activities, current industrial, social, legal governmental and technical developments, and career opportunities. Requires extensive reading and writing, both technical and non-technical, as well as library research, prepared group discussions. 3 Cr. Every Semester.

CSC 492 Internship (A). *Prerequisites:* Junior status,

3.0 or better average in computer science courses, appropriate course work, at least 18 credits towards the major completed prior to starting the internship, and instructor's permission. Provides an opportunity to apply knowledge from the classroom by working in a professional setting. This is a valuable and challenging experience for students who have never worked in such a situation, as well as for professionals furthering their education. The successful intern learns how effective professional performance requires integrating substantive knowledge with behavioral skills and proficiency in oral and written communication. Each student is supervised on campus by a computer science faculty member, and at the work site by qualified management personnel. Past projects have involved software engineering, graphics, database design, data communications, and process control. 3 Cr.

CSC 493 Senior Thesis (A). *Prerequisites:* Junior

class standing, 3.0 or better average in computer

science, appropriate coursework, at least 18 hours towards the major completed prior to starting the thesis, and permission of instructor. The Computer Science Senior Thesis Option provides students with an opportunity to apply knowledge from the classroom by working in an independent research or development project in an academic setting. This is a valuable and challenging experience for students who are contemplating graduate studies in computer science, to test out their potential for independent study and advanced research. Projects pursued may involve substantial software or hardware development, structuring available commercial software/hardware for specific applications, or theoretical analysis of computational schemes. A successful thesis permits students to enrich their knowledge of computer applications, theory, hardware or software, to develop skills in analyzing problems involving current computing technologies, and to make effective oral and written presentations of their accomplishments. Each student is supervised by a Department of Computer Science faculty member. For details, see "The Computer Science Thesis Option" in the Handbook. 3 Cr. Every Semester.

CSC 495 Topics in Computer Science (A). Prerequisite: Instructor's permission. Addresses current topics in the field. Each offering is motivated by the expertise of the instructor and students' interests. Requires students to complete a major research, design, or development project. Descriptions and prerequisites are published prior to the registration period for the course. Past topics include: networking, human factors, computational linguistics, advanced architecture, software engineering, logic programming, and program validation, object-oriented programming and parallel algorithms. 3 Cr.

CSC 499 Independent Study in Computer Science (A). Prerequisite: Instructor's permission. Arranged in consultation with the instructor-sponsor and in accordance with the procedures of the Office of Academic Advisement prior to registration. 1-3 Cr.

Information System Courses

CIS 106 End-User Computing. (A) Intended to develop students' acumen in key end-user computing technologies, to a level that will allow students to utilize technology successfully in the workplace and to meet the contemporary expectations of employers. Topics include word processing, operating systems, spreadsheets, office presentation, net work applications, and databases. Extensive lab work. 3 Cr. Every semester.

CIS 202 Fundamentals of Information Sys-

tems. (A) Prerequisite: CSC 104 or CIS 106. The use of information systems and information technology in organizations is introduced. Concepts of information management, systems theory, quality, enhanced decision making, and added value in products and services are considered. Information technology, including computing and telecommunications systems, is stressed. Students learn to analyze requirements, define an information system, and develop custom solutions to enhance productivity. 3 Cr. Every semester.

CIS 303 Information Technology Hardware and Software. (A) Prerequisites: CIS 202 and MTH 281. Covers both hardware and software components of computer systems. The basic elements of a computer system are examined including CPU architecture, memory, buses, instruction sets, multi-processors, hard disks, CDs, backup storage, video displays, I/O devices, and networks. System software is also covered, particularly in how it relates to the computer hardware. Topics include assembly language; operating systems; process, file, and memory management; networks and multi-user systems. These topics are covered in theoretical terms. 3 Cr. Every semester.

CIS 304 Computers and Office Productivity. Prerequisite: CSC 104 or (or CIS 106) and CSC 120. Study of computer-mediated office communication and business data processing. Topics include guidelines for buying office computers, operating systems and graphical user interfaces, word processing, desktop publishing, grammar and style checkers, office presentations, multimedia documents, spreadsheets with advanced applications, business charts, Internet and intranet, e-mail, World Wide Web, search engines, Web publishing, copy right and ethical issues. Extensive lab work. 3 Cr. Every semester.

CIS 317 Analysis and Logical Design of Information Systems. (A) Prerequisites: CIS 202, CIS 304 (or BUS 317), and CSC 203. Study of requirement analysis, system development and modification process. Topics include lifecycle phases and the role of systems analyst; organizational style, feasibility and impact of information systems; requirements analysis, sampling and investigating data, interviewing; data flow diagrams, data dictionaries, preparing and writing proposals; prototyping, designing for effective input and output, user interface; software metrics, quality assurance, and software package evaluation and acquisition. 3 Cr. Fall

CIS 334 Decision Support and Expert Systems. (A) Prerequisites: CIS 202 and CSC 203. Decision Support Systems (DSS) and its subsystems: DSS overview, data management, modeling and model management, knowledge subsystem, user interface

subsystem, group decision support systems, executive information and support systems, fundamentals of artificial intelligence, expert systems, knowledge acquisition and validation, knowledge representation, and expert system building tools. 3 Cr. Fall.

CIS 404 Multimedia Applications. (A) *(Prerequisites: CIS 303 and CIS 304.* Study of multimedia systems and applications in the business world. Topics include multimedia applications, hypertext and hypermedia, audio, graphics, images, and full motion video; multimedia-ready personal computers and workstations, storage devices, operating systems and graphical user interfaces; communication and networking requirements, multimedia applications on the Internet; file formats, data compression and streaming audio/video; and multimedia authoring tools. 3 Cr. Spring.

CIS 419 Computer Networks and Internet Applications. (A) *(Prerequisites: CIS 304 (or BUS 317) and CSC 203.* Study of data communication, computer networks, and Internet applications. Topics include data communication, LAN and WAN applications, Internet and intranet, e-mail, FTP and Web applications, distributed systems, standards; communication concepts, media, coding of data, error control, LAN topologies and protocols, bridges, routers and gateways; TCP/IP, client server paradigm; network configuration, performance monitoring, management, security, and reliability. 3 Cr. Fall.

CIS 422 Physical Design and Implementation of DBMS. (A) *(Prerequisite: CIS 317 (or BUS 417).* Covers information systems design and implementation within a database management system environment. Students will design and construct a physical system using database software to implement the logical design. Stresses basic knowledge of normalization of data modeling, database methods, database design, and the use of databases in business. 3 Cr. Spring.

CIS 427 Project Management and Practice. (A,U) *(Prerequisite: CIS 317 (or BUS 417).* Introduction to software development and management of the development process. Topics include managing the software lifecycle: requirements definition, logical design, physical design, implementation, testing, system integration, maintenance; design techniques (structured, event-driven and object-oriented); implementation; testing and software quality assurance; delivery and user training; metrics for project management and system performance evaluation; management expectations: personnel management, cost analysis and change management; management of behavioral and technical project

aspects. Course is placed in frame work of client-server systems. 3 Cr. Spring.

CSC 429 Object-Oriented Programming. (A) *(Prerequisites: CSC 205.* Introduction to basic concepts in object-oriented programming (OOP) and how to apply OOP techniques using an appropriate OOP language such as Java or C++. Topics include: the OOP programming paradigm including analysis and design, a survey of related languages, data hiding and encapsulation, inheritance, and polymorphism. Implementation of these concepts using appropriate programming language constructs. Extensive programming. 3 Cr. Spring.

CIS 492 Internship. (A) *(Prerequisites: Junior class standing, 3.0 or better in major courses, appropriate coursework, at least 18 hours towards the major completed prior to starting the internship, and permission of instructor.* Supervised experience in information systems in a practical operating environment. Projects may involve applications in business programming, requirements analysis, requirements tracking, project management assistance, test development, web applications, process control, database design, data communications, etc. 1–3 Cr.

CIS 493 Senior Thesis. (A) *(Prerequisites: Junior class standing, 3.0 or better average in major courses, appropriate course work, at least 18 hours towards the major completed prior to starting the thesis, and permission of instructor.* Supervised experience in Computer Information Systems to pursue an independent research or development project in an academic setting. Each thesis has its own specific objectives. Projects may involve substantial software development, structuring available commercial software/hardware for specific applications, or an empirical case study of the use of technology. A written thesis and an oral presentation are required. 3 Cr.

CIS 495 Topics in Information Systems. (A) *(Prerequisites: published prior to registration each semester.* An advanced course which addresses current topics in the field. Each offering of the course is motivated by the expertise of the instructor and by students' interests. The student is expected to complete a major research, design, or development project. Descriptions and prerequisites are published prior to the registration period for the course. 3 Cr.

CIS 499 Independent Study in Information Systems. (A) *(Prerequisite: permission of the instructor.* Arranged in consultation with the professor/sponsor and in accordance with the procedures of the Office of Academic Advisement prior to registration. 1–3 Cr.

Department of Counselor Education

**184 Faculty Office Building
(716) 395-2258**

Chairperson: Susan R. Seem; *Associate Professors:* Muhyi Shakoor; *Assistant Professors:* Jan Bartlett, Jeff Cochran, Thomas Hernandez.

The department does not offer an undergraduate academic major. A few courses, however, are offered for the undergraduate student. For information on graduate degrees in Counselor Education, refer to the Graduate Catalog.

Counselor Education Courses

EDC 201 Career/Life Planning (B). For adults desiring to determine future goals. Allows students to assess their ideal goals, interests, abilities and skills through class discussion, assigned readings and papers. Allows students to decide on future directions. *1 Cr.*

EDC 301 Introduction to Counseling (B). Explores the philosophical basis of counseling. Requires students to identify and understand five counseling theories and five interpersonal skills, and to demonstrate basic competence in interpersonal relations. *3 Cr.*

EDC 302 Achieving Helping Relationships in College Residence Halls (B). Explores the role

and responsibilities of the college resident assistant. Allows students to develop and practice the skills of assertiveness, conflict management, empathic listening, helping, self-awareness and self-disclosure. Allows these skills to be applied to the college environment and to current issues facing college resident assistants. *3 Cr. Every Semester.*

EDC 418 Conferencing Skills (B). Explores the knowledge and skills related to conferencing with students, parents and others. Includes communication models with an emphasis on applying the knowledge to conferencing skills. Entails demonstrations, simulations and role-playing activities. Not applicable as an elective in this program. *3 Cr.*