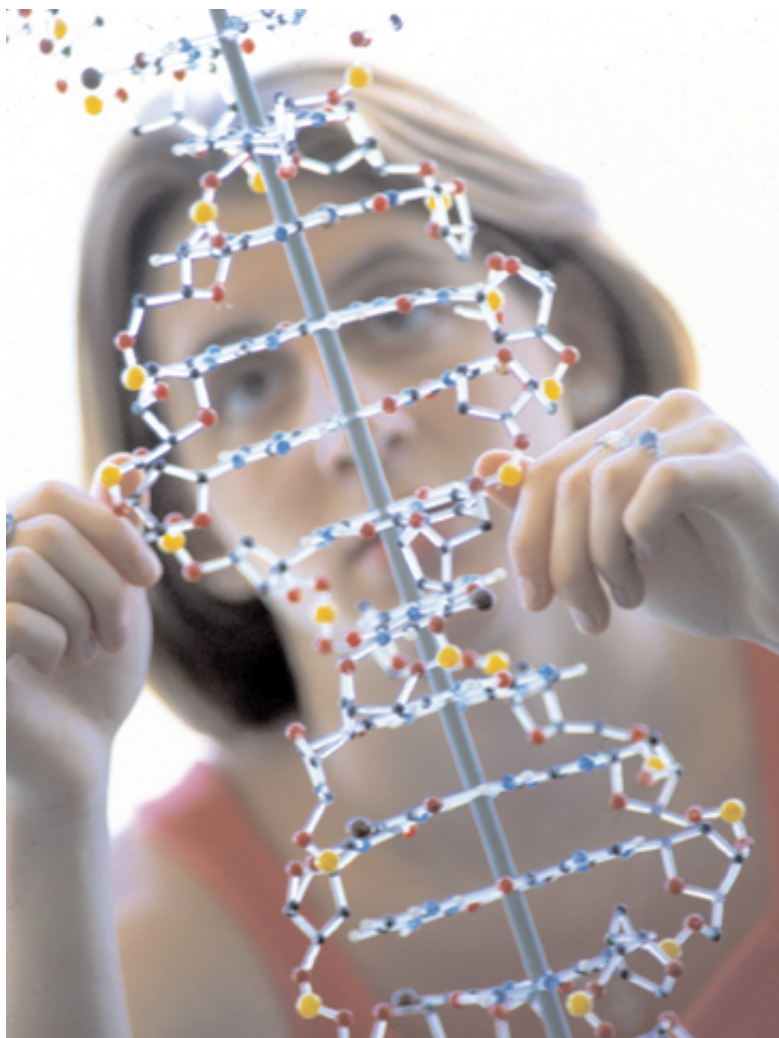


College of Arts and Sciences



COLLEGE OF ARTS AND SCIENCES

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The College of Arts and Sciences is the largest, and the most diverse, of the four colleges at Sacred Heart University. The college offers Bachelor of Arts and Bachelor of Science degrees; Associate in Arts and Science degrees; Master's degrees in Chemistry, Computer Science, Criminal Justice, and Religious Studies; and a variety of minors.

The degrees are offered through the following academic departments: Art, Biology, Chemistry, Criminal Justice, Computer Science, English, Government and Politics, History, Mathematics, Media Studies and Digital Culture, Modern Foreign Languages, Philosophy and Religious Studies, Psychology, Social Work, Sociology, and Special Programs.

The College of Arts and Sciences strives to provide a learning environment that fosters the growth, development, and nurturing of the entire individual.

Chemistry

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Chemistry Laboratories

There are eight chemistry laboratories serving the needs of inorganic chemistry, organic chemistry, physical chemistry, analytical chemistry, instrumental analysis, biochemistry, environmental chemistry, and computational chemistry. These laboratories contain the following major equipment:

Spectroscopy

Jeol ECLIPSE 400 high resolution 400 MHz NMR Spectrometer with self-shielding magnet system;

Bruker Alpha FTIR; PE Spectrum One FT-IR Spectrometers; PE Lambda 20, Ultra-violet/Visible Spectrophotometer; Buck Scientific ACCUSYS 211 Flame and Graphite Furnace Atomic Absorption Spectrometer with Autosampler; Kett NIR Composition Analyzer.

Chromatography

PE HPLC Binary UV/Vis System with Series 200 Autosampler; Gow Mac 550P and two Gow Mac 69-400 TCD-P Gas Chromatographs; Dionex DX-80 Ion Analyzer.

Electrochemistry

Pine Dual Potentiostat System; EG&G Parc 264A and EG&G Parc 384 Polarographic Analyzer/-Stripping Voltammeter; EG&G Parc 303A SMDE Electrode; EG&G Parc 616 RDE Electrode.

Computers and Software Licenses

Hyperchem Molecular Modeling System; ACD proton and carbon-13 NMR software; Wiley 6th edition MS spectral library of 138,000 MS Spectra and NIST Library Chemical Structure Database; Sadtler search software and infrared spectrum library of 3500 organic and inorganic compounds; MATHCAD; ChemDraw; Chem3D; IR Tutor; Introduction to Spectroscopy; Spectra Deck; Turbochrom.

Others

Performance Plus HP 6890 GC/MS System with Purge-and-Trap Liquid Sample Concentrator; Rudolph Autopol IV Automatic Polarimeter; Johnson Matthey Mark II Magnetic Susceptibility Balance; Jenway PFP7 Flame Photometer; Bio-Rad Experion Automated Electrophoresis System; PE 48-well Thermal Cylinder for DNA analysis; IEC Centra CL2 Benchtop Clinical Centrifuge; Classic Series C-Line Model C24 Benchtop Incubator Shaker; Labconco Tissue Culture Enclosure.

Master of Science in Chemistry

Sacred Heart University's Graduate Chemistry pro-

gram includes a number of graduates with a Bachelor of Science degree in Chemistry who are working in the region and aspire to an advanced degree in Chemistry. The program is also composed of science graduates with a B.S. degree in other fields of science who are shifting career interests and want to obtain a degree in Chemistry. Enrollment in this program allows these students to use their science background to obtain an advanced degree in Chemistry without first obtaining a B.S. in Chemistry. This approach allows students to obtain a higher degree in the same time frame that it would have taken them to obtain just a B.S. in Chemistry.

Local chemical industry scientists participate in the teaching of graduate courses. Students who opt to do research are allowed, if and when possible, to pursue their projects at their place of employment with joint supervision of their employer and University faculty. This allows students to work on relevant projects that interest them, while at the same time increasing collaboration between the University and local industries.

Goals and Objectives

The Master of Science in Chemistry program builds on the strength of the University's undergraduate Chemistry program. The program meets the needs of students and the chemical industry by offering a unique opportunity for career and personal advancement to employees of the local chemical industry, while serving the industry to employ and recruit better qualified chemists.

In order to serve part-time as well as full-time students, graduate courses are offered in the evenings and on Saturdays. This, together with the University's ideal location, allows chemical industry employees to continue their study on a part-time basis while working full-time and thus take advantage of tuition reimbursement programs offered by their employers.

Course Loads

Both full-time and part-time graduate students are enrolled in the program. Full-time students must enroll in at least nine credit hours per semester. This allows them to normally finish the degree requirements in two years. Part-time students are expected to enroll in three to six credit hours per semester. This allows them to finish the degree requirements in three years or less.

Student Transfer Credit Policy

Transfer credits are granted for appropriate graduate-level courses with a grade of B or better, taken at other regionally accredited institutions. Students, however, must complete at least 70 percent of the required credits including the thesis (when applicable) at Sacred Heart University and pass the comprehensive exam, in order to obtain an M.S. degree in Chemistry.

Admission Requirements

Admission to the program is in January and September of each year. Full-time students are expected to finish the degree requirements in four semesters. Part-time students may require at least three years. The University's graduate admission policy is observed when admitting students to the program. Applicants with a B.S. degree in Chemistry or Chemical Engineering are accepted based on their undergraduate performance in Chemistry and other supporting subjects. Applicants with a B.S. degree in other areas of science and mathematics are admitted after completing the appropriate courses in Chemistry in order to meet individual graduate course prerequisites.

Degree Requirements

These tracks of study leading to an M.S. degree in Chemistry are available:

M.S. in Chemistry, Thesis Option

M.S. in Chemistry, Non-Thesis Option

M.S. in Chemistry, Thesis Option

Thirty semester hours of approved graduate cred-

its must be completed for the degree with a minimum grade point average (GPA) of 3.0. Students must complete a 12-credit core plus a thesis.

Required Courses

CH 521	Advanced Organic Chemistry	3 credits
or		
CH 522	Organic Synthesis	3 credits
CH 531	Advanced Physical Chemistry I: Molecular Structure	3 credits
or		
CH 532	Advanced Physical Chemistry II: Molecular Dynamics	3 credits
CH 551	Advanced Analytical Instrumentation I: Spectroscopy	3 credits
or		
CH 552	Advanced Analytical Instrumentation II: Chromatography	3 credits
CH 553	Advanced Inorganic Chemistry	3 credits
CH 599	Thesis	6 credits

M.S. in Chemistry, Non-Thesis Option

Thirty-three semester hours of approved graduate credits must be completed for the degree with a minimum GPA of 3.0. Students must complete a 12-credit core plus the Advanced Integrated Lab.

Required Courses

CH 521	Advanced Organic Chemistry	3 credits
or		
CH 522	Organic Synthesis	3 credits
CH 531	Advanced Physical Chemistry I: Molecular Structure	3 credits
or		
CH 532	Advanced Physical Chemistry II: Molecular Dynamics	3 credits
CH 551	Advanced Analytical Instrumentation I: Spectroscopy	3 credits
or		
CH 552	Advanced Analytical Instrumentation II: Chromatography	3 credits
CH 553	Advanced Inorganic Chemistry	3 credits
CH 595	Advanced Integrated Laboratory	3 credits
CH 598	Comprehensive Test	0 credits

Students electing the non-thesis option are required to pass a comprehensive exam.

Students are required to take electives from graduate-level courses in Chemistry and no more than six credits of other approved courses in other related areas of science, mathematics, physics, biology and computer science.

Elective Courses (for both options)

CH 523	Organic Structure Determination	3 credits
CH 524	Special Topics in Organic Chemistry	2–3 credits
CH 534	Special Topics in Physical Chemistry	2–3 credits
CH 541	Advanced Biochemistry	3 credits
CH 545	Bioinformatics	3 credits
CH 547	Computation Chemistry and Molecular Modeling	3 credits
CH 549	Special Topics in Biochemistry	2–3 credits
CH 554	Special Topics in Analytical Chemistry	2–3 credits
CH 555	Theoretical Inorganic Chemistry	3 credits
CH 556	Chemical Applications of Group Theory	3 credits
CH 559	Special Topics in Inorganic Chemistry	2–3 credits
CH 561	Environmental Chemistry	3 credits
CH 565	Environmental Sampling and Analysis	3 credits
CH 569	Special Topics in Environmental Chemistry	3 credits
CH 571	Polymer Chemistry	3 credits
CH 590	Chemical Information: Sources and Technology	3 credits
CH 595	Advanced Integrated Laboratory	3 credits

B.S./M.S. Combined Degree in Chemistry

This is a five-year undergraduate/graduate accelerated track. Students who complete this track receive both B.S. and M.S. degrees. Students must elect this

track in their Freshman, Sophomore or Junior year. Traditional and Biochemistry concentrations are available at the undergraduate level. Students are required to complete 145 credits of undergraduate- and graduate-level courses and a thesis. The thesis involves six credits of original research.

Course Descriptions

CH 521 Advanced Organic Chemistry 3 CH

Prerequisite: CH 222 Organic Chemistry II or equivalent. Explores the effects of structure and environment on reaction rates and equilibria and the use of statistical and quantum mechanics in organic chemical reactions. Topics include: organic reaction mechanism, Huckel theory, orbital symmetry, photochemistry and standard concepts of physical organic chemistry.

CH 522 Organic Synthesis 3 CH

Prerequisite: CH 222 Organic Chemistry II or equivalent. Surveys three general classes of reactions: reduction, oxidation and the formation of carbon-carbon bonds. Each reaction is used as a tool in chemical synthesis.

CH 523 Organic Structure Determination 3 CH

Prerequisites: CH 222 Organic Chemistry II or equivalent and CH 351 Instrumental Analysis or equivalent. Identification and structure determination of organic molecules by modern spectroscopic techniques. Emphasis is on IR, NMR, CMR and mass spectrometry. Hands-on work in NMR and FT-IR.

CH 524 Special Topics in Organic Chemistry 3 CH

Topics include: heterocyclic chemistry, medicinal chemistry, polymer chemistry, supramolecular chemistry, organometallic chemistry, radical and photochemistry and combinatorial chemistry.

CH 530 Physical Chemistry 3 CH

Prerequisite: CH 331; co- or prerequisite: MA 253

or permission of the program director. A prerequisite to CH 531. Explores advanced kinetics and quantum mechanics.

CH 531 Advanced Physical Chemistry I: Molecular Structure 3 CH

Prerequisite: CH 332. Topics in quantum chemistry, molecular structure, group theory and applications of these topics to spectroscopy.

CH 532 Advanced Physical Chemistry II: Molecular Dynamics 3 CH

Prerequisite: CH 332. Topics in statistical thermodynamics, collision theory, and reaction dynamics and mechanism.

CH 534 Special Topics in Physical Chemistry 3 CH

Topics include: magnetic resonance spectroscopy, statistical mechanics and mathematical and computer concepts in chemistry.

CH 541 Advanced Biochemistry 3 CH

Prerequisite: CH 342 Biochemistry II or equivalent. Explores the integration of the basic chemistry of biomolecules into living systems. Topics include: bioenergetics and metabolic pathways; biosynthesis and biodegradation of amino acids, proteins, nucleotides and DNA; chemical communication; hormones; and the cell cycle.

CH 545 Bioinformatics 3 CH

This course provides an introduction to bioinformatics that is suitable for graduate students and advanced undergraduate students. Topics include a historical introduction to the subject; basic computer programming and database design; basic review of biochemistry, biomolecular sequence comparisons and alignments; biomolecular structure prediction; biomolecular function prediction; and data analysis. Students are required to solve theoretical problems and application problems using bioinform-

matics programs. Students may also be required to write a short bioinformatics program of their own. Example problems and applications usually focus on proteins. Students must have access to a computer and the Internet and are expected to purchase at least one primary class text.

CH 547 Computation Chemistry and Molecular Modeling 3 CH

This course provides an introduction to computational chemistry that is suitable for graduate students and advanced undergraduate students. Topics covered include a historical introduction to the subject, quantum mechanics, molecular mechanics, a brief introduction to statistical mechanics and a short review of thermodynamics. Students are required to solve theoretical problems and application problems using computational software, software that students might have to purchase. Example problems and applications are drawn from organic chemistry and biochemistry. Students must have access to a computer and the Internet and are expected to purchase at least one primary class text.

CH 549 Special Topics in Biochemistry 3 CH

Topics include: carbohydrate chemistry; enzyme kinetics; endocrinology; electrically excitable cells; computer-aided access to proteins and databases; cell motility; chemical concepts in genetic engineering.

CH 550 Instrumental Analysis 3 CH

Prerequisites: CH-252 and CH 331 or permission of the program director. A prerequisite to CH 551. Explores theory and practice of instrumental methods of analysis: spectrophotometric, electro-analytical and chromatographic methods of separation and quantification.

CH 551 Advanced Analytical Instrumentation I: Spectroscopy 3 CH

Prerequisite: CH 351. Fundamentals and practical

aspects of analytical spectroscopy. Special emphasis is given to theory and instrumentation; methods and applications are covered.

CH 552 Advanced Analytical Instrumentation II: Chromatography 3 CH

Prerequisite: CH 351. Fundamentals and practical aspects of analytical separation and chromatography. Special emphasis is given to theory and instrumentation; methods and applications are covered.

CH 553 Advanced Inorganic Chemistry 3 CH

Prerequisite: CH 331 Physical Chemistry I or equivalent. The physical and chemical properties of the elements and their compounds are correlated with their positions in the periodic table. Bonding theory and coordination chemistry are emphasized. (This undergraduate/graduate level course also has an undergraduate course number of CH 355, Advanced Inorganic Chemistry, or equivalent.) Three credits will be given for the completion of this course with a grade of B or better.

CH 554 Special Topics in Analytical Chemistry 3 CH

Topics include: data acquisition and LIMS; aquatic chemistry; GC-MS: theory, instrumentation and method; thermal analysis; and applications of supercritical fluids.

CH 555 Theoretical Inorganic Chemistry 3 CH

Prerequisite: CH 355 Advanced Inorganic Chemistry, CH 553 or equivalent. An advanced theoretical study of bonding and spectroscopy of inorganic compounds. Topics include: crystal field, ligand field and molecular orbital theories of inorganic complexes; magnetic susceptibility; and electronic, infrared and raman spectroscopy.

CH 556 Chemical Applications of Group Theory 3 CH

Prerequisite: CH 331 Physical Chemistry I or equivalent. Presents basic principles of group theoretical methods. Topics include: molecular symmetry, normal coordinate analysis, molecular bonding and energy levels and theoretical basis for selection rules.

CH 559 Special Topics in Inorganic Chemistry 3 CH

Topics include: electronic spectra of transition metal complexes, reactions of transition metal complexes, ionic liquids and bioinorganic chemistry.

CH 561 Environmental Chemistry 3 CH

Prerequisites: CH 221 Organic Chemistry I or equivalent and MA 151 Introductory Calculus or equivalent. Focuses on the chemical aspects of the human environment. Examines the sources, reactions, transport, effects and fates of chemical species in water, soil, air and living environments and the effects of technology thereon.

CH 565 Environmental Sampling and Analysis 3 CH

Prerequisite: CH 561. Discusses methods and protocols of environmental sampling and analysis in water, air and biological matrices. Addresses EPA quality assurance and quality control plans. Laboratory and field work include: sampling of surface and groundwater; performing chemical and biological analyses of water; monitoring treated effluent quality control and detecting hazardous contaminants.

CH 569 Special Topics in Environmental Chemistry 3 CH

Topics include: water and wastewater treatment systems; hazardous waste management; environmental regulations; environmental hydrology and water resource management; environmental organic chemistry; atmospheric chemistry and air

pollution; chemical toxicology.

CH 571 Polymer Chemistry 3 CH

Prerequisites: CH 222 Organic Chemistry II or equivalent and CH 331 Physical Chemistry I or equivalent or permission of program director. An introduction to polymer chemistry through a study of step and chain polymerization and copolymerization as well as block and graft copolymers. Polymerization techniques in solution, emulsion and microemulsion are discussed as well as polymer structure and characterization with an overview of the properties of commercial polymers.

CH 590 Chemical Information: Sources and Technology 3 CH

Information is a vital key to success in today's chemical industry. The premier chemical information sources will be reviewed with emphasis on Chemical Abstracts Service and Beilstein. Chemical information retrieval applications will be highlighted including STN International, Scifinder and Crossfire, in addition to Internet resources. Students will gain an appreciation for chemical database design and content as well as formulating queries for keyword and structure-based searches.

CH 595 Advanced Integrated Laboratory 3 CH

The central theme for this laboratory is inorganic coordination chemistry. Students are required to work on unified projects rather than a series of unrelated experiments. Projects involve synthesis and analysis of a complex or a pair of isomers. Emphasis is on analytical and instrumental methods that are fundamental for the characterization of inorganic compounds. Six hours of laboratory work per week.

CH 598 Comprehensive Test 0 CH

Chemistry graduate students (non-thesis track) are required to pass a comprehensive test (after the completion of 33 credits in coursework) in fulfillment of the MS degree.

CH 599 Thesis**3 + 3 CH**

Original research under the supervision of faculty member(s) leading to a written thesis.

Computer Science and Information Technology

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The University confers Master of Science degrees in Computer Information Science (MS), with tracks in Information Technology (IT) as well as the traditional Computer Science (CS) discipline. It also offers recognized graduate certificates in Computer Science, Information Technology, IT and Network Security, Database and Web Development, some of the most lucrative and dynamic fields in the contemporary marketplace. Students choose their curriculum track based on their educational and career interests. Course content includes use of software such as VB.net 2008, Flash 8, Fireworks 8, Director 11, Java, C++, C#, ASP.net and content such as interactive multimedia, data communications, network security, Oracle, Artificial Intelligence (AI) and software engineering.

Most classes are held in the evenings or on Saturday mornings in Fairfield, with some IT courses offered in Stamford and a few courses offered during the day. This structure accommodates working full-time students as well as those who may wish to participate in internships during the day.

Admission Requirements

Applications are processed on a rolling basis. Applicants should have a cumulative undergraduate GPA of 3.0 (on a 4.0 scale) or better. However, students may be admitted provisionally if their cumulative GPA is better than 2.5. Such students

are allowed to take up to 12 credit hours and must maintain a 3.0 GPA in those courses. Provisional students who have completed 12 credit hours will then be considered for full matriculation. Except under unusual circumstances, applicants with a cumulative GPA of less than 2.5 are not admitted. A GPA of 3.0 is required to maintain good standing in the program and for graduation.

All prospective students must complete an application for admission, submit official transcripts from each college or university attended (including Sacred Heart University) and forward two letters of recommendation and a résumé. Course waivers (to a maximum of nine credits) are granted on the basis of a student's academic record.

Program Prerequisites

Students who do not have a bachelor's degree in Computer Science or in a related field may be required to complete prerequisite coursework before full admission is granted. The number of courses is determined by which track a student chooses to pursue.

Computer Science Track Prerequisite Requirements

The following prerequisite courses may be required for those who wish to pursue the Computer Science track. All courses are to be completed with a grade of B or better. Additional prerequisites may be recommended by the program director. All students are required to complete the following coursework unless waived by the program director:

Prerequisites

CS 601	Assembly Language Programming and Computer Systems	3 credits
CS 602	Advanced Data Structures and Algorithms	3 credits
	Calculus	

Computer Science Track Computer Science Master's Degree Track Program

Sacred Heart University offers both a graduate certificate and a Master of Science degree in this traditional track. This track is ideal for those who wish to pursue advanced study in areas of programming, data structures and fundamental computer language design.

Requirements

This track requires a minimum of 36 credit hours of graduate-level coursework to complete. Students may be required to complete an additional 13 credit hours of prerequisite coursework. Students with an undergraduate degree in Computer or Information Science may receive waivers for some courses. Course waivers are not granted for work experience.

A thesis is not required; however, for those students in the scientific track who elect to complete a thesis, they must enroll in CS 690 Thesis I and CS 691 Thesis II. Those who do not elect to complete a thesis must complete at least three credits of CS 670 Research Project Seminar. A degree will be granted upon satisfactory completion of all coursework and a favorable recommendation of the faculty responsible for CS 670 or 690/691.

Required Courses

CS 551	Introduction to Object-Oriented Programming with Java	3 credits
CS 603	Database Design (Oracle)	3 credits
CS 604	Advanced Software Engineering	3 credits
CS 611	Operating/Multiprogramming Systems	3 credits
CS 614	Theory of Computation	3 credits
CS 615	Programming in Unix	3 credits
CS 622	Network Security I	3 credits
CS 623	Advanced Network Security	3 credits
CS 625	Cryptography	3 credits

CS 670	Research Project Seminar	3 credits
or		
CS 690/691	Thesis (I and/or II)	3–6 credits
Electives		3–6 credits
Total		36 credits

Information Technology Track Prerequisite Requirements

The following prerequisite courses may be required for those who wish to enter the Information Technology track. All courses are to be completed with a grade of B or better. Additional prerequisites may be recommended by the program director. Prerequisite courses cannot be taken concurrently.

CS 500	Introduction to Structured Programming	3 credits
CS 501	Introduction to Data Structures	3 credits
Prerequisites total		6 credits

Information Technology Track Information Technology Master's Degree Track Program

The Information Technology (IT) track is a new, innovative program designed specifically to accommodate the dynamic demands of the contemporary marketplace. With the exponential growth of the Internet and the wide-ranging ramifications of the accompanying technologies, the IT track will prepare individuals for careers that utilize, or are affected by, the latest technological advances and methods of modern business and industry.

Requirements

This track requires a minimum of 36 credit hours of graduate-level coursework. Students may be required to complete an additional six credit hours of prerequisite coursework. However, students with an undergraduate degree in Computer or Information Science may receive waivers for some courses. Course waivers are not granted for work experience.

Required Courses

CS 551	Introduction to Object-Oriented Programming with Java	3 credits
CS 552	Windows Interface Design (VB.net)	3 credits
CS 553	Web Design with Java Script	3 credits
CS 554	Fundamentals of Interactive Multimedia	3 credits
CS 601	Assembly Language Programming and Computer Systems	3 credits
CS 603	Database Design (Oracle)	3 credits
CS 620	Information Analysis and Systems Design	3 credits
CS 621	Principles of Data Communication	3 credits
CS 670	Research Project Seminar	3 credits
Required courses total		27 credits

Elective Courses

(Nine credits are required). A maximum of six credits can be an MBA (BU) offering. It is also at the discretion of the academic program director to approve any other CS or MBA course offering as an appropriate elective. The following is a partial list of electives:

BU 651	Management of Global Telecommunications	3 credits
BU 652	Project/Program Management	3 credits
BU 653	International Electronic Commerce and the Internet	3 credits
CS 550	Dynamic Web Page Development	3 credits
CS 555	Advanced Scripting with Interactive Media	3 credits
CS 556	Electronic Commerce Technology	3 credits
CS 557	Web Programming with ASP	3 credits
CS 560	Networking Applications	3 credits
CS 561	Multimedia Authoring (Authorware)	3 credits
CS 604	Advanced Software Engineering	3 credits

CS 611	Operating/Multiprogramming Systems	3 credits
CS 622	Network Security I	3 credits
CS 623	Advanced Network Security	3 credits
CS 624	Hands-on Network Security	3 credits
CS 640	Special Topics in Computer Science	3 credits
Elective courses total		9 credits
Degree total		36 credits

Information Technology Certificate Track Program

A student may choose to enroll in the Information Technology Graduate Certificate program to learn specific skills in the area of Information Technology. The certificate program is ideal for those who are undecided about committing to a full master's degree program, but wish to pursue advanced study in this field.

Requirements

The program requires the student to complete a minimum of 12 semester credit hours of coursework, with a minimum cumulative GPA of 3.0. Students matriculated in the master's program are not eligible for a graduate certificate. However, students who have successfully completed a graduate certificate may apply to the master's program and may be able to use those credits earned in the certificate program toward the master's degree. Contact the program director to determine which, if any, graduate certificate credits may apply. Graduate admissions procedures must be followed.

Prerequisite Courses

CS 500	Introduction to Structured Programming	3 credits
CS 501	Introduction to Data Structures	3 credits

Required Courses

CS 552	Windows Interface Design (VB.net)	3 credits
CS 553	Web Design with Java Script	3 credits

CS 603 Database Design (Oracle) 3 credits
One elective from any available electives approved by program director

Interactive Multimedia Certificate Track Program

In response to the recent growth and use of multimedia applications in the modern business environment, this certificate has been explicitly designed for students who want to focus exclusively on the popular discipline of multimedia.

Requirements

The program requires the student to complete a minimum of 12 semester credit hours of coursework, with a minimum cumulative GPA of 3.0. Regular program prerequisites still apply (CS 500 Introduction to Structured Programming and CS 501 Introduction to Data Structures). Students matriculated in the master's program are not eligible for a graduate certificate. However, students who have successfully completed a graduate certificate may apply to the master's program and may be able to use those credits earned in the certificate program toward the master's degree. Contact the program director to determine which, if any, graduate certificate credits may apply. Graduate admissions procedures must be followed.

Prerequisite Courses (if required)

CS 500 Introduction to Structured Programming 3 credits
CS 501 Introduction to Data Structures 3 credits

Required Courses

CS 553 Java Scripting for Web Design 3 credits
CS 554 Fundamentals of Interactive Multimedia 3 credits

Elective Courses (choose two; other electives may also be available after consultation with the program director)

CS 550 Dynamic Web Page Development 3 credits

CS 552 Windows Interface Design (using VB) 3 credits
CS 555 Advanced Scripting with Interactive Multimedia 3 credits
CS 561 Multimedia Authoring (Authorware) 3 credits
Certificate total 12–18 credits

Web Development Certificate Track Program

This program provides students with the background and technical skills needed for a comprehensive understanding of the development, design and construction of professional web pages.

Requirements

The program requires the student to complete a minimum of 12 semester credit hours of coursework with a minimum cumulative GPA of 3.0. Two program prerequisites apply to those without suitable academic credentials in programming.

Some required courses also require additional prerequisites (e.g., CS 501)

All course credits earned in the program may be applied to the master's program.

Prerequisite Courses (if required)

CS 500 Introduction to Structured Programming 3 credits
CS 501 Introduction to Data Structures 3 credits

Required Courses

CS 550 Dynamic Web Page Development 3 credits
CS 552 Windows Interface Design 3 credits
CS 553 Java Scripting for Web Design 3 credits
CS 557 Web Programming with ASP 3 credits

Certificate total 12–18 credits

IT and Network Security

Our country and, in fact, the entire world have become increasingly dependent on information technology as a means of staying competitive in business, industry, the arts, and commerce of all

types. Education, electronic commerce, and the Defense Department are all areas that utilize technology on an exponentially expanding level with each passing year. But this dependence on and utilization of technology are accompanied by a growing risk of security issues that must be addressed if we are to thrive and survive in a technology-driven world.

Inadequate security practices have left corporations vulnerable to a number of illegal activities such as computer fraud, telecommunications abuse, and unauthorized disclosure, modification, and destruction of information. National security has been and will continue to be threatened unless corporations and the government on all levels are able to effect and maintain sufficient computer security.

The certificate program in IT and Network Security is designed to provide individuals with introductory networking, ethical, and security skills to effectively address the areas of concern mentioned above. The courses in the certificate program:

- provide an overview of networking protocols and how they can be secured;
- introduce the individual to an array of social and ethical issues that are incumbent on those in providing security; and
- provide the individual with an introduction to computer programming, as it relates to the maintenance of security protocols.

Upon completion of the certificate program, the student will be better equipped to enter or continue as a professional in the cyber security field.

Requirements

The certificate requires a total of 12 credits plus two prerequisite courses (CS 500 and CS 501). Prerequisite courses may be waived if evidence of prior completion of these prerequisites can be supplied. Courses taken for the certificate can be applied toward the MSCIS degree.

Prerequisite Courses (if required)

CS 500	Introduction to Structured Programming	3 credits
CS 501	Introduction to Data Structures	3 credits

Required Courses

CS 621	Principles of Data Communication	3 credits
CS 622	Network Security I	3 credits
CS 623	Advanced Network Security	3 credits

Elective Courses

CS 624	Hands-On Network Security	3 credits
CS 625	Cryptography	3 credits

Computer Science and Information Technology Database Certificate

Prerequisites

CS 500	Introduction to Structured Programming	3 credits
CS 501	Introduction to Data Structures	3 credits

Required Courses

CS 603	Database Design (Oracle)	3 credits
CS 631	Data Warehousing	3 credits
CS 632	Advanced Database Topics	3 credits
CS 633	Advanced Database Programming	3 credits

(CS 603 will be a prerequisite for CS 631, CS 632 and CS 633)

Course Descriptions

CS 500 Introduction to Structured Programming 3 CH

This is an introductory course in computer programming using a structured programming language. Representative topics include: iteration, selection, procedures, functions, arrays and packages.

CS 501 Introduction to Data Structures 3 CH

Prerequisite: CS 111 or CS 500 Introduction to Structured Programming or equivalent. A

continuation of CS 500 utilizing a structured programming language to further implement multidimensional arrays and other data structures including: linked lists, stacks, queues, trees, etc. Also provides introduction to recursion and data abstraction.

CS 502 C: Advanced Programming **3 CH**

Prerequisite: CS 112 Data Structures or equivalent, or CS 501 Introduction to Data Structures. Discusses advanced programming techniques with an emphasis on mathematical and scientific programming applications. Topics include: recursion, pointers and some advanced data structures. C language is introduced in this course.

CS 550 Dynamic Web Page Development **3 CH**

Prerequisite: CS 500 Introduction to Structured Programming. This course enables students to develop low-bandwidth visual effects for web pages. A variety of software is employed to develop web sites and media for the web. Topics include: web animation and interactivity using Macromedia Flash®, a vector-based animation tool; vector-based graphic construction and digital compression using Macro-media Fireworks®, a graphic optimizing tool; and dynamic web page construction using Macromedia Dreamweaver®, a visual HTML editor.

CS 551 Introduction to Object-Oriented Programming with Java **3 CH**

Prerequisite: CS 501 Introduction to Data Structures. Provides an introduction to the fundamental concepts of object-oriented analysis (OOA), design (OOD) and programming (OOP), and how object-oriented languages differ from procedural languages. Notation is used to teach the concepts of abstraction, encapsulation, modularity, hierarchy and polymorphism. This course is designed for both programmers and analysts.

Both C++ and Java are used to implement these object-oriented concepts.

CS 552 Windows Interface Design (VB.net) **3 CH**

Prerequisite: CS 501 Introduction to Data Structures. This course introduces the fundamentals of writing Windows applications, event-driven programming and the GUI. Topics include: dialogues, menus, controls, data types, scope and life of variables, objects and instances, fonts and graphics, simple file I/O and other DLL procedures. VB.net is used in implementing various Windows applications.

CS 553 Web Design with Java Script **3 CH**

Prerequisite: CS 500 Introduction to Structured Programming. This course shows how to embed Java “applets” into HTML pages, as well as create applets. The course covers the Java applet paradigm and the standard Java-class libraries. Students write Java applets, stand-alone applications, Native Libraries and content/protocol handlers for extending web browsers.

CS 554 Fundamentals of Interactive Multimedia **3 CH**

Prerequisite: CS 500 Introduction to Structured Programming. Students develop multimedia applications of their own design using Macromedia Director®. This course explores principles for effective interactive multimedia design from concept definition, storyboarding, multimedia development and authoring to testing and revision. It covers techniques to include sound, graphics, photographs, animation, video and text into multimedia presentations. Macromedia Director movies are developed for use in authoring applications such as business presentations, interactive kiosks, CD-ROMs and Shockwave movies for the web.

CS 555 Advanced Scripting with Interactive Multimedia **3 CH**

Prerequisites: CS 501 Introduction to Data

Structures and CS 554 Fundamentals of Interactive Multimedia. This advanced multimedia development course explores program control for effective design and delivery of interactive multimedia applications. Students learn how to use the director's full-feature scripting language Lingo to develop the interactivity and program control of multimedia projects. Xobjects, special code segments that control external devices, are also covered.

CS 557 Web Programming with ASP 3 CH

Prerequisites: CS 501 Introduction to Data Structures and CS 552 Windows Interface Design. Covers Active Server Pages and how they allow for powerful web site creation by combining program code with standard HTML. The class is presented in a tutorial system application. Students will successfully learn how to program using Visual Basic Script, the most commonly used ASP programming language. Other relevant topics include: integrating databases with a web site and effective site functionality.

CS 560 Networking Applications 3 CH

Prerequisite: CS 621 Principles of Data Communication. This hands-on course provides an in-depth introduction to IP addressing, TCP/IP, routing of IP packets, Internet protocol, TCP, DHCP, DNS, network management and a brief introduction to network security including use of firewalls, proxy servers, and footprint analysis.

CS 561 Multimedia Authoring (Authorware) 3 CH

Prerequisite: CS 500 Introduction to Structured Programming. This authoring course covers design and delivery of interactive multimedia using an icon-based product. Students use the authoring tool Authorware to develop a variety of projects: CBT, interactive kiosks, performance-support applications, interactive magazines and

catalogs, educational games and interactive education and information that can be delivered over intranets.

CS 601 Assembly Language Programming and Computer Systems 3 CH

Prerequisite: CS 501 Introduction to Data Structures. Explores programming concepts at the interface of hardware and software: addressing, instructions, symbol tables, linkage, registers, ALU and CPU, anatomy of an assembler, relocatable code, macros, interrupts and debuggers.

CS 602 Advanced Data Structures and Algorithms 3 CH

Prerequisites: MA 151 Introductory Calculus, CS 502 C: Advanced Programming and CS 241 Advanced Programming Concepts Using "C." Explores the relationship between data structures and algorithms with a focus on space and time efficiency: review of recursion, data abstraction and complexity analysis, multilists, trees (including balanced binary trees, n-ary trees and B-trees), hash tables, external sorting, graphs and algorithm design techniques.

CS 603 Database Design (Oracle) 3 CH

Prerequisite: CS 501 Introduction to Data Structures. Discusses goals and techniques in the design, implementation and maintenance of large database management systems: physical and logical organization; file structures; indexing; entity relationship models; hierarchical, network and relational models; normalization; query languages; and database logic.

CS 604 Advanced Software Engineering 3 CH

Prerequisite: CS 502 C or permission of department. Advanced Programming. Reviews models and metrics for software engineering in the large: software life-cycle models, software modeling tools, design and analysis of software subsystems,

management of software projects, test plans, configuration control, reliability and metrics.

CS 605 Discrete Structures and Logic 3 CH

Prerequisite: CS 501 Introduction to Structured Programming and MA 151 Introductory Calculus. Reviews the mathematical concepts and foundations of logic for computer science: sets, relations and functions; Boolean algebras; graphs; propositional and predicate logic; notions of logical consequence and provability; soundness and completeness of inference methods; resolution; unification; and introduction to theorem proving.

CS 611 Operating/Multiprogramming Systems 3 CH

Prerequisite: CS 502 C: Advanced Programming. Explores the management of resources in a multi-user system: memory allocation and management, process scheduling, protection, concepts of concurrent processes, study of different operating systems and multiprocessing.

CS 613 Structure of Programming Languages 3 CH

Prerequisite: CS 602 Advanced Data Structures and Algorithms. Discusses the syntax and semantics of programming languages including: an introduction to theory of languages and grammars; concepts of design and implementation of programming languages; and the comparison of different language paradigms such as imperative, functional, logic and object-oriented.

CS 614 Theory of Computation 3 CH

Prerequisite: Permission of instructor. Reviews the theory of the power and limitations of computation and computers: Turing machines, recursive and recursively enumerable functions, equivalence of computing paradigms (Church-Turing thesis), undecidability, intractability and introduction to NP-completeness.

CS 615 Programming in Unix 3 CH

Prerequisite: CS 611 or permission of instructor. Discusses main issues of Unix OS programming and administration. In particular, it explores a popular Unix text editor Emacs, Unix file system, process manipulation, regular expressions and their use, filters, and system administration and security.

CS 620 Information Analysis and System Design 3 CH

Prerequisite: CS 501 Introduction to Data Structures. Discusses the design, analysis and management of information systems: system life-cycle management, hardware and software selection and evaluation, the role of information systems in decision support and other functional areas of business, project management, systems development and analysis, module design and techniques to reduce system complexity.

CS 621 Principles of Data Communication 3 CH

Prerequisite: CS 501 Introduction to Data Structures. A survey of modern data communication techniques, including: data communication and local networking, hardware (e.g., terminals, modems, multiplexors), nodal and host processor architecture, packet switching, network control, protocols, software management and security.

CS 622 Network Security I 3 CH

Prerequisite: CS 621 Principles of Data Communication. Is there a security problem in computing? How do IT and network managers interface with business managers to create a security system that meets the needs of both sides of the business? How does network security support the business mission and how many resources is business willing to give to support network security? This course addresses these complex issues. Among the topics covered are: conventional encryption and message confidentiality, public key cryptography and message authentication, authen-

tication applications, e-mail security, IP security, Web security, firewalls, security in mobile networks, and other security issues.

CS 623 Advanced Network Security **3 CH**

Prerequisite: CS 622 Network Security I. This is the second course in security that emphasizes security at the system level. The course covers secure encryption, systems, program security (viruses and other malicious code), controls against program threats, protection in general-purpose operating systems, trusted operating systems, database security, security in networks and distributed systems, administering security, and legal and ethical issues in security.

CS 624 Hands-On Network Security **3 CH**

Prerequisites: CS 621 Principles of Data Communication and CS 622 Network Security I. Designed for IT graduate students, this course uses VMWare of Connectix Virtual PC to simulate different environments. It examines networking security topics, firewalls (using Linux), packet filters, NAT, PAT, socks and HTTP proxies; public key infrastructure (using Microsoft Certification Server), encryption algorithms, decrypting passwords, dictionary decryption, brute force decryption, certificate servers; and vulnerability assessment, identifying security holes, forensics, tracing, log analysis, Layer 5 vulnerabilities (Services/Daemons and OS), identifying denial of service attack (simulation), identifying a virus/work attack (simulation), packet monitoring (sniffing).

CS 625 Cryptography **3 CH**

Prerequisite: CS 622 Network Security I or permission of instructor. Designed for CS graduate students, the course covers theoretical and practical aspects of modern applied computer cryptography. Topics include: block and stream ciphers; hash functions, data authentication, and identifica-

tion; and digital signatures. Special emphasis is given to public-key cryptosystems. The course includes implementation of various encryption algorithms in different programming systems.

CS 631 Data Warehousing **3 CH**

Prerequisite: CS 603 Database Design (Oracle). Provides a comprehensive review of data warehousing technology. Areas of study include the evolution of the modern-day data warehouse; analysis and collection of business data requirements; dimensional modeling; the loading of data using Extraction, Transformation, and Loading (ETL) processes; data quality issues; and reporting from the data warehouse using SQL and Online Analytical Processing (OLAP) techniques. Several Oracle lab experiments are conducted to provide hands-on experience in the areas of data warehouse design, construction, data loading, and essential reporting techniques.

CS 632 Advanced Database Topics **3 CH**

Prerequisite: CS 603 Database Design (Oracle). Provides students with an advanced understanding of database technology. In addition to the entity-relationship model, alternate database models (such as EAV and OOD) are investigated. Possible topics include indexing, optimization, XML, on-line analytic processing (OLAP), embedded SQL, locking techniques and parallel and distributed systems. Specific topics covered and focus of this course changes to reflect modern trends and the latest technology.

CS 633 Advanced Database Programming **3 CH**

Prerequisite: CS 603 Database Design (Oracle). Provides students with a thorough understanding of database programming. Students use the latest technology to create front-end applications to hit large-scale backend databases. SQL and stored procedures are used to retrieve data from various data stores. Emphasis is placed on a layered

approach to programming. User-friendly design principles and business logic are used to teach students how to implement large-scale windows and/or web applications. The specific technology used will vary to reflect current trends in database programming technology.

CS 640 Special Topics in Computer Science 3 CH

Prerequisite: Determined at the time of course offering. Presents one-time and first-time offerings of courses on current topics.

CS 642 Artificial Intelligence 3 CH

Prerequisite: CS 602 Advanced Data Structures and Algorithms. Examines the essentials of artificial intelligence (AI): definition of AI; heuristic, adversary and other search methods for problem solving and games; principles of knowledge representation; AI languages; and survey of applications.

CS 646 Computer Graphics 3 CH

Prerequisite: CS 602 Advanced Data Structures and Algorithms. Reviews the principles of design and use of computer graphics: matrix algebra overview, basic drawing techniques, line and polygon clipping, linear transformations, projections, graphics standards and hardware, raster scan, refresh, storage, hidden line and surface elimination and shading.

CS 648 Distributed Database Systems 3 CH

Prerequisites: CS 603 Advanced Database Systems and CS 611 Operating/Multiprogramming Systems. Explores the problems and opportunities inherent to distributed databases: file allocation, deadlock detection and prevention, synchronization, update consistency, query optimization, fault tolerance, etc.

CS 650 Principles of Natural Language Processing 3 CH

Prerequisite: CS 613 Structure of Programming

Languages or CS 642 Artificial Intelligence. Studies the issues arising in computer processing of languages like English and solution techniques: AI principles overview, significance of language structure in extracting meaning, ambiguities, parsing techniques, semantic issues, semantic models, pragmatics, text-based systems and case studies.

CS 652 Neural Networks 3 CH

Prerequisites: MA 151 Introductory Calculus and CS 642 Artificial Intelligence. Discusses neural networks as a computation model complementary to symbolic AI: basic principles, history of neuro-computing, various models and their common ideas, applications in machine learning and pattern recognition and hybrid systems.

CS 654 Object-Oriented Programming Using C++ 3 CH

Prerequisite: CS 502 C: Advanced Programming or equivalent. Reviews the principles of OOP: encapsulation, polymorphism and inheritance. C++ is used as the main vehicle for getting the ideas across. Issues of multiple inheritance, persistence, etc. are covered, and comparison with other OOP languages are made, as time permits.

CS 670 Research Project Seminar 3 CH

Prerequisite: Determined by the faculty advisor. Required for the non-thesis option, the student works with a faculty advisor in defining a short research or implementation project. For a research project, the student surveys relevant literature, critically analyzes the state of the art and possibly synthesizes improvements. For an implementation project, the student implements and tests a solution to the chosen problem; the project could involve a combination of research and implementation. At the end of the project, the student writes a report approved by the faculty member and makes a public presentation of the work.

CS 690 Thesis I 3 CH

Prerequisite: Determined by the faculty advisor.

Required for the thesis option, the student works with a faculty advisor in defining a substantial research or implementation project. For a research project, the student surveys relevant literature, critically analyzes the state of the art and synthesizes improvements. For an implementation project, the student implements and tests a solution to the chosen problem, comparing it with other work, if any; the project could involve a combination of research and implementation. At the end of this course, the student should have a well-defined problem, have surveyed relevant literature and have made partial progress toward the completion of the work. The student should be ready to make a brief presentation of the work in progress, as required by the advisor. Also, by the end of this course, a proposal describing the work should be written and approved by a thesis committee chosen by the student and the advisor, according to University policy.

CS 691 Thesis II

3 CH

Prerequisite: CS 690 Thesis I. A continuation of CS 690, this course is required for the thesis option. By the end of this course, the student completes the work remaining in the project started in CS 690, as defined by the written proposal. A thesis must be written and defended in front of the thesis committee. The presentation portion of the thesis defense is open to the public.

Criminal Justice

Pearl Jacobs, Ph.D., *Director*

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Goals and Objectives

The Master of Arts in Criminal Justice program provides students with a comprehensive knowledge of all components of the criminal justice system. This program is open to recipients of undergraduate degrees in Criminal Justice as well as individuals who have developed a career interest in criminal justice after completing an undergrad-

uate degree in another discipline. This Master of Arts in Criminal Justice provides individuals with bachelor's degrees in Criminal Justice or other disciplines with the knowledge needed to obtain advanced professional positions in the field. It also enables individuals already employed in the field of criminal justice to advance further in their careers.

Thirty credits are required to graduate from the program. Students must complete 18 required credits of the core curriculum plus an additional 12 credits of any elective courses. Students may also choose the 12 credits for a concentration in national security or criminal justice management. Upon completion of the required 30 credits, students desiring to pursue an advanced career in criminal justice must successfully complete a comprehensive examination. Students desiring to continue their education toward a Ph.D. should pursue the 3-credit thesis option rather than the comprehensive examination. The thesis course may be used to satisfy 3 of the 12 elective credits required.

Admission

Bachelor of Arts or Science degree with a 3.0 GPA from an accredited four-year college or university (official transcripts required)

Completed Graduate application

Application fee

Two letters of recommendation

Personal statement

Admission Deadline

Although applications are reviewed by the Admissions Committee on a rolling basis, the University has a priority deadline of March 1 for Fall admittance and November 1 for Spring admittance for financial aid considerations.

Required Courses (18 credits)

CJ 401 Theories and Analysis of Crime Causation and Deviance

- CJ 402 Critical Issues in the Administration and Management of the Criminal Justice System
- CJ 403 Law, Society and Ethics
- CJ 404 Issues in the Administration of the Adult and Juvenile Correctional Systems
- CJ 405 Criminal Law
- CJ 406 Methods of Research Design and Statistical Analysis

Elective Courses (12 credits)

The program offers a variety of courses covering all aspects of the criminal justice system including:

- CJ 506 Victimology
- CJ 507 Organizational Procedures
- CJ 508 Capital Punishment
- CJ 509 Criminal Behavior and the Family
- CJ 510 Criminal Profiling
- CJ 511 Emergency Management
- CJ 513 Issues in National Security
- CJ 514 Domestic and International Terrorism
- CJ 515 Budgetary Planning in Public Agencies
- CJ 601 Internship/Practicum Experience in Criminal Justice
- CJ 650 Criminal Justice Thesis

Concentration in National Security (12 credits)

- CJ 510 Criminal Profiling
- CJ 511 Emergency Management
- CJ 513 Issues in National Security
- CJ 514 Domestic and International Terrorism

Concentration in Criminal Justice Management (12 credits)

- CJ 507 Organizational Procedures
- CJ 511 Emergency Management
- CJ 515 Budgetary Planning in Public Agencies
- CJ 601 Internship/Practicum Experience in Criminal Justice

Course Descriptions

CJ 401 Theories and Analysis of Crime Causation and Deviance 3 CH

Prerequisites: CJ 101 Introduction to Criminal Justice, CJ 200 Constitutional Law. Examines the development and application of theories of crime causation and social deviance. The course includes an assessment of the issues and problems involved in controlling crime and deviance in society. Students learn about the nature of criminal behavior and the impact of this behavior on the victims, and study the development of programs and policies to control crime and assist the victims.

CJ 402 Critical Issues in the Administration and Management of the Criminal Justice System 3 CH

Prerequisite: CJ 401 or permission of Department Chair. Theories and Analysis of Crime Causation and Deviance. Examines the current problems and issues facing the American criminal justice system. The course explores controversial policies such as the use of force, discretion, access to the justice system, organizational and legal issues related to decision-making within the criminal justice system, the role of the courts and the correctional system.

CJ 403 Law, Society and Ethics 3 CH

Prerequisite: CJ 401 Theories and Analysis of Crime Causation and Deviance, CJ 402 Critical Issues in the Administration and Management of the Criminal Justice System or permission of the Department Chair. Focuses on constitutional and ethical issues as they affect the operation of the criminal justice system. Topics examined include legal issues related to punishment and the ethical responsibilities of criminal justice agents.

CJ 404 Issues in the Administration of the Adult and Juvenile Correctional Systems 3 CH

Prerequisites: CJ 401 Theories and Analysis of

Crime Causation and Deviance, CJ 402 Critical Issues in the Administration and Management of the Criminal Justice System or permission of Department Chair. Explores the operation and nature of the American correctional system. The course examines the Juvenile Justice System as well as the adult correctional system. Theories and philosophies of correctional administration and the conditions that generate delinquent behavior are examined as well as current critical issues such as overcrowding, alternatives to incarceration, efforts to maintain family cohesion.

CJ 405 Criminal Law 3 CH

Prerequisites: CJ 401 Theories and Analysis of Crime Causation and Deviance, CJ 402 Critical Issues in the Administration and Management of the Criminal Justice System or permission of Department Chair. Examines various topics in substantive criminal law as they affect the operation of the criminal justice system. Topics may include standards of evidence, defenses, and punishments.

CJ 406 Methods of Research Design and Statistical Analysis 3 CH

Prerequisites: CJ 401 Theories and Analysis of Crime Causation and Deviance, CJ 402 Critical Issues in the Administration and Management of the Criminal Justice System or permission of Department Chair. *This course must be taken at the graduate level. An undergraduate course in this subject cannot be substituted for the graduate course.* Examines the research process and is designed to provide students with an understanding of the principles and practices of criminal justice empirical research. More specifically, methods of research and data analysis, as applied to the field of criminal justice, are presented. The application of these methods to criminal justice practice is demonstrated through various exercises. To better prepare capable professionals, students are taught both the language of scientific discourse and the abil-

ity to appraise empirical studies critically. To better prepare practitioners who are fair and respectful toward individuals from diverse backgrounds, research ethics, and sensitivity to populations-at-risk are promoted.

CJ 506 Victimology 3 CH

Prerequisites: CJ 101 Introduction to Criminal Justice, CJ 200 Constitutional Law. Examines the victim through history. Course explores the victim movement, the nature and extent of criminal victimization and its affect on American society.

CJ 507 Organizational Procedures 3 CH

Prerequisites: CJ 101 Introduction to Criminal Justice, CJ 200 Constitutional Law. Examines the criminal justice system from an organizational perspective. Course explores fraud control, risk analysis, and corporate crime control through case studies.

CJ 508 Capital Punishment 3 CH

Prerequisites: CJ 101 Introduction to Criminal Justice, CJ 200 Constitutional Law. Examines the theoretical, legal and ethical issues involved in this form of punishment.

CJ 509 Criminal Behavior and the Family 3 CH

Prerequisites: CJ 101 Introduction to Criminal Justice, CJ 200 Constitutional Law. This course studies theories and research concerning the socialization experience and their impact on behavior. Topics examined include child abuse and neglect, parental substance abuse, disciplinary techniques, single parent families, etc.

CJ 510 Criminal Profiling 3 CH

Prerequisites: CJ 401 Theories and Analysis of Crime Causation and Deviance, CJ 402 Critical Issues in the Administration and Management of the Criminal Justice System or permission of Department Chair. Studies the process of identifying characteristics associated with individuals who

become criminal sociopaths. Sociological theories of crime causation are used in the examination of criminal typology.

CJ 511 Emergency Management **3 CH**

Prerequisites: CJ 401 Theories and Analysis of Crime Causation and Deviance, CJ 402 Critical Issues in the Administration and Management of the Criminal Justice System or permission of Department Chair. Examines the policies and systems necessary to govern in situations of conflict and uncertainty. Explores appropriate responses to serious incidents and disasters. Evaluates early warning systems and prevention strategies. Students learn the techniques involved in planning and preparing for crises, and forecasting potential crisis situations.

CJ 513 Issues in National Security **3 CH**

Prerequisites: CJ 401 Theories and Analysis of Crime Causation and Deviance, CJ 402 Critical Issues in the Administration and Management of the Criminal Justice System or permission of Department Chair. Examines the changes in American policy fostered by the terrorist attacks of 9/11/01. Students study the organizations and resources developed since 9/11/01 to defend national security. The course explores the role played by all the components of the criminal justice system in providing for the security of the nation. Also studied are the policies and practices that have been developed for this purpose by the various agencies that represent the criminal justice system. Specifically, students study the adjudication process as it relates to issues of national security and the correctional practices employed to maintain national security.

CJ 514 Domestic and International Terrorism **3 CH**

Prerequisites: CJ 401 Theories and Analysis of Crime Causation and Deviance, CJ 402 Critical

Issues in the Administration and Management of the Criminal Justice System or permission of Department Chair. Examines the history, current developments, and responses to both international and domestic terrorism. Emphasis is on the examination of the law enforcement response to terrorism, and the sociological models of consensus and conflict in an effort to better understand the nature of terrorism. Assesses the strategies of terrorists, their funding and their use of the media, and examines the efforts of terrorist victimization.

CJ 515 Budgetary Planning in Public Agencies **3 CH**

Prerequisites: CJ 401 Theories and Analysis of Crime Causation and Deviance, CJ 402 Critical Issues in the Administration and Management of the Criminal Justice System or permission of the Department Chair. Examines the nature of public budgeting and financial management from the perspective of a public manager. Explores public budgeting from an analytical perspective.

CJ 601 Internship/Practicum Experience in Criminal Justice **3 CH**

Prerequisite: CJ 406 Methods of Research Design and Statistical Analysis. Students use their theoretical knowledge in a practical environment. Students are required to spend 150 hours interning in a criminal justice agency or use their current criminal justice work experience to apply theory. Students must observe and assist in the everyday operations of the agency. They are required to maintain a log of their activities and confer weekly with the faculty supervisor to discuss their individual progress. The class meets regularly with the professor so that students may share their internship/practicum experiences.

Upon completion of the 150 hours, the student will prepare a two-part paper. Those fulfilling the requirements through their current work experience will also prepare a paper. The first part of the

paper will consist of a literature review on a topic related to the internship. The second part of the paper will consist of a description of the work experience including the topics provided by the instructor/advisor.

CJ 650 Criminal Justice Thesis 3 CH

Prerequisite: Completion of 27 seven credits required by the program. This course may be taken in place of the Comprehensive Examination. It is appropriate for students wanting to continue their education toward a Ph.D. in Criminal Justice. The student works with a mentor to develop a research project. The research project culminates in a thesis and an oral presentation of the thesis to faculty and students in the program.

Religious Studies

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Throughout human history, religion has played an enormous role in the shaping of human actions and perceptions, as well as social institutions and values. The academic study of religion involves a sympathetic yet critical examination of the human attempt to answer the questions, “Who are we and why are we here?” It also allows us to understand better the complex world in which we live. The study of religion uses the methods of several disciplines, including theology, philosophy, history, psychology, sociology, anthropology, and literary criticism. Methodologically and topically diverse, the Master of Arts in Religious Studies (MARS) program is unified by its commitment to the task of exploring the basic religious beliefs and insights that render human life and experience meaningful. Specific courses in the program examine the various symbols and myths, rituals and creeds, and events and institutions that illuminate the religious imagination and understanding. The student who completes the MARS pro-

gram will be able to engage in critical dialogue with his/her own religious tradition and other traditions; understand these traditions in their complexity; and articulate coherent, religiously informed answers to basic questions of human meaning.

Goals and Objectives

The Graduate Program in Religious Studies is designed to suit the needs and interests of a wide variety of students. Whether one wishes to prepare for doctoral work in religion, pursue a career in religious education, or learn more about the world’s religious traditions in order to enrich one’s personal and/or professional life and activities, the program supplies a broad range of valuable resources. Each graduate student, in consultation with a faculty advisor, is encouraged to plan an appropriate course of study.

In addition to the goal of intellectual enrichment, this program has proven particularly beneficial in the professional advancement of educators, writers, spiritual directors, and directors of religious education. It also offers a strong foundation for students contemplating further study toward a doctoral degree or the ministry.

Admission Requirements

Applicants must have a strong undergraduate record from an accredited college or university. Official transcripts from all undergraduate and graduate institutions attended must be sent by those institutions to the Office of Graduate Admissions. Two letters of recommendation must accompany the application. A personal interview is required as part of the admission process.

The Graduate Record Examination (GRE) is recommended for all applicants, and in some circumstances it may be required.

MA Thesis

Upon completing coursework, each MA student must write a master’s thesis. The thesis is a formal

document that shows the student has made an original contribution to knowledge. Writing the thesis is a learning experience in which the student draws upon integrated knowledge of religious studies and research skills to present a distinctive interpretation of a problem in the field. The thesis is at least 60 pages in length. The process typically requires a semester's worth of planning and a semester's worth of writing, under the direction of an advisor. See the program director to receive a full set of guidelines and to be matched with an advisor.

MA Teaching Curriculum

For students interested in pursuing a career in teaching Religious Studies, six graduate credits may be earned in the University's Master of Arts in Teaching program and transferred to the MARS degree.

Degree Requirements

All MA candidates must complete a total of 36 credit hours of graduate coursework, with a minimum GPA of 3.0. Student performance is reviewed by the graduate faculty at the end of each semester. If a student completes all coursework for the degree with a GPA below 3.0, then the student will be allowed to take a maximum of six additional credit hours of study to raise the average to 3.0. If this 3.0 average is not achieved, the student will not be allowed to continue in the program and no degree will be awarded. If a grade below C is earned in a required course, that course must be repeated. If a grade below C is earned in an elective course, the student must repeat that course or take another elective. In any case, the original grade is calculated into the GPA.

Required Courses

RS 500	Research in the Study of Religion	3 credits
RS 501	Phenomenology of Religion	3 credits

RS 510	Modern Biblical Criticism and the Gospels	3 credits
	Elective in non-Christian religion	3 credits
	Any course that is primarily focused on a religious tradition other than Christianity. The department will provide a list of which courses meet the requirement in each year's schedule.	
	Free electives	21 credits
	MA Thesis	3 credits

Course Descriptions

RS 500 Research in the Study of Religion 3 CH

Prepares the student for graduate-level work in religion. Provides opportunities to apply various research methods used in the field, including history, surveys, ethnographies, literary criticism, and philosophical/theological analysis. Develops customs of writing and citation for publications in religious studies and theology.

RS 501 Phenomenology of Religion 3 CH

Focuses on contemporary methods for the investigation of religion and prepares the student for graduate-level work.

RS 505 Ancient Religions and Cults 3 CH

Explores the beliefs, practices, and teachings of ancient world religions including those of ancient Egypt and Mesopotamia, the mystery cults of the ancient Greco-Roman civilizations, and the religious traditions of pre-Christian northern Europe (Scandinavia) and ancient Iran. The focus of study is on the sacred writings of the religions, with emphasis on such major topics as deities and divine powers, rituals of birth and death, gender studies, and the relationships between ancient faith traditions and the emergence of monotheism.

RS 510 Modern Biblical Criticism and the Gospels 3 CH

Provides a brief history of biblical criticism lead-

ing up to an in-depth analysis of the achievements of recent biblical research in the area of New Testament studies.

RS 511 Introduction to the Hebrew Bible 3 CH

Examines the development of Hebrew Bible traditions, as well as the historical rise of the people of Israel; the distinctive religious awareness that accompanied it; and Israel's understanding of God, humanity and history.

RS 514 Introduction to Eastern Religions 3 CH

Explores the religious traditions of Asia, including Hinduism, Buddhism, Taoism, Confucianism and Shinto. Students are introduced to the beliefs and practices of these traditions in their historical context and to manifestations of Eastern religions in the contemporary United States.

RS 515 Introduction to Islam 3 CH

A theological and phenomenological exploration of beliefs, practices, and symbology of Islam, incorporating extensive readings from the *Qur'an*, the hadith and *shari'a*, and Sufism. This course analyzes contemporary topics such as religion and gender, and religion and politics.

RS 517 Introduction to Western Religions 3 CH

A theological and phenomenological exploration of the beliefs, history and practices of Judaism, Christianity, and Islam with particular emphasis on the sacred scriptures and spiritual traditions of each religion.

RS 518 Cults, Sects and New Religious Movements 3 CH

Explores beliefs and practices of new religions in America, including Mormonism, Unification Church, Christian Science, Scientology, Theosophy, New Age, Neopaganism, and UFO cults. Presents both sociological and theological approaches to understanding new religions.

RS 519 Women in World Religions 3 CH

An analysis of women's role in Christianity, Judaism, Hinduism, and Islam—both historical and contemporary—using theories and methods of gender study.

RS 520 Women in Christianity 3 CH

A theological, textual and gender-based examination of women in the history of Christianity, incorporating critical analysis of texts written about and by Christian women. Topics include the image of women and woman's spirituality in the Bible, writings of the Church Fathers, mystics, sectarian movements, and the feminist reconstruction of tradition.

RS 522 Women in American Religion 3 CH

A critical analysis of women and religion within the context of American history and culture. This course examines religious writings/narratives by Native American women, and American women in Christianity, Judaism, and Islam. The impact of race, class, history, and/or ethnicity upon religious experience is also explored in the writings of feminist, Womanist (African-American) and Mujerista (Latina) theologians.

RS 524 The Gospel of John 3 CH

Provides a critical interpretation of the Gospel of John.

RS 526 The Letters of Paul 3 CH

Examines the social and religious world of St. Paul, his biography, his writings in the New Testament, and how these influenced the developing Christian church.

RS 529 The Historical Jesus 3 CH

Attempts to recover the words and actions of the historical Jesus through a proper methodological examination of the sources. Special emphasis is given to the parables of Jesus.

RS 530 The Death of Jesus 3 CH

Traces the development of the traditions of

the passion and death of Jesus as they are found in the gospels of Matthew, Mark, Luke, and John.

RS 532 Contemporary Religious Thinkers 3 CH

Examines the selected, representative writings of specific religious thinkers. In any given semester, the course focuses on the work of either an important theologian or a contemporary scholar of religion. (Students should consult the instructor to obtain information concerning the topic for that semester.)

RS 533 Religion and Ecology 3 CH

Examines how religion has shaped humanity's relationship with nature, and explores various religious and philosophical responses to contemporary ecological problems.

RS 535 Religion and Sexuality 3 CH

Introduction to the Study of Religion. Examines the relationship between religion and sexuality in various world religions. Topics include asceticism vs. eroticism, defining normality and deviance, sex as a means to challenge or maintain the social order, religious responses to the changing sexual morality in contemporary Western society.

RS 537 Three Teresas 3 CH

Studies the life and writings of three spiritual masters in the Carmelite tradition: St. Teresa of Avila, St. Therese of Lisieux, and Edith Stein, who was canonized as St. Teresa Benedicta of the Cross.

RS 538 Spiritual Teachers and Thinkers 3 CH

Explores the representative spiritual writings of a specific religious teacher from the history of the world's religions. Examples of such spiritual teachers include Hildegard of Bingen, Meister Eckhart, George Fox, Teresa of Avila, Ibn al'Arabi, and Martin Buber. Consult instructor for relevant topic.

RS 540 Understanding Theology 3 CH

Provides an introduction to the nature and role of theology. This course investigates both academic or "public" theology and confessional or Church-centered theology.

RS 542 Medieval Theology 3 CH

A critical examination of central doctrines of Christianity, Judaism, and Islam as they developed during the Middle Ages. This course analyzes particular modalities of theological expression such as mysticism, sacred art/architecture, and women's visionary writings.

RS 543 Early Christian Thought 3 CH

Traces the course of the Church's historical and dogmatic traditions from the New Testament period to the Middle Ages.

RS 544 Christian-Jewish Understanding 3 CH

Examines the historical and theological relationship between Judaism and Christianity beginning at the time of Jesus, which resulted in the separation of and misunderstanding between Christians and Jews through the Patristic period, Renaissance, Middle Ages, until the present time. Particular attention is paid to the recent positive studies in interreligious understanding advanced by the Second Vatican Council.

RS 555 History of Christian Ethics 3 CH

The ethical reflections of some of the most influential Christian thinkers from the Church fathers to the present (e.g., Augustine, Thomas Aquinas, and Martin Luther) applied to various important topics of ethical debate in Christian history (e.g., the notion of just war). A survey of the most important thinkers and documents in the history of Christian ethical reflection.

RS 559 Faith and Justice 3 CH

Explores the content, sources, and methods of

Catholic social ethics and investigates its relevance to social-ethical problems in both the United States and the global community. Service learning may be required.

RS 560 Bioethics: Religious Approaches 3 CH

Introduces students to the methods and principles of biomedical ethics, and explores several ethical issues in medical practice and health care policy. The theoretical frameworks employed include religion-ethical perspectives in Christianity and some other religious traditions, as well as philosophical and social critiques and proposals. Major topics covered include euthanasia, reproductive technologies, human cloning, consent for experimentation, and allocation of health care resources.

RS 561 Symbol, Myth and Ritual 3 CH

Defines the basic categories of symbol, myth and ritual and explores their religious significance. Theoretical analyses of the symbolic imagination are also examined.

RS 567 Mysticism 3 CH

This course introduces the student to the dimension of spirituality known as mysticism, through readings in and critical analysis of mystical texts of the world's religions, including *Tao te Ching*, the Hindu *Upanishads*, *Zohar* and other Kabbalistic texts, the poets of Sufism, and Christian mystics from the history of Christianity.

RS 568 Classics of Western Spirituality 3 CH

Provides a close examination of the writings of one or more of the great spiritual masters of the Western religious traditions (e.g., John of the Cross, Theresa of Avila, Ignatius Loyola, Teilhard de Chardin, Martin Buber and Thomas Merton).

RS 575 Death 3 CH

Examines the concept of “death”—the central reality in human life and that which makes

authentic, full, human and humane life possible.

RS 577 Pilgrimage and Spiritual Journeys 3 CH

Introduces the religious ritual activity of pilgrimage, a spiritually inspired journey in time and over space. The concept is studied in several religions and from several methodological angles that occurs in many religious traditions.

RS 581 Religion, Health and Healing 3 CH

Explores theories and practices of healing in Eastern, Western and Primal religions. Examines research on connections between religion and health and efficacy of alternative and spiritual therapies.

RS 589 Religion, War and Peace 3 CH

Examines various religious perspectives on violence, war and the quest for peace.

RS 591 Religious Themes in Contemporary Fiction 3 CH

Explores the religious dimensions in the fiction of writers such as Cynthia Ozick, John Cheever, Toni Morrison and Italo Calvino.

RS 594 Elementary New Testament Greek 3 CH

An introduction to the nominal and verbal systems of Hellenistic Greek, this course provides a basis for reading the Greek New Testament.

RS 595 Intermediate New Testament Greek 3 CH

A study of the syntax of Hellenistic Greek in union with selected readings from the Greek New Testament. The aim of the course is to achieve a moderate reading proficiency.

†**RS 599 Special Topics in Religion** 3 CH

Designates new or occasional courses that may or may not become part of the department's perma-

ment offerings. Courses capitalize on a timely topic, a faculty member's particular interest, an experimental alternative to existing courses, etc. Course title is shown on the student's transcript. Consult the current course schedule for available topics.

**RS 601 The Church:
Roman Catholic Perspectives 3 CH**

Investigates Catholic thinking and teaching about the nature of the Church.

**RS 602 The Roman Catholic
Sacraments 3 CH**

Explores the history of the sacraments, the theology behind them and their role in contemporary Catholic life.

RS 699 Independent Study 1–3 CH

An area of study for which no course is presently provided. The student must find an instructor competent in his or her proposed topic and secure the permission of the program director, chairperson, and the dean.