

DEPAUL
UNIVERSITY



Course Catalog

College of Science and Health Undergraduate Studies

Summer/Autumn 2011-2012

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General Information

Introduction

[College of Science and Health - Undergraduate Studies](#) ▢ [General Information](#) ▢ [Introduction](#)

Purpose

The College of Science and Health provides students with innovative, science-based curricula with a strong liberal arts foundation. Our departments represent the natural sciences, mathematics, psychology, nursing, and health science, each of which is committed to providing the highest quality education. The College of Science and Health educates students with a strong Vincentian commitment to social justice and civic engagement. The college provides mathematical and scientific education/literacy for all undergraduate students within the University and participates in all aspects of DePaul's distinctive Liberal Studies Program.

The College of Science and Health is dedicated to helping members of DePaul's diverse student body reach their full academic and professional potential. The innovative curricula supported by the college encourages active participation in research, internships and other opportunities that further prepare students for successful careers and as life long learners. Faculty in the college embody the commitment to student academic and professional development through their quality instruction and by conducting meaningful, student accessible research.

[College of Science and Health - Undergraduate Studies](#) ▢ [General Information](#) ▢ [Introduction](#) ▢ [College Requirements](#)

College Requirements

MODERN LANGUAGE REQUIREMENTS

Students who intend to graduate with the Bachelor of Arts Degree will be required to demonstrate competence in a modern language equivalent to the proficiency attained from one year of college-level language study. Such competence may be demonstrated in one of several ways:

- completing the last course in the fourth-year high school sequence of any language
- completing the last course in the first-year college sequence of any language
- completing a college course beyond the first-year level in any language
- achieving a satisfactory score on any of the Modern Language placement examinations administered at DePaul
- achieving a satisfactory rating in a proficiency examination accepted by DePaul
- achieving a score of 3 or higher on the Advance Placement (AP) test for any language
- achieving a score of 5 or higher in the Language B assessment from a Standard or Higher Level International Baccalaureate (IB) program
- achieving a satisfactory score on the CLEP examination

For further information regarding satisfactory scores and possible credit from the DePaul placement, AP, CLEP, or IB examinations, please contact Student Records.

Students who complete an Inter-College Transfer (ICT) to the College of Science and Health will abide by the College of Science and Health Modern Language Requirement in place on the effective date of the ICT.

B.A. students who meet College requirements and wish to pursue further work in the language may elect the Modern Language Option of the Liberal Studies Program. While B.S. students are not required to demonstrate competency in a modern language, the Modern Language Option is available to them for language study at any level.

MAJOR DECLARATION REQUIREMENTS

All students in the College are required to declare a major field prior to beginning their junior year. To declare a major field, the student should fill out the online Declaration of Program Plan form.

The student will then be assigned a faculty advisor in the department or program and should make an appointment to see that advisor at his or her earliest convenience.

To change major fields, or to declare a minor or concentration, the student must repeat the procedure described above. However, for the purpose of exploring the possibility of changing a major field, the student should consult an academic advisor in the College.

College of Science and Health - Undergraduate Studies [□](#) General Information [□](#) Introduction [□](#) Location

Location

The College of Science and Health is located on the Lincoln Park Campus. The College of Science and Health is temporarily housed in the Department of Psychology, Byrne Hall Suite 420. The new office is scheduled to open August 15, 2011 in McGowan South 4th floor.

Administration

College of Science and Health - Undergraduate Studies [□](#) General Information [□](#) Administration

JERRY W. CLELAND, Ph.D.,
Interim Dean

Admission

College of Science and Health - Undergraduate Studies [□](#) General Information [□](#) Admission

Candidates interested in admission to the College of Science and Health should direct all inquiries to the Office of Admission, DePaul University, 1 E. Jackson Boulevard, Chicago, Illinois, 60604, admission@depaul.edu, or (312) 362-8300.

For general information on the types of admission, see [University Information, Admission](#).

Majors

College of Science and Health - Undergraduate Studies [□](#) General Information [□](#) Majors

Allied Health Technologies
Biological Sciences
Chemistry
Environmental Science and Studies
Health Sciences
Mathematical Sciences
Physics
Psychology

Minors

College of Science and Health - Undergraduate Studies [General Information](#) [Minors](#)

Biological Sciences
Chemistry
Environmental Science and Studies
Mathematical Sciences
Physics
Psychology

Academic Advising

College of Science and Health - Undergraduate Studies [General Information](#) [Academic Advising](#)

Academic advising is a valued component of the student experience within the College of Science and Health. It provides students with the opportunity to develop an academic plan that best fits their interests, strengths, and academic and career goals under the guidance of a knowledgeable and supportive advisor.

Upon declaring a major field of study in the college, students are promptly assigned to a faculty academic advisor in the corresponding department or program. Students who have declared a major should meet regularly with their assigned faculty advisor within their program in order to complete their courses in a timely and efficient manner. Taking courses without consulting an advisor may lead to credits that will not satisfy college requirements for graduation. Those students who have not declared a major are highly encouraged to meet with a college staff advisor prior to registering for classes each quarter.

Catalog Version

College of Science and Health - Undergraduate Studies [General Information](#) [Catalog Version](#)

UNDERGRADUATE UPDATE: MAY 15, 2011

Please use the menu items to the left for current catalog navigation. Access archived catalogs by choosing the link to the right. Prior to Summer 2011, information can be found within the College of Liberal Arts and Sciences.

Programs of Study

College of Science and Health - Undergraduate Studies ▫ Programs of Study

Allied Health Technologies
Biological Sciences
Chemistry
Environmental Science and Studies
Health Sciences
Mathematical Sciences
Physics
Psychology

Allied Health Technologies

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Allied Health Technologies

Introduction

Administered through the Department of Biological Sciences, the Allied Health Technologies program offers three concentrations. The Clinical Laboratory Science (CLS) concentration is nearly identical to the standard Biological Sciences concentration, except that Biology 210, 310 and 370 are also required. The student takes 12 courses in the Biological Sciences, two years of Chemistry, a year of Physics, a year of Calculus, and a course in Statistics. Upon completing the requirements for the baccalaureate, the student spends one year in an internship at a hospital associated with DePaul University (currently Evanston Hospital). Upon completion of a clinical laboratory science program, graduates are eligible for national certification as a clinical laboratory scientist, CLS, by exams offered by the National Credentialing Agency for Laboratory Personnel (NCA).

The two other concentrations offered through the program are Nuclear Medicine Technology, and Radiation Therapy. These two concentrations are offered as 3+1 programs in which the student spends three years at DePaul and one year at an internship at Northwestern Memorial Hospital. Students interested in the technological aspects of biosciences may also consider the Biotechnology concentration in the Department of Biological Sciences program.

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Allied Health Technologies ▫ Faculty

Faculty

JOANNA S. BROOKE, Ph.D.,
Associate Professor
Pre-medical Advisor
University of Western Ontario

STANLEY COHN, Ph.D.,
Professor
Allied Health Advisor
University Of Colorado (Boulder)

TALITHA RAJAH , Ph.D.,
Assistant Professor

Major Requirements

Liberal Studies Requirements

- I. Concentration in Clinical Laboratory Sciences
- II. Concentration in Nuclear Medicine Technology or Radiation Therapy

SEQUENCING

Since programs in the Biological Sciences tend to be structured, it is useful for students to take courses in sequence. Students should begin with the General Biology and Chemistry sequences. These are prerequisite to Cell Biology, Genetics, and Organic Chemistry, which should preferably be taken in the sophomore year. Since calculus is required, students should also begin their study of mathematics as soon as possible, preferably prior to their junior year, so that they can be adequately prepared for the General Physics sequence, best taken in the junior year. Because of this highly structured sequence, students are strongly encouraged to work with their Departmental advisor in order to plan their course schedules and plan alternatives if necessary. Such planning is particularly important for transfer students, as the sequence presented above is highly recommended and most likely to be completed in a timely fashion.

The predominance of chemistry and biology sequences in the freshman and sophomore years generally dictates that, with the exception of the Liberal Studies Core courses, the majority of the Liberal Studies courses may be postponed until the junior and senior years. Students therefore tend to take fewer Liberal Studies courses in the first two years, concentrating instead on major field requirements, which are prerequisites to upper division courses. For the Clinical Lab Sciences concentration, students will complete their post-graduate (fifth year) internship at an associated hospital. For the Nuclear Medicine Technology and Radiation Therapy concentrations, students apply to take the internship during their fourth year.

Liberal Studies Requirements

First Year Program	
Chicago Quarter	LSP 110 or LSP 111
Focal Point	LSP 112
Writing	WRD 103* and WRD 104*
Quantitative Reasoning & Technological Literacy	Not Required
Sophomore Year	
Multiculturalism in the US	LSP 200
Junior Year	
Experiential Learning	Required
Senior Year	
Capstone	Required*
Learning Domains	
Arts and Literature (AL)	3 Courses Required
Philosophical Inquiry (PI)	2 Courses Required
Scientific Inquiry (SI)	Not Required

Self, Society and the Modern World (SSMW)	3 Courses Required
Religious Dimensions (RD)	2 Courses Required
Understanding the Past (UP)	2 Courses Required
Note:	* Students must earn a C- or better in this course.

Note: Courses offered in the student's primary major cannot be taken to fulfill LSP Domain requirements. If students double major, LSP Domain courses may double count for both LSP credit and the second major. Students who choose to take an experiential learning course offered by the major may count it either as a general elective or the JYEL requirement.

In meeting learning domain requirements, no more than one course that is outside the students major and is cross-listed with a course within the students major, can be applied to count for LSP domain credit. This policy would apply only to those students in pursuit of a BA or BS degree, and not to those who are double majors or earning BFA or BM degrees.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Allied Health Technologies □ I. Concentration in Clinical Laboratory Sciences

I. Concentration in Clinical Laboratory Sciences

Biological Sciences: 191 General Biology I for Science Majors; 192 General Biology II for Science Majors; 193 General Biology III for Science Majors; 210 Microbiology; 215 Ecology or 235 Evolution; 250 Cell Biology; 260 Genetics; 310 Vertebrate Physiology; 370 Immunobiology; and *three* additional Biology courses, *one* of which must include a laboratory. Biology courses that fulfill the Scientific Inquiry Domain requirements, other than the General Biology sequence, do not generate credit toward the major.

Chemistry: 130/131 General Chemistry I Lecture/Lab; 132/133 General Chemistry II Lecture/Lab; 134/135 General Chemistry III Lecture/Lab; 230/231 Organic Chemistry I Lecture/Lab; 232/233 Organic Chemistry II Lecture/Lab; 234/235 Organic Chemistry III Lecture/Lab. (First-year chemistry courses should be taken simultaneously with Biology 191, 192, and 193.)

Physics: 150 General Physics I; 151 General Physics II; and 152 General Physics III. (Students may take any comparable sequences of Physics courses designed for science majors).

Mathematics/Statistics: Mathematics: 150 Calculus I; 151 Calculus II; 152 Calculus III (or Mathematics 147/148/149; or Mathematics 160/161/162; or Mathematics 170/171/172.); and *one* statistics course: Biology: 305 Biometry, or Environmental Science: 260 Environmental Data Analysis.

Students may be advised on the basis of their performance on the Mathematics Diagnostic test to take one or more pre-calculus courses.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Allied Health Technologies □ II. Concentration in Nuclear Medicine Technology or Radiation Therapy

II. Concentration in Nuclear Medicine Technology or Radiation Therapy

In addition to the Clinical Laboratory Sciences (CLS) concentration, the Allied Health Technologies program has two concentrations that are offered in conjunction with Northwestern Memorial Hospital: Nuclear Medicine Technology and Radiation Therapy. These programs require three years of study at DePaul University and one year of internship study and courses at Northwestern Memorial Hospital. The three years of study at DePaul include 12 credits each of General Biology and General Chemistry, 8 credits each of Organic Chemistry, Physics and Calculus, and 6 credits of Biochemistry. These concentrations will also include 72 credits of the required Liberal Studies Courses (The Experiential Learning course is taken at Northwestern Memorial Hospital as part of a clinical practicum). One of the Liberal Studies Domain courses should be in speech or communications, and one should be in some field of ethics, preferably bioethics. Students interested in either

of these concentrations should contact a biology allied health advisor for additional information guidelines.

Biological Sciences: 191 General Biology I for Science Majors; 192 General Biology II for Science Majors; 193 General Biology III for Science Majors; 201 Mammalian Anatomy; 215 Ecology; 250 Cell Biology; 260 Genetics; and 310 Vertebrate Physiology.

Chemistry: 130/131 General Chemistry I Lecture/Lab; 132/133 General Chemistry II Lecture/Lab; 134/135 General Chemistry III Lecture/Lab; 230/231 Organic Chemistry I; 232/233 Organic Chemistry II; 340 Biochemistry I; 341 Experimental Biochemistry I. (First-year chemistry courses should be taken simultaneously with Biology 191, 192, and 193).

Physics: 150 General Physics I; 151 General Physics II.

Mathematics/Statistics : Mathematics 150 Calculus I; Mathematics 151 Calculus II; (or Math 147/148, or Math 160/161, or Math 170/171); and *one* statistics course: Biology: 305 Biometry, or Environmental Science: 260 Environmental Data Analysis.

Students may be advised on the basis of their performance on the Mathematics Diagnostic test to take one or more pre-calculus courses.

After the three year program of study at DePaul the student will apply to Northwestern Hospital to take approximately 42 quarter hours of core study and practicum at the Hospital (4 credits count towards the Experiential Learning requirement), along with taking a 4 quarter Capstone course at DePaul.

College of Science and Health - Undergraduate Studies ▢ Programs of Study ▢ Allied Health Technologies ▢ Courses

Courses

Please visit Campus Connection at <https://campusconnect.depaul.edu> for current course information. If you do not have a password for Campus Connection you may log on as a guest. Once you are on Campus Connection please select Course Descriptions followed by the department.

For information on the courses and program requirements for the Nuclear Medicine Technology and Radiation Therapy programs at Northwestern Memorial Hospital please see:

Nuclear Medicine

Radiation Therapy

Biological Sciences

College of Science and Health - Undergraduate Studies ▢ Programs of Study ▢ Biological Sciences

Introduction

The Department of Biological Sciences provides programs for both biology majors and non-majors. For its majors, the department offers six different concentrations, briefly described below. These concentrations provide a core program consisting of six to seven lecture/laboratory courses. Beyond the core program, the concentrations allow the students to have a moderate degree of specialization in any one of several areas. It also provides a number of opportunities for learning outside the classroom, including a program of seminars, internships and opportunities for research with, or under the direction of, a member of the faculty.

Typically students enter the program under the General Concentration, and choose their concentration of interest after they have completed the first year of General Biology. The General concentration is also

available to all Biology majors who want an overall degree in Biology without a specific concentration, or students who started off in a different concentration and changed their mind about whether they want to continue in it. The General Concentration can also provide a means by which students can select electives in their own area of interest.

Students who intend to enter medicine or a wide range of other health-related professions such as dentistry, veterinary medicine, physical therapy, pharmacy, or optometry may find it most appropriate to select the Pre-Health Concentration. The Pre-health science curriculum includes core classes that will prepare students for application to health profession training after graduation from DePaul. It will also expose students to the breadth of fields within biology while allowing them to select from courses with a human biology focus. In addition, the department is working with other science departments at DePaul to provide health advising, and has a specialized pre-medical advisor.

The Neuroscience concentration at DePaul will provide students majoring in either Biology or Psychology the opportunity to design a curriculum that will prepare them for a career or future study in Neuroscience. In addition to a core curriculum with the major the concentration will also provide recommendations for courses within the LA&S learning domains that relate to Neuroscience.

For students more interested in the fields of ecology or evolution, the department has a designated Ecology-Evolution concentration, allowing a degree of specialization in these disciplines building on the first year sequence. Courses focus on understanding the relationships between organisms and the natural environment as well as how those relationships change or have changed over time. This concentration is appropriate for students with an interest in ecology, evolution, animal behavior, developmental biology, paleontology or organismal biology.

The Cell and Molecular Biology concentration curriculum is designed for those students who wish to focus on the structure and function of living organisms at the cellular and molecular level. It is designed to expose biology students to recent advances in the field of Cell and Molecular Biology and acquire relevant technical skills in the field.

Students interested in the more technological side of modern biosciences can follow the Biotechnology concentration. This concentration allows students to pursue a more focused course of study in those areas most relevant to Biotechnology. Students in the Biotechnology option take a core course in Principles of Biotechnology, as well as courses in Biochemistry, Molecular Biology, Microbiology, and Immunobiology. This concentration may be particularly suited for students whose interests include areas such as microbiology, bioethics, agriculture, environmental biology, forensic sciences, health, and medicine.

In addition, the College of Education and the Department of Biological Sciences offer a program that prepares students for a career in teaching biology at the secondary school level. The Biology/Education concentration culminates in certification by the State of Illinois. The departmental course requirements in the Standard Biological Sciences concentration and in the Biology/Education concentration are listed below.

The Department of Biological Sciences also administers a Clinical Laboratory Sciences (Medical Technology) concentration within the Allied Health Technology program similar to the Standard Biological Sciences concentration. The department provides specialized academic advising for students in this program. Upon completing the requirements for the baccalaureate, the student enrolls in a hospital associated with DePaul for a year of specialized study. This program is available as a concentration through the Allied Health Technologies program. The department also administers concentrations in Nuclear Medicine Technology and Radiation Therapy through the Allied Health Technologies program. These two concentrations are offered as 3+1 programs in which the student spends three years at DePaul and one year at an internship at Northwestern Memorial Hospital.

Additionally, the department provides courses for the life science components of non-biology majors (e.g. nursing, physical education, chemistry, environmental science, psychology) as well as prerequisite courses for those who intend to later apply for entrance elsewhere into specialized programs such as Physical Therapy, Occupational Therapy, Pharmacy, and Dentistry. The Department of Biological Sciences provides those students with both academic and career counseling during their years at DePaul University.

Faculty

WINDSOR E. AGUIRRE, Ph.D.,
Assistant Professor
Stony Brook University
RIMA BARKAUSKAS, M.S.,
Asst. Laboratorian
DePaul University

JOANNA S. BROOKE, Ph.D.,
Associate Professor
University of Western Ontario

JASON BYSTRIANSKY, Ph.D.,
Assistant Professor
University of Guelph

STANLEY A. COHN, Ph.D.,
Professor
University of Colorado

JOHN V. DEAN, Ph.D.,
Professor and Departmental Chair
University of Illinois

PHILLIP E. FUNK, Ph.D.,
Associate Professor
Loyola University Chicago

WILLIAM D. GILLILAND, Ph.D.,
Assistant Professor
University of California, Davis

JINGJING L. KIPP, Ph.D.,
Assistant Professor
University of Illinois

DOROTHY A. KOZLOWSKI, Ph.D.,
Associate Professor
University of Texas at Austin

ELIZABETH LECLAIR, Ph.D.,
Associate Professor
University of Chicago

JAMES F. MASKEN, Ph.D.,
Adjunct Professor
Colorado State University

DENNIS A. MERITT, JR., Ph.D.,
Adjunct Professor
University of Illinois

TALITHA RAJAH, Ph.D.,
Assistant Professor
Osmania University

KENSHU SHIMADA, Ph.D.,
Associate Professor
University of Illinois , Chicago

MARGARET E. SILLIKER, Ph.D.,
Associate Professor
University of California , Berkeley

TIMOTHY C. SPARKES, Ph.D.,
Associate Professor
University of Kentucky

CAROLYN WROBEL, Ph.D.,
Laboratorian
Harvard Medical School

Liberal Studies Requirements

- I. General Concentration
- II. Biotechnology Concentration
- III. Pre-Health Concentration
- IV. Neuroscience Concentration
- V. Ecology-Evolution Concentration
- VI. Cell & Molecular Biology Concentration

SEQUENCING

Since programs in the Biological Sciences tend to be structured, it is useful for students to take courses in sequence. Students should begin with the General Biology and General Chemistry sequences. These are prerequisite to higher level requirements such as Ecology, Cell Biology, Genetics, and Organic Chemistry, which should preferably be taken in the sophomore year. Since calculus is required for the degree, students should also begin their study of mathematics as soon as possible, preferably prior to their junior year, so that they can be adequately prepared for the General Physics sequence, best taken in the junior year. Because of this highly structured sequence, students are strongly encouraged to work with their Departmental advisor in order to plan their course schedules and plan alternatives if necessary. Such planning is particularly important for transfer students, as the sequence presented above is highly recommended and most likely to be completed in a timely fashion.

The predominance of chemistry and biology course sequences required in the freshman and sophomore years generally dictates that, with the exception of the Liberal Studies Core courses, the majority of the Liberal Studies courses may be postponed until the junior and senior years. Students may therefore be taking fewer Liberal Studies courses in the first two years than many other programs, concentrating instead on major field requirements, which are prerequisites to upper division courses.

College of Science and Health - Undergraduate Studies ▢ Programs of Study ▢ Biological Sciences ▢ Liberal Studies Requirements

Liberal Studies Requirements

First Year Program	
Chicago Quarter	LSP 110 or LSP 111
Focal Point	LSP 112
Writing	WRD 103* and WRD 104*
Quantitative Reasoning & Technological Literacy	Not Required
Sophomore Year	
Multiculturalism in the US	LSP 200
Junior Year	
Experiential Learning	Required
Senior Year	
Capstone	Required*
Learning Domains	
Arts and Literature (AL)	3 Courses Required
Philosophical Inquiry (PI)	2 Courses Required
Scientific Inquiry (SI)	Not Required
Self, Society and the Modern World (SSMW)	3 Courses Required
Religious Dimensions (RD)	2 Courses Required
Understanding the Past (UP)	2 Courses Required
Note:	* Students must earn a C- or better in this course.

Note: Courses offered in the student's primary major cannot be taken to fulfill LSP Domain requirements. If students double major, LSP Domain courses may double count for both LSP credit and the second major. Students who choose to take an experiential learning course offered by the major may count it either as a general elective or the JYEL requirement.

In meeting learning domain requirements, no more than one course that is outside the students major and is cross-listed with a course within the students major, can be applied to count for LSP domain credit. This policy would apply only to those students in pursuit of a BA or BS degree, and not to those who are double majors or earning BFA or BM degrees.

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Biological Sciences ▫ I. General Concentration

I. General Concentration

Biological Sciences :

I. 191 General Biology I for Science Majors; 192 General Biology II for Science Majors; 193 General Biology III for Science Majors; 260 Genetics.

II. Students must also take *three* additional courses from the following list: 210 Microbiology; 215 Ecology; 235 Evolution; 250 Cell Biology; 309 Plant Physiology; 310 Vertebrate Physiology; 360 Molecular Biology.

III. Students must also take *five* additional majors-level Biology courses (not including 305 Biometry). Biology courses that fulfill the Scientific Inquiry Domain requirements, other than the General Biology sequence, do not generate credit toward the major or minor.

Chemistry :

130/131 General Chemistry I (Lecture and Lab); 132/133 General Chemistry II (Lecture and Lab) ; 134/135 General Chemistry III (Lecture and Lab) ; 230/231 Organic Chemistry I (Lecture and Lab) ; 232/233 Organic Chemistry II (Lecture and Lab) ; 234/235 Organic Chemistry III (Lecture and Lab) . (Students are typically expected to take the first year chemistry courses simultaneously with Biology 191, 192, and 193).

Physics :

150 General Physics I; 151 General Physics II; and 152 General Physics III. (Students may substitute comparable sequences of Physics courses designed for science majors).

Mathematics/Statistics :

Mathematics: 150 Calculus I; 151 Calculus II; and 152 Calculus III (or Math 147/148/149, or Math 160/161/162, or Math 170/171/172); and *one* statistics course: Biology 305 Biometry. Students may be advised on the basis of their performance on the Mathematics Diagnostic Test to take one or more pre-calculus courses.

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Biological Sciences ▫ II. Biotechnology Concentration

II. Biotechnology Concentration

Biological Sciences:

I. 191 General Biology I for Science Majors; 192 General Biology II for Science Majors; 193 General Biology III for Science Majors; 210 Microbiology; 220 Principles of Biotechnology; 250 Cell Biology; 260 Genetics; 360 Molecular Biology.

II. Students must also take *two* courses from the following list: 209 Plant Biology; 309 Plant Physiology; 310 Vertebrate Physiology; 320 Microbial Ecology; 321 Molecular Methods in Ecology and Evolution; 330 Developmental Biology; 347

Topics in Medical Bacteriology; 348 Biology of Infection; 355 Genetic Toxicology; 361 Topics in Molecular Biology; 365 Principles of Toxicology; 370 Immunobiology; 375 Introduction to Pharmacology; or Chemistry: CHE 340/341 Biochemistry I with Lab or 342 Biochemistry II.

III. Students must also take *two* additional majors-level Biology courses (other than Biology 305 Biometry).

At least two courses from sections II. and III. above must have lab components. Biology courses other than the General Biology sequence that have any Scientific Inquiry domain designation do not generate credit toward the major or minor.

Chemistry :

130/131 General Chemistry I (Lecture and Lab) ; 132/133 General Chemistry II (Lecture and Lab) ; 134/135 General Chemistry III (Lecture and Lab) ; 230/231 Organic Chemistry I (Lecture and Lab) ; 232/233 Organic Chemistry II (Lecture and Lab) ; 234/235 Organic Chemistry III (Lecture and Lab) . (Students are typically expected to take the first year chemistry courses simultaneously with Biology 191, 192, and 193).

Physics :

150 General Physics I; 151 General Physics II; and 152 General Physics III. (Students may substitute comparable sequences of Physics courses designed for science majors).

Mathematics/Statistics :

Mathematics: 150 Calculus I; 151 Calculus II; and 152 Calculus III (or Math 147/148/149, or Math 160/161/162, or Math 170/171/172); and *one* statistics course: Biology 305 Biometry. Students may be advised on the basis of their performance on the Mathematics Diagnostic Test to take one or more pre-calculus courses.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Biological Sciences □ III. Pre-Health Concentration

III. Pre-Health Concentration

Biological Sciences :

I. 191 General Biology I for Science Majors; 192 General Biology II for Science Majors; 193 General Biology III for Science Majors; 260 Genetics; 210 Microbiology; 250 Cell Biology; 310 Vertebrate Physiology.

II. Students must also take *three* courses from the following list (1 must be a lab course): 201 Mammalian Anatomy; 220 Principles of Biotechnology; 230 Epidemiology; 311 Histology; 330 Developmental Biology; 339 Cellular Neurobiology; 340 Systems Neurobiology; 341 Topics in Neurobiology; 347 Topics in Medical Bacteriology; 348 Biology of Infection; 355 Genetic Toxicology; 360 Molecular Biology; 361 Topics in Molecular Biology; 365 Principles of Toxicology; 370 Immunobiology; 375 Introduction to Pharmacology; 380 Cancer Biology; 386 Introduction to Endocrinology; or Chemistry: 340 Biochemistry I or 342 Biochemistry II. Students can request permission from the department to have a 390 Special Topics class count for one of the requirements if appropriate.

III. Students must also take *two* additional majors-level Biology courses (other than Biology 305 Biometry).

At least two courses from sections II. and III. above must have lab components. Biology courses other than the General Biology sequence that have any Scientific Inquiry domain designation do not generate credit toward the major or minor.

Chemistry :

130/131 General Chemistry I (Lecture and Lab) ; 132/133 General Chemistry II (Lecture and Lab) ; 134/135 General Chemistry III (Lecture and Lab) ; 230/231 Organic Chemistry I (Lecture and Lab) ; 232/233 Organic Chemistry II (Lecture and Lab) ; 234/235 Organic Chemistry III (Lecture and Lab) . (Students are typically expected to take the first year chemistry courses simultaneously with Biology 191, 192, and 193).

Physics :

150 General Physics I; 151 General Physics II; and 152 General Physics III. (Students may substitute comparable

sequences of Physics courses designed for science majors).

Mathematics/Statistics :

Mathematics: 150 Calculus I; 151 Calculus II; and 152 Calculus III (or Math 147/148/149, or Math 160/161/162, or Math 170/171/172); and *one* statistics course: Biology 305 Biometry. Students may be advised on the basis of their performance on the Mathematics Placement Test to take one or more pre-calculus courses.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Biological Sciences □ IV. Neuroscience Concentration

IV. Neuroscience Concentration

Biological Sciences :

I. 191 General Biology I for Science Majors; 192 General Biology II for Science Majors; 193 General Biology III for Science Majors; 250 Cell Biology; 260 Genetics; 310 Vertebrate Physiology; 339 Cellular Neurobiology; 340 Systems Neurobiology.

II. Students must also take *one* course from the following list: 341 Topics in Neurobiology; 360 Molecular Biology; 375 Introduction to Pharmacology; or 386 Introduction to Endocrinology.

III. Students must also take *three* additional majors-level Biology courses (other than 305 Biometry), one of which must be a lab course. Biology courses other than the General Biology sequence that have any Scientific Inquiry domain designation do not generate credit toward the major or minor.

Chemistry :

130/131 General Chemistry I (Lecture and Lab) ; 132/133 General Chemistry II (Lecture and Lab) ; 134/135 General Chemistry III (Lecture and Lab) ; 230/231 Organic Chemistry I (Lecture and Lab) ; 232/233 Organic Chemistry II (Lecture and Lab) ; 234/235 Organic Chemistry III (Lecture and Lab) . (Students are typically expected to take the first year chemistry courses simultaneously with Biology 191, 192, and 193).

Physics :

150 General Physics I; 151 General Physics II; and 152 General Physics III. (Students may substitute comparable sequences of Physics courses designed for science majors).

Mathematics/Statistics :

Mathematics: 150 Calculus I; 151 Calculus II; and 152 Calculus III (or Math 147/148/149, or Math 160/161/162, or Math 170/171/172); and *one* statistics course: Biology 305 Biometry. Students may be advised on the basis of their performance on the Mathematics Diagnostic Test to take one or more pre-calculus courses.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Biological Sciences □ V. Ecology-Evolution Concentration

V. Ecology-Evolution Concentration

Biological Sciences :

I. 191 General Biology I for Science Majors; 192 General Biology II for Science Majors; 193 General Biology III for Science Majors; 215 Ecology; 235 Evolution; and 260 Genetics.

II. Any one 300-level advanced topics course.

III. Students must also take *three* courses from the following list: 209 Plant Biology; 210 Microbiology; 250 Cell Biology; 270 Comparative Vertebrate Anatomy; 301 Animal Behavior; 304 Introduction to Field Studies; 309

Plant Physiology; 310 Vertebrate Physiology; 316 Phycology; 317 Aquatic Biology; 318 Field Studies in Marine and Estuarine Biology; 320 Microbial Ecology; 321 Molecular Methods in Ecology and Evolution; 325 Paleobiology; 330 Developmental Biology; 333 Mycology; 335 Concepts in Evolution; 345 Topics in Paleobiology; 350 Animal Adaptations; 352 Advanced Comparative Physiology; 386 Introduction to Endocrinology. Students can request permission from the department to have a 390 Special Topics class count for one of the requirements if appropriate.

IV. Students must also take *two* additional majors-level Biology courses (other than 305 Biometry). Biology courses other than the General Biology sequence that have any Scientific Inquiry domain designation do not generate credit toward the major or minor.

Chemistry :

130/131 General Chemistry I (Lecture and Lab) ; 132/133 General Chemistry II (Lecture and Lab) ; 134/135 General Chemistry III (Lecture and Lab) ; 230/231 Organic Chemistry I (Lecture and Lab) ; 232/233 Organic Chemistry II (Lecture and Lab) ; 234/235 Organic Chemistry III (Lecture and Lab) . (Students are typically expected to take the first year chemistry courses simultaneously with Biology 191, 192, and 193).

Physics :

150 General Physics I; 151 General Physics II; and 152 General Physics III. (Students may substitute comparable sequences of Physics courses designed for science majors).

Mathematics/Statistics :

Mathematics: 150 Calculus I; 151 Calculus II; and 152 Calculus III (or Math 147/148/149, or Math 160/161/162, or Math 170/171/172); and *one* statistics course: Biology 305 Biometry or Environmental Science 260. Students may be advised on the basis of their performance on the Mathematics Diagnostic Test to take one or more pre-calculus courses.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Biological Sciences □ VI. Cell & Molecular Biology Concentration

VI. Cell & Molecular Biology Concentration

Biological Sciences :

I. 191 General Biology I for Science Majors; 192 General Biology II for Science Majors; 193 General Biology III for Science Majors; 260 Genetics; 210 Microbiology; 250 Cell Biology; 360 Molecular Biology, and any one advanced Topics course.

II. Students must also take *two* courses from the following list, one of which must be a lab course: 309 Plant Physiology; 315 Topics in Ecology; 330 Developmental Biology; 339 Cellular Neurobiology; 341 Topics in Neurobiology; 345 Topics in Paleobiology; 347 Topics in Medical Bacteriology; 348 Biology of Infection; 354 Topics in Cell Motility; 355 Genetic Toxicology; 361 Topics in Molecular Biology; 365 Principles of Toxicology; 370 Immunobiology; 375 Introduction to Pharmacology; 380 Cancer Biology; 386 Introduction to Endocrinology; or Chemistry: 340 Biochemistry I with 341 Biochemistry Lab. Students can request permission from the department to have a 390 Special Topics class count for one of the requirements if appropriate.

III. Students must also take *two* additional majors-level Biology courses (other than 305 Biometry), one of which must be a lab course. Biology courses other than the General Biology sequence that have any Scientific Inquiry domain designation do not generate credit toward the major or minor.

Chemistry :

130/131 General Chemistry I (Lecture and Lab) ; 132/133 General Chemistry II (Lecture and Lab) ; 134/135 General Chemistry III (Lecture and Lab) ; 230/231 Organic Chemistry I (Lecture and Lab) ; 232/233 Organic Chemistry II (Lecture and Lab) ; 234/235 Organic Chemistry III (Lecture and Lab) . (Students are typically expected to take the first year chemistry courses simultaneously with Biology 191, 192, and 193).

Physics :

150 General Physics I; 151 General Physics II; and 152 General Physics III. (Students may substitute comparable sequences of Physics courses designed for science majors).

Mathematics/Statistics :

Mathematics: 150 Calculus I; 151 Calculus II; and 152 Calculus III (or Math 147/148/149, or Math 160/161/162, or Math 170/171/172); and *one* statistics course: Biology 305 Biometry. Students may be advised on the basis of their performance on the Mathematics Diagnostic Test to take one or more pre-calculus courses.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Biological Sciences □ Minor Requirements

Minor Requirements

A student wishing to obtain a minor in Biology must take *six* courses designed primarily for the major, including Biology 191, 192, and 193. *Three* additional courses (generally lab-based) designed for the major must be taken. If desired, these courses can be recommended by a departmental advisor on the basis of the students interests.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Biological Sciences □ Special Programs

Special Programs

CLINICAL LABORATORY SCIENCE (MEDICAL TECHNOLOGY)

A student wishing to enter a career in Clinical Laboratory Science takes a program of study almost identical to the major in Biological Sciences, except that Biology 210, 310 and 370 are also required. Upon completion of the requirements for the baccalaureate, the student enters one year of internship (separate tuition required) in a hospital associated with DePaul University. The Clinical Laboratory Science option is one of three concentrations in the Allied Health Technologies Program, which also includes programs for Nuclear Medicine Technology and Radiation Therapy (see separate listing of the Allied Health Technologies Program for details).

MASTER OF SCIENCE DEGREE PROGRAM

Certain graduate level courses, including 401 (Independent Study) are open to qualified advanced undergraduate students with the approval of the chair of the department. See the Graduate School Bulletin for course offerings. Students planning to complete a graduate program at DePaul University should inquire of their academic advisor how they, as juniors or seniors may initiate studies in the Graduate School which become applicable toward our masters degree (see below).

COMBINED BACHELORS AND MASTERS DEGREE IN BIOLOGY

The Department of Biological Sciences offers a special option to students with a potential for graduate study and an interest in pursuing a masters degree at DePaul. Following consultation with the students advisor, and with prior permission from the department, a student may enter the Graduate Program prior to completion of the bachelors degree. The student may take graduate level courses as an undergraduate and have up to three of them count towards the undergraduate degree as well. These students will earn a bachelors degree during their fourth year and at the same time be considered graduate students with all of the perquisites that apply to that status. Those perquisites include, but are not limited to, eligibility for assistantships, attending graduate-only courses, graduate level mentoring, and initiation of masters level research.

TEACH PROGRAM

This program provides students the opportunity to complete in five years an undergraduate Biology major and a Masters of Education degree with State of Illinois secondary teaching certification in Biology. As a combined degree program of the College of Science and Health and the College of Education, the program is collaboratively developed, governed, and taught by faculty from both units.

Students may apply to the Program during the spring of their junior year. They must complete the Junior Year Experiential Course TCH 320, *Exploring Teaching in an Urban High School*, and meet other application criteria

prior to applying; these include completion of at least 16 quarter credit hours at DePaul and a 3.0 GPA. During their senior year, students are required to complete a Program capstone course and three 400-level courses that count toward both their undergraduate and graduate degrees. The Masters year comprises teacher-preparation coursework that culminates with student teaching during Spring quarter. Upon graduation and the fulfilling of State of Illinois Certification requirements (which may require some additional course work in the students major and related fields), students are eligible to be certified to teach Biology at the 6th -12th grade levels.

A full description of the Program can be found on the College of Education website in the graduate course catalog. Students interested in the Program should consult with the designated TEACH Program advisor in their home department.

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Biological Sciences ▫ Courses

Courses

Please visit Campus Connection at <https://campusconnect.depaul.edu> for current course information. If you do not have a password for Campus Connection you may log on as a guest. Once you are on Campus Connection please select Course Descriptions followed by the department.

Chemistry

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Chemistry

Introduction

The Department of Chemistry has several fundamental responsibilities. They are (a) to train students to understand, to criticize meaningfully, and to carry out scientific investigations, (b) to provide instruction and laboratory experience for those who wish to make chemistry their livelihood and/or pursue advanced study in chemistry, (c) to provide instruction and laboratory experience for those who wish to use chemistry as a background in an allied profession, and (d) to provide students not majoring in chemistry with up-to-date instruction in the principles of chemistry and methods of scientific inquiry. In meeting these responsibilities, the department offers four tracks of study, each of which lead to a Bachelor of Science that is certified by the American Chemical Society, the department's accrediting body. The tracks include Standard Chemistry, Analytical and Physical Chemistry, Biochemistry and Medicinal Chemistry, and Synthetic Chemistry. The department also offers a Bachelor of Arts degree. This option allows students to get a firm educational foundation in chemistry along with the ability to develop specialization in another field not necessarily related to chemistry.

In addition to its baccalaureate degrees, the department offers several five-year degree programs. Students may pursue a degree in chemistry and chemical engineering through a joint program with the Illinois Institute of Technology. The department has teamed with the School of Education to develop a five-year B.S./M.Ed. program that allows students to earn an undergraduate degree in chemistry and a graduate degree in secondary education. Finally, the department hosts its own B.S./M.S. program. This option allows students to earn a B.S. and M.S. in chemistry in five years.

DEPARTMENTAL PROGRAM REQUIREMENTS

The following enrollment-related policies are fully enforced by the Department of Chemistry

- 1.) All students enrolling in the first course of a General Chemistry sequence must independently meet a minimum mathematics requirement and successfully complete either the General Chemistry placement examination or a General Chemistry preparation course. See the course descriptions for General Chemistry for up-to-date information.
- 2.) All prerequisite chemistry courses must be completed with a C- or better. Students not meeting this requirement may be removed from course rosters before the start of an academic session. This requirement may be waived only with departmental consent.

3.) The department offers lower-level sequences several times each academic year. Due to potentially small class sizes, upper-level courses are typically scheduled every other year. Students should consult with their faculty academic advisor to develop a program they can complete in a timely fashion.

Additional information regarding department policies and course offerings can be found in the departmental handbook which can be found at <http://chemistry.depaul.edu/handbook> .

College of Science and Health - Undergraduate Studies □ Programs of Study □ Chemistry □ Faculty

Faculty

RICHARD F. NIEDZIELA, Ph.D.,
Associate Professor and Chair
The University of Chicago

JURGIS A. ANYSAS, Ph.D.,
Professor Emeritus
Illinois Institute of Technology

FRED W. BREITBEIL, III, Ph.D.,
Professor Emeritus
University of Cincinnati

MATTHEW R. DINTZNER, Ph.D.,
Associate Professor
Syracuse University

LIHUA JIN, Ph.D.,
Associate Professor
Princeton University

CAITLIN E. KARVER, Ph.D.,
Assistant Professor
University of Southern California

GREGORY B. KHARAS, Ph.D.,
Professor
Technion Institute

JOHN J. KOZAK, Ph.D.,
University Professor
Princeton University

JUSTIN J. MARESH, Ph.D.,
Assistant Professor
The University of Chicago

SARA STECK MELFORD, Ph.D.,
Associate Professor Emeritus
Northwestern University

EDWIN F. MEYER, Ph.D.,
Professor Emeritus
Northwestern University

THOMAS J. MURPHY, Ph. D.,
Professor Emeritus
Iowa State University

RUBEN D. PARRA, Ph.D.,
Associate Professor
University of Nebraska-Lincoln

WILLIAM R. PASTERCZYK, Ph.D.,
Professor Emeritus
Loyola University , Stritch School of Medicine

SANDRA CHIMON PESZEK, Ph.D.,
Assistant Professor
University of Illinois at Chicago

FRANKLIN S. PROUT, Ph.D.,
Professor Emeritus
Vanderbilt University

QUINETTA D. SHELBY, Ph.D.,
Assistant Professor
 University of Illinois at Urbana-Champaign

ROGER D. SOMMER, Ph.D.,
Assistant Professor
 University of Colorado at Boulder

CATHRINE A. SOUTHERN, Ph.D.,
Assistant Professor
 The University of Chicago

WENDY S. WOLBACH, Ph.D.,
Professor
 The University of Chicago

College of Science and Health - Undergraduate Studies ▢ Programs of Study ▢ Chemistry ▢ Major Requirements

Major Requirements

Liberal Studies Requirements

Common Core

B.S., Analytical/Physical Chemistry Track

B.S., Biochemical/Medicinal Chemistry Track

B.S., Standard Track

B.S., Synthetic Chemistry Track

B.A., Standard Track

SEQUENCING AND PREREQUISITES

Students should begin their General Chemistry, Physics, and Calculus sequences in their freshman year, provided they have an adequate mathematics background. The Organic Chemistry sequence and Analytical Chemistry should be taken in the sophomore year. Students not yet prepared for calculus should take the prerequisite courses in the first year and take Calculus and General Physics one year later than suggested above. Advanced courses in Chemistry may be taken as soon as students have met the appropriate prerequisites.

Students in Biochemistry are recommended to consider taking the General Biology sequence (191, 192, 193) prior to taking the Biochemistry sequence .

Since the Undergraduate Common Core in Chemistry, Mathematics, and Physics is particularly demanding in the first two years, students take the majority of their Liberal Studies courses in their junior and senior years. This is necessary so that students have the necessary prerequisites for advanced courses.

College of Science and Health - Undergraduate Studies ▢ Programs of Study ▢ Chemistry ▢ Liberal Studies Requirements

Liberal Studies Requirements

First Year Program	
Chicago Quarter	LSP 110 or LSP 111
Focal Point	LSP 112
Writing	WRD 103* and WRD 104*
Quantitative Reasoning & Technological Literacy	Not Required
Sophomore Year	
Multiculturalism in the US	LSP 200

Junior Year	
Experiential Learning	Required
Senior Year	
Capstone	Required*
Learning Domains	
Arts and Literature (AL)	3 Courses Required
Philosophical Inquiry (PI)	2 Courses Required
Scientific Inquiry (SI)	Not Required
Self, Society and the Modern World (SSMW)	3 Courses Required
Religious Dimensions (RD)	2 Courses Required
Understanding the Past (UP)	2 Courses Required
Note:	* Students must earn a C- or better in this course.

Note: Courses offered in the student's primary major cannot be taken to fulfill LSP Domain requirements. If students double major, LSP Domain courses may double count for both LSP credit and the second major. Students who choose to take an experiential learning course offered by the major may count it either as a general elective or the JYEL requirement.

In meeting learning domain requirements, no more than one course that is outside the students major and is cross-listed with a course within the students major, can be applied to count for LSP domain credit. This policy would apply only to those students in pursuit of a BA or BS degree, and not to those who are double majors or earning BFA or BM degrees.

In addition, the Department of Chemistry recommends that students who are seeking accreditation by the American Chemical Society fulfill the Modern Language Option by completing a three-course language sequence. Please see an advisor for further information.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Chemistry □ Common Core

Common Core

All students pursuing a Bachelor of Arts or Bachelor of Science in chemistry must complete a common core of courses in the department and in allied fields. These courses are consistent with the requirements of all degree programs accredited by the American Chemical Society. The courses in the common core consist of:

Introductory Courses

CHE 130/131: General Chemistry I (Lecture and Laboratory)
 CHE 132/133: General Chemistry II (Lecture and Laboratory)
 CHE 134/135: General Chemistry III (Lecture and Laboratory)

The department offers General Chemistry each summer. In this case, the combination of CHE136/137 and CHE138/139 may substitute for the three-quarter sequence above.

Foundation Courses

CHE 202: Applied Probability and Statistics
 CHE 204/205: Analytical Chemistry (Lecture and Laboratory)
 CHE 230/231: Organic Chemistry I (Lecture and Laboratory)
 CHE 232/233: Organic Chemistry II (Lecture and Laboratory)
 CHE 302: Quantum Chemistry
 CHE 303: Experimental Physical Chemistry I
 CHE 304: Thermochemistry
 CHE 305: Experimental Physical Chemistry II
 CHE 320/321: Intermediate Inorganic Chemistry (Lecture and Laboratory)

CHE 340/341: Biochemistry I (Lecture and Laboratory)
CHE 394: Seminar

Allied Field Courses

Calculus

One year of calculus is required to earn a baccalaureate degree in chemistry. This may be accomplished by completing any of the following sequences offered by the Department of Mathematical Sciences:

MAT 147/148/149: Calculus with Integrated Precalculus I/II/III
MAT 150/151/152: Calculus I/II/III
MAT 160/161/162: Calculus for Mathematics and Science Majors I/II/III
MAT 170/171/172: Calculus for Science Majors I/II/III

Students interested in earning credit for multi-variable calculus should not take the MAT170/171/172 sequence. Business calculus cannot be substituted for any of the sequences above.

Physics

One year of calculus-based physics is required to earn a baccalaureate in chemistry. This may be accomplished by completing the following sequence offered by the Department of Physics:

PHY170/171/172: University Physics I/II/III

Non-calculus-based physics cannot be used to meet the requirements of the common core unless previously approved by the Director of Undergraduate Studies or the Chair.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Chemistry □ B.S., Analytical/Physical Chemistry Track

B.S., Analytical/Physical Chemistry Track

The Analytical/Physical Chemistry Track offers a variety of courses at the upper-level to prepare for advanced study or employment in the areas of analytical chemistry or physical chemistry

Requirements

Undergraduate Common Core in Chemistry, Mathematics, and Physics plus:

CHE 234/235: Organic Chemistry III (Lecture and Laboratory)
CHE 306: Kinetics and Molecular Dynamics
CHE 307: Experimental Physical Chemistry III
CHE 378: Applied Spectroscopy

In addition, students in the Analytical/Physical Track must take an additional 12 quarter credit hours taken from any of the following chemistry courses:

CHE 264/265: Air Chemistry (Lecture and Laboratory)
CHE 268/269: Solid Waste Chemistry (Lecture and Laboratory)
CHE 310: Nuclear Chemistry
CHE 318: Biophysical Chemistry
CHE 470: Advanced Physical Chemistry I
CHE 472: Advanced Physical Chemistry II
CHE 474: Advanced Quantum Mechanics
CHE 476/477: Computational Chemistry (Lecture and Laboratory)

Also, open elective coursework may be needed to reach the minimum of 192 credit hours.

B.S., Biochemical/Medicinal Chemistry Track

The Biochemistry/Medicinal Chemistry Track offers students a solid preparation for work in biotechnology or pharmaceutical fields. The track also provides a good foundation for those interested in professional fields such as medicine, dentistry, or veterinary science. Students who are thinking of pursuing advanced work in medicinal chemistry will benefit from this track as well.

Requirements

Undergraduate Common Core in Chemistry, Mathematics, and Physics plus:

CHE 234/235: Organic Chemistry III (Lecture and Laboratory)

CHE 342/343: Biochemistry II (Lecture and Laboratory)

CHE 344/345: Biochemistry III (Lecture and Laboratory)

The General Biology sequence (BIO 191/192/193) may be of interest to students in this track. The sequence is not required but is recommended if time permits.

In addition, students in the Biochemistry/Medicinal Chemistry Track must take an additional 12 quarter credit hours taken from any of the following chemistry courses:

CHE 306: Kinetics and Molecular Dynamics

CHE 307: Experimental Physical Chemistry III

CHE 318: Biophysical Chemistry

CHE 360: Medicinal Chemistry

CHE 362: Drugs and Toxicology

CHE 364: Nutrition

CHE 442: Advanced Biochemistry I

CHE 444: Advanced Biochemistry II

CHE 476/477: Computational Chemistry (Lecture and Laboratory)

Also, open elective coursework may be needed to reach the minimum of 192 credit hours.

B.S., Standard Track

The Standard Track is the most flexible option for undergraduate study. It is suited for those students who intend to continue their studies at the graduate level.

Requirements

Undergraduate Common Core in Chemistry, Mathematics, and Physics plus:

CHE 234/235: Organic Chemistry III (Lecture and Laboratory)

CHE 306: Kinetics and Molecular Dynamics

CHE 307: Experimental Physical Chemistry III

In addition, students in the Standard Track must take an additional 16 quarter credit hours taken from any chemistry course numbered CHE 250 or above.

Also, open elective coursework may be needed to reach the minimum of 192 credit hours.

B.S., Synthetic Chemistry Track

The Synthetic Chemistry Track provides students with exposure to synthetic chemistry from both the organic and inorganic perspectives. The courses in this track are suitable for students thinking of graduate school or those considering working in industry.

Requirements

Undergraduate Common Core in Chemistry, Mathematics, and Physics plus:

CHE 234/235: Organic Chemistry III (Lecture and Laboratory)
CHE 326/327: Intermediate Organic Chemistry (Lecture and Laboratory)
CHE 378: Applied Spectroscopy

In addition, students in the Synthetic Track must take an additional 12 quarter credit hours taken from any of the following chemistry courses:

CHE 360: Medicinal Chemistry
CHE 362: Drugs and Toxicology
CHE 422: Advanced Inorganic Chemistry I
CHE 424: Advanced Inorganic Chemistry II
CHE 430: Polymer Synthesis
CHE 434/435: Polymer Characterization (Lecture and Laboratory)
CHE 450: Advanced Organic Chemistry I
CHE 452: Advanced Organic Chemistry II

Additional open elective coursework may be needed to reach the minimum of 192 credit hours.

B.A., Standard Track

The Bachelor of Arts option is available for students who want a thorough, base knowledge of chemistry, and the ability to combine that education with a broader educational experience. Students earning a B.A. in chemistry usually complete their overall degree requirements with a minor in another field of study.

Requirements

Undergraduate Common Core in Chemistry, Mathematics, and Physics

Open elective coursework may be needed to reach the minimum of 192 credit hours.

Minor Requirements

A student wishing to obtain a minor in chemistry normally take seven courses in the department from the following list:

CHE 130/131 - General Chemistry I (Lecture and Laboratory)
CHE 132/133 - General Chemistry II (Lecture and Laboratory)
CHE 134/135 - General Chemistry III (Lecture and Laboratory)
CHE 204/205 - Analytical Chemistry (Lecture and Laboratory)

CHE 230/231 - Organic Chemistry I (Lecture and Laboratory)
CHE 232/233 - Organic Chemistry II (Lecture and Laboratory)
One additional course numbered above CHE 250

College of Science and Health - Undergraduate Studies □ Programs of Study □ Chemistry □ Special Programs

Special Programs

PRE-ENGINEERING CURRICULUM IN CHEMICAL ENGINEERING

The Chemical Engineering option is offered in conjunction with Illinois Institute of Technology (IIT). In the five-year program, students simultaneously earn a B.S. in Chemistry from DePaul University and a Chemical Engineering (Ch.E.) degree from IIT. Students complete the B.S. in Chemistry (Standard Concentration) at DePaul University. Students supplement their DePaul B.S. with twenty additional chemical engineering and related courses taken at IIT. It is recommended that interested students contact the chemistry engineering advisor as soon as possible.

MASTER OF SCIENCE DEGREE PROGRAM

Students planning to integrate a B.S. and M.S. degree program at DePaul University should inquire of the Director of Undergraduate Studies or the department Chair as undergraduate juniors whether they can begin studies in the Graduate School that are applicable toward a master's degree.

TEACH PROGRAM

This program provides students the opportunity to complete in five years an undergraduate Chemistry major and a Masters of Education degree with State of Illinois secondary teaching certification in Chemistry. As a combined degree program of the College of Science and Health and the College of Education, the program is collaboratively developed, governed, and taught by faculty from both units.

Students may apply to the Program during the spring of their junior year. They must complete the Junior Year Experiential Course TCH 320, *Exploring Teaching in an Urban High School*, and meet other application criteria prior to applying; these include completion of at least 16 quarter credit hours at DePaul and a 3.0 GPA. During their senior year, students are required to complete a Program capstone course and three 400-level courses that count toward both their undergraduate and graduate degrees. The Masters year comprises teacher-preparation coursework that culminates with student teaching during Spring quarter. Upon graduation and the fulfilling of State of Illinois Certification requirements (which may require some additional course work in the students major and related fields), students are eligible to be certified to teach Chemistry at the 6th-12th grade levels.

A full description of the Program can be found on the College of Education website in the graduate course catalog. Students interested in the Program should consult with the designated TEACH Program advisor in their home department.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Chemistry □ Courses

Courses

Please visit Campus Connection at <https://campusconnect.depaul.edu> for current course information. If you do not have a password for Campus Connection you may log on as a guest. Once you are on Campus Connection please select Course Descriptions followed by the department.

Environmental Science and Studies

Introduction

The Department of Environmental Science and Studies offers two degrees: a Bachelor of Science in Environmental Science and a Bachelor of Arts in Environmental Studies. The aim of the Department is to develop the environmental literacy of our majors and enable them to become informed participants and leaders in current and future debates on the state of the environment. The department seeks to provide a supportive environment which stimulates analytical and creative thinking about environmental issues, challenging students to get the maximum benefit from their talents and skills.

The two majors offered by the Department offers students a choice of a strong science based curriculum or a multidisciplinary curriculum drawing from the natural sciences, social sciences, and humanities. The following are features common to both degrees:

- A strong interdisciplinary curriculum that draws on courses from several departments and colleges, and presents them to undergraduates as a coherent degree program.
- An experienced group of faculty who have developed academic relationships across disciplines around shared interests in environmental issues.
- Close ties with the Institute for Nature and Culture (INC), a research and outreach program within the Department of Environmental Science and Studies. INC's vision to be a center for education, advanced study, experimentation, and practice relevant to the relationship between humans and their environment will provide a framework for the study of a "new environmentalism."

The B.S. degree in Environmental Science is a broad, science-based curriculum designed to prepare students for a variety of environmentally-related technical careers, as well as for graduate programs in environmental and allied fields. The program requires 192 credit hours and draws upon the faculty and resources of several departments. Majors take core courses in Biology, Chemistry, Environmental Science, Mathematics, and Physics; advanced study in Environmental Science and five University-wide electives.

The B.A. degree in Environmental Studies provides students with a holistic education on environmental topics that includes the natural and social sciences as well as the humanities. The degree allows students to connect with present and emerging environmental problems in a uniquely interdisciplinary manner, and will prepare them for positions in environmental management and in environmentally themed non-profit organizations, to bring an environmental perspective to any career, as well as preparing them for further studies. The degree is focused on the comprehensive study of human interaction with the natural environment.

The B.A. degree in Environmental Studies provides students with a holistic education on environmental topics that includes the natural and social sciences as well as the humanities. The degree allows students to connect with present and emerging environmental problems in a uniquely interdisciplinary manner, and will prepare them for positions in environmental management and in environmentally themed non-profit organizations, to bring an environmental perspective to any career, as well as preparing them for further studies. The degree is focused on the comprehensive study of human interaction with the natural environment.

The B.A. degree offers students a choice of two tracks: A standard track and a sustainability track. Within the sustainability track, students can further choose an urban sustainability focus. Students selecting the sustainability track will recognize the concept of sustainability as a dynamic condition characterized by the interdependency among physical, biological, economic and social systems.

Students choosing the urban sustainability focus will be able to identify the concepts and methods of environmental economics, environmental politics, ethics, design, and human geography relevant to the sustainability of environmental resources and social institutions in urban settings, as well as recognize and understand the functions of sustainable institutions created for water, land, air, and urban management at multiple spatial and temporal scales.

Faculty

JUDITH BRAMBLE, Ph.D.,
Associate Professor and Chair
University of North Carolina, Chapel Hill

KIMBERLY FRYE, M.S.,
Lecturer
DePaul University

LIAM J. HENEGHAN, Ph.D.,
Professor
University College Dublin

CHRISTIE KLIMAS, Ph. D.,
Lecturer
University of Florida

JAMES A. MONTGOMERY, Ph.D.,
Associate Professor
Washington State University

THOMAS J. MURPHY, Ph.D.,
Professor Emeritus
Iowa State University

MARK J. POTOSNAK, Ph.D.,
Assistant Professor
Columbia University

SARAH RICHARDSON, Ph.D.,
Lecturer
University of Arizona

MONICA RICHART, M.L.A.
Lecturer
The University of Texas at Austin

KENSHU SHIMADA, Ph.D.,
Associate Professor
University of Illinois at Chicago

BARBARA WILLARD, Ph.D.,
Associate Professor
University of Iowa

MARGARET WORKMAN, M.S.,
Laboratorian/Instructor
Purdue University

Affiliated Faculty

There are several DePaul faculty from other departments affiliated with the Environmental Science Program.

HUGH BARTLING, Public Policy Studies
BERNHARD BECK-WINCHATZ, STEM Studies
MICHAEL EDWARDS, First Year Programs
JAMES FAIRHALL, English
RANDALL HONOLD, Philosophy
DAVID JABON, STEM studies
WILLIAM JORDAN III, Institute for Nature & Culture

Major Requirements

B.A. in Environmental Studies

Liberal Studies Requirements- B.A. in Environmental Studies
 B.A. in Environmental Studies - Standard Track
 B.A. in Environmental Studies - Sustainability Track

B.S. in Environmental Science

Liberal Studies Requirements- B.S. in Environmental Science
 B.S. in Environmental Science

Liberal Studies Requirements- B.A. in Environmental Studies

First Year Program	
Chicago Quarter	LSP 110 or LSP 111
Focal Point	LSP 112
Writing	WRD 103* and WRD 104*
Quantitative Reasoning & Technological Literacy	LSP 120 and LSP 121 (Note: See information below)
Sophomore Year	
Multiculturalism in the US	LSP 200
Junior Year	
Experiential Learning	Required
Senior Year	
Capstone	Required*
Learning Domains	
Arts and Literature (AL)	3 Courses Required
Philosophical Inquiry (PI)	2 Courses Required
Scientific Inquiry (SI)	Not Required
Self, Society and the Modern World (SSMW)	3 Courses Required
Religious Dimensions (RD)	2 Courses Required
Understanding the Past (UP)	2 Courses Required
Note:	* Students must earn a C- or better in this course.

Quantitative Reasoning and Technological Literacy:

Readiness for LSP 120 is determined by the math placement test taken online after admission. Students may need to take developmental coursework prior to LSP 120. The LSP 120 requirement may be waived by credit already earned for advanced math coursework or by passing a dedicated proficiency exam. Students who complete both LSP 120 and LSP 121 take one less Learning Domain course. Students may not apply the course reduction to any Domain where only one course is required, and if taken within the SI Domain, the reduction

cannot be applied to the SI Lab requirement.

Note: Courses offered in the student's primary major cannot be taken to fulfill LSP Domain requirements. If students double major, LSP Domain courses may double count for both LSP credit and the second major. Students who choose to take an experiential learning course offered by the major may count it either as a general elective or the JYEL requirement.

In meeting learning domain requirements, no more than one course that is outside the student's major and is cross-listed with a course within the student's major, can be applied to count for LSP domain credit. This policy does not apply to those who are pursuing a double major or earning BFA or BM degrees.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Environmental Science and Studies □ B.A. in Environmental Studies - Standard Track

B.A. in Environmental Studies - Standard Track

CORE (7 courses/26 quarter credits):

ENV 150 Foundations of Env Studies
ENV 152 Ecological Economics
ENV 216 Earth Systems Science
ENV 217 Human Impacts on the Environment
ENV 250 Applied Ecology
ENV 294 Second Year Seminar (2 quarter credits)
ENV 350 Capstone - Environmental Impact Analysis
CHE 103 Environmental Chemistry

10 courses/40 quarter credits chosen from the categories below

Natural Sciences (3 courses):

Choose three, at least one must be non-SI :

ENV 200 Cities and the Environment
ENV 204 Energy and the Environment
ENV 224 Chicago River
ENV 230 Global Climate Change
ENV 300 Plant Identification
ENV 310 Soil Science
ENV 320 Conservation Biology
ENV 322 Ecosystem Ecology
ENV 340 Urban Ecology
ENV 355 Environmental Health

Social Sciences (3-4 courses):

***If ENV 150 is waived by advisor, then four must be completed.*

One of the following:

CMNS 325 Promoting Sustainable Practices
CMNS 326 Environmental Communication Workshop

*Two (or three **) of the following:*

ENV 151 Introduction to Sustainability
ENV 345 Urban Agriculture
CMNS 324 Culture of Consumption
GEO 205 Justice & Inequality in the Urban Environment
GEO 210 Environmental Conservation
PPS 330 Sustainable Development
PPS 333 Green Cities
SOC 232 Global Cities
SOC 348 The City in the Future

Humanities (4 courses):

At least one, but not more than two, of the following:

ENV 160 Ideas of Nature
ENV 170 Environmental Ethics
PHL 235 Philosophy and the Environment

At least two of the following:

ENV 205 Issues in Environmental Design
ENG 367 Environmental Literature
HST 240 History of Chicago
HST 270 US Historical Landscape
REL 262 Religion & Globalization

Others by approval.

Open elective credit also is required to meet the minimum graduation requirement of 192 hours.

The Modern Language Requirement must be met for the B.A. degree.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Environmental Science and Studies □ B.A. in Environmental Studies - Sustainability Track

B.A. in Environmental Studies - Sustainability Track

CORE (9 courses/34 quarter credits):

ENV 150 Foundations of Env Studies
ENV 151 Introduction to Sustainability
ENV 152 Ecological Economics
ENV 216 Earth Systems Science
ENV 217 Human Impacts on the Environment
ENV 250 Applied Ecology
ENV 294 Second Year Seminar (2 quarter credits)
ENV 350 Capstone - Environmental Impact Analysis
CHE 103 Environmental Chemistry
PPS 330 Sustainable Development

8 courses/32 quarter credits chosen from the categories below

Students with an interest in Urban Sustainability are encouraged to select the courses with asterisks.

Natural Sciences (at least 2 courses)

* ENV 200 Cities and the Environment
ENV 204 Energy and the Environment
ENV 230 Global Climate Change
ENV 320 Conservation Biology
* ENV 340 Urban Ecology

Social Sciences (at least 2 courses)

ENV 345 Urban Agriculture
CMNS 324 Culture of Consumption
* CMNS 325 Promoting Sustainable Practices
CMNS 326 Environmental Communication Workshop
GEO 205 Justice & Inequality in the Urban Environment
* PPS 333 Green Cities

Humanities (at least 2 courses)

ENV 160 Ideas of Nature
ENV 170 Environmental Ethics
ENV 205 Issues in Environmental Design

Others by approval.

Open elective credit also is required to meet the minimum graduation requirement of 192 hours.

The Modern Language Requirement must be met for the B.A. Degree.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Environmental Science and Studies □ Liberal Studies Requirements- B.S. in Environmental Science

Liberal Studies Requirements- B.S. in Environmental Science

First Year Program	
Chicago Quarter	LSP 110 or LSP 111
Focal Point	LSP 112
Writing	WRD 103* and WRD 104*
Quantitative Reasoning & Technological Literacy	Not Required
Sophomore Year	
Multiculturalism in the US	LSP 200
Junior Year	
Experiential Learning	Required
Senior Year	
Capstone	Required*
Learning Domains	
Arts and Literature (AL)	3 Courses Required
Philosophical Inquiry (PI)	2 Courses Required
Scientific Inquiry (SI)	Not Required
Self, Society and the Modern World (SSMW)	3 Courses Required
Religious Dimensions (RD)	2 Courses Required
Understanding the Past (UP)	2 Courses Required
Note:	* Students must earn a C- or better in this course.

Note: Courses offered in the student's primary major cannot be taken to fulfill LSP Domain requirements. (ENV 150, 160, 170, and 205 are exceptions to this rule.) If students double major, LSP Domain courses may double count for both LSP credit and the second major. Students who choose to take an experiential learning course offered by the major may count it either as a general elective or the JYEL requirement.

In meeting learning domain requirements, no more than one course that is outside the students major and is cross-listed with a course within the students major, can be applied to count for LSP domain credit. This policy would apply only to those students in pursuit of a BA or BS degree, and not to those who are double majors or earning BFA or BM degrees.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Environmental Science and Studies □ B.S. in Environmental Science

B.S. in Environmental Science

CORE (8 courses/28 quarter credits)
 BIO 215 Ecology or ENV 250 Applied Ecology
 ENV 216 Earth Systems Science

ENV 217 Human Impacts on Environment
ENV 260 Environmental Data Analysis
ENV 294 Second Year Seminar (2 quarter credits)
ENV 350 Capstone Environmental Impact Analysis
ENV 360 Research Methods
ENV 362 Senior Thesis (2 quarter credits)

ALLIED CORE (12 courses/48 quarter credits)

BIO 191 General Bio I
BIO 192 General Bio II
BIO 193 General Bio III
CHE 130/131 General/Analy Chem I
CHE 132/133 General/Analy Chem II
CHE 134/135 General/Analy Chem III
MAT 147 **OR** 150 **OR** 170 Calculus I
MAT 148 **OR** 151 **OR** 171 Calculus II
MAT 149 **OR** 152 **OR** 172 Calculus III
PHY 150 General Physics I
PHY 151 General Physics II
PHY 152 General Physics III

ALLIED ELECTIVES (3 courses/12 quarter credits)

Choose from within one discipline

Biology:

BIO 210, 235, 260, 317, 321, 350

Chemistry:

CHE 230/231, 232/233, 234/235

CHE 205, 240, 261, 265, 267, 269

Geography (GIS):

GEO 240, 241, 242, 243

ENVIRONMENTAL SCIENCE ELECTIVES (3 courses/12 quarter credits)

ENV 300 Plant Identification
ENV 310 Soil Science
ENV 315 Plant Ecology
ENV 316 Chemistry of Earth Systems
ENV 320 Conservation Biology
ENV 322 Ecosystem Ecology
ENV 330 Field Methods
ENV 345 Urban Agriculture
ENV 355 Environmental Health

FREE ELECTIVES (5 courses/20 quarter credits)

SENIOR THESIS

Students in the B.S. in Environmental Science degree program do a research project leading to a senior thesis. This is a distinctive feature of the major and allows students to have valuable, direct experience in the field of environmental science. This requirement is fulfilled by the successful completion of ENV 362.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Environmental Science and Studies □ Minor Requirements

Minor Requirements

ENVIRONMENTAL SCIENCE MINOR

The Environmental Science Minor consists of five Environmental Science courses.

- ENV 102-Introduction to Environmental Science
**In addition to ENV 102, the chosen classes should include at least one with a laboratory.*

- One from the 300-level courses
- Three other ENV classes chosen from:
 - ENV 115 - Environmental Geology
 - ENV 116 - Geology of the Environment
 - ENV 200 - Cities and the Environment
 - ENV 202 - Resources, Population and the Environment
 - ENV 204 - Energy and the Environment
 - ENV 216 - Earth Systems Science
 - ENV 217 - Human Impacts on the Environment
 - ENV 220 - Environmental Soil Science
 - ENV 224 - Environment of the Chicago River
 - ENV 230 - Global Climate Change
 - ENV 250 - Applied Ecology
 - ENV 300 - Plant Identification
 - ENV 315 - Plant Ecology
 - ENV 322 - Ecosystems Ecology
 - ENV 340 - Issues in Urban Ecology
 - ENV 342 - Natural History of Forests
 - ENV 350 - Environmental Impact Analysis

ENVIRONMENTAL STUDIES MINOR

The Environmental Studies Minor consists of six courses:

- ENV 150 - Foundations of Environmental Studies
- Two from:
 - ENV 200 - Cities and the Environment
 - ENV 202 - Resources, Population, and the Environment
 - ENV 204 - Energy and the Environment
 - ENV 216 - Earth System Science
 - ENV 217 - Human Impacts on the Environment
- CMNS 326 - Environmental Politics and Rhetoric
- Two from:
 - ENV 160 - Ideas of Nature
 - ENV 170 - Environmental Ethics
 - PHL 235 - Philosophy and the Environment
 - ENV 205/ART 230 - Issues in Environmental Design
 - ENG 367 - American Literature and the Land
 - HST 270 - U. S. Historical Landscape

College of Science and Health - Undergraduate Studies □ Programs of Study □ Environmental Science and Studies □ Special Programs

Special Programs

COMBINED-DEGREE [B.A./B.S.-M.Ed.] TEACHER-EDUCATION PROGRAM

This program provides students the opportunity to complete in five years an undergraduate Environmental Science major and a Masters of Education degree with State of Illinois secondary teaching certification in Environmental Science. As a combined degree program of the College of Science and Health and the School of Education, the program is collaboratively developed, governed, and taught by faculty from both units.

Students may apply to the Program during the spring of their junior year. They must complete the Junior Year Experiential Course TCH 320, *Exploring Teaching in an Urban High School*, and meet other application criteria prior to applying; these include completion of at least 16 quarter credit hours at DePaul and a 3.0 GPA. During their senior year, students are required to complete a Program capstone course and three 400-level courses that count toward both their undergraduate and graduate degrees. The Masters year comprises teacher-preparation coursework that culminates with student teaching during Spring quarter. Upon graduation and the fulfilling of State of Illinois Certification requirements (which may require some additional course work in the students major and related fields), students are eligible to be certified to teach Environmental Science at the 6th-12th grade levels.

A full description of the Program can be found on the School of Education website in the graduate course catalog. Students

interested in the Program should consult with the designated Program advisor in their home department.

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Environmental Science and Studies ▫ Courses

Courses

Please visit Campus Connection at <https://campusconnect.depaul.edu> for current course information. If you do not have a password for Campus Connection you may log on as a guest. Once you are on Campus Connection please select Course Descriptions followed by the department.

Health Sciences

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Health Sciences

Introduction

Over the next ten to twenty years and beyond, our nation will require increasing numbers and varieties of health care professionals to meet the needs of a growing and aging population: doctors and nurses, to be sure, but also nurse practitioners, physicians assistants, nurse anesthetists, physical therapists, occupational therapists, pathologists assistants, clinical psychologists, radiation technologists, pharmacists, podiatrists, and more. Likewise, the creation of policies and structures for health care delivery and education, on the one hand, and the day-to-day management of health care delivery, on the other, will require a host of public health officials, health educators, crisis management experts, case managers, and hospital administrators, to name a few. None of these professionals work in isolation; teams of clinicians and technicians, by necessity, join forces with respect to each ones appropriate role, and their work takes place in the context of public and health policy and within a variety of health care delivery settings. It has never been more important for all health care professionals, no matter what their role, to understand the range of expertise involved in this enterprise, and to be able to work together to solve problems.

The Health Sciences Program offers concentrations in BioScience and Health Care, Policy, and Practice that will enable future health care professionals to begin this cross-disciplinary conversation even earlier. In addition to General tracks, each concentration offers tracks that help students focus their interests and prepare for future careers. In BioScience students can choose from tracks in Medicine, Nursing, or Laboratory investigations; while in Health Care, Policy, and Practice, students can choose tracks in Health Education, Community and Public Health or Health Policy and Administration. This degree a) provides students interested in pursuing a career in one of many health-related professions with a common core of knowledge; b) provides a general track in each concentration but also articulates additional tracks that meet requirements for entry into graduate programs; c) provides enough flexibility to enable students to move among those tracks as their interests evolve, and d) brings students headed for multiple health-related professions into on-going conversation with each other. Its curriculum is built on the principle that, in order to be effective, health care professionals need to understand both the factors that impact the health of individuals and the factors that impact the health of populations.

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Health Sciences ▫ Faculty

Faculty

DOROTHY A. KOZLOWSKI, Ph.D.,
Director, Health Sciences
Associate Professor, Biological Sciences

Major Requirements

Liberal Studies Requirements

I. BioScience Concentration

II. Health Care, Policy, and Practice Concentration

Liberal Studies Requirements

First Year Program	
Chicago Quarter	LSP 110 or LSP 111
Focal Point	LSP 112
Writing	WRD 103* and WRD 104*
Quantitative Reasoning & Technological Literacy	Not Required for BioScience Concentration. LSP 120 and LSP 121 are required for Health Care, Policy, and Practice**
Sophomore Year	
Multiculturalism in the US	LSP 200
Junior Year	
Experiential Learning	Required
Senior Year	
Capstone	Required*
Learning Domains	
Arts and Literature (AL)	3 Courses Required
Philosophical Inquiry (PI)	2 Courses Required See Note Below
Scientific Inquiry (SI)	Not Required
Self, Society and the Modern World (SSMW)	3 Courses Required
Religious Dimensions (RD)	2 Courses Required See Note Below
Understanding the Past (UP)	2 Courses Required
Notes:	Note: Students must either take PHL 229 (PI) or REL 229 (RD) for one of their PI or RD courses. *Students must earn a C- or better in any courses marked with an asterisk.

Note: Courses offered in the student's primary major cannot be taken to fulfill LSP Domain requirements. If students double major, LSP Domain courses may double count for both LSP credit and the second major.

Students who choose to take an experiential learning course offered by the major may count it either as a general elective or the JYEL requirement.

In meeting learning domain requirements, no more than one course that is outside the students major and is cross-listed with a course within the students major, can be applied to count for LSP domain credit. This policy does not apply to those who are pursuing a double major or earning BFA or BM degrees.

****Quantitative Reasoning and Technological Literacy (for Health Care, Policy, and Practice Concentration only):**
 Readiness for LSP 120 is determined by the math placement test taken online after admission. Students may need to take developmental coursework prior to LSP 120. The LSP 120 requirement may be waived by credit already earned for advanced math coursework or by passing a dedicated proficiency exam. Students who complete both LSP 120 and LSP 121 take one less Learning Domain course. Students may not apply the course reduction to any Domain where only one course is required.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Health Sciences □ I. BioScience Concentration

I. BioScience Concentration

CORE

HLTH 201	Introduction to Health Sciences
HLTH 202	Health Research Literacy
HLTH 350	Health Science Capstone
BIO 191	General Biology I
BIO 210	Microbiology

BIO SCIENCE CONCENTRATION

BIO 192	General Biology II
BIO 193	General Biology III
BIO 305	Biometry
CHE 130/131	General Chemistry I (Lecture and Laboratory)
CHE 132/133	General Chemistry II (Lecture and Laboratory)
BIO 250	Cell Biology
BIO 310	Vertebrate Physiology

Students will select and complete the requirements of one of the following tracks: General, Medical/Graduate, Lab Investigations or Nursing.

GENERAL TRACK:

Select 10 courses from the following:

CHE 134/135	General Chemistry III (Lecture and Laboratory)
CHE 230/231	Organic Chemistry I (Lecture and Laboratory)
CHE 232/233	Organic Chemistry II (Lecture and Laboratory)
CHE 234/235	Organic Chemistry III (Lecture and Laboratory)
CHE 340/341	Biochemistry (Lecture and Laboratory)
PHY 150	General Physics I
PHY 151	General Physics II
PHY 152	General Physics III
BIO 201	Mammalian Anatomy
BIO 230	Epidemiology
BIO 260	Genetics
BIO 270	Comparative Vertebrate Anatomy
BIO 311	Histology

BIO 330	Developmental Biology
BIO 339	Cellular Neurobiology
BIO 340	Systems Neurobiology
BIO 347	Topics in Medical Bacteriology
BIO 348	The Biology of Infection
BIO 355	Genetic Toxicology
BIO 360	Molecular Biology
BIO 365	Principles of Toxicology
BIO 370	Immunobiology
BIO 375	Introduction to Pharmacology
BIO 380	Cancer Biology
BIO 386	Introduction to Endocrinology
MAT 150	Calculus I
MAT 151	Calculus II
MAT 152	Calculus III
PSY 105 or PSY 106	Introductory Psychology I or II

MEDICAL/GRADUATE TRACK:

CHE 134/135	General Chemistry III (Lecture and Laboratory)
CHE 230/231	Organic Chemistry I (Lecture and Laboratory)
CHE 232/233	Organic Chemistry II (Lecture and Laboratory)
CHE 234/235	Organic Chemistry III (Lecture and Laboratory)
CHE 340/341	Biochemistry (Lecture and Laboratory)
PHY 150	General Physics I
PHY 151	General Physics II
PHY 152	General Physics III
BIO 201	Mammalian Anatomy

And select one from the following:

BIO 230	Epidemiology
BIO 260	Genetics
BIO 270	Comparative Vertebrate Anatomy
BIO 311	Histology
BIO 330	Developmental Biology
BIO 339	Cellular Neurobiology
BIO 340	Systems Neurobiology
BIO 347	Topics in Medical Bacteriology
BIO 348	The Biology of Infection
BIO 355	Genetic Toxicology
BIO 360	Molecular Biology
BIO 365	Principles of Toxicology
BIO 370	Immunobiology
BIO 375	Introduction to Pharmacology
BIO 380	Cancer Biology
BIO 386	Introduction to Endocrinology
MAT 150	Calculus I
MAT 151	Calculus II
MAT 152	Calculus III
PSY 105 or PSY 106	Introductory Psychology I or II

LAB INVESTIGATIONS TRACK

CHE 134/135	General Chemistry III (Lecture and Laboratory)
CHE 230/231	Organic Chemistry I (Lecture and Laboratory)
CHE 232/233	Organic Chemistry II (Lecture and Laboratory)
CHE 234/235	Organic Chemistry III (Lecture and Laboratory)
BIO 260	Genetics
BIO 311	Histology
BIO 360	Molecular Biology

Select three from the following:

CHE 340/341	Biochemistry (Lecture and Laboratory)
PHY 150	General Physics I
PHY 151	General Physics II
PHY 152	General Physics III
BIO 201	Mammalian Anatomy
BIO 230	Epidemiology
BIO 270	Comparative Vertebrate Anatomy
BIO 330	Developmental Biology
BIO 339	Cellular Neurobiology
BIO 340	Systems Neurobiology
BIO 347	Topics in Medical Bacteriology
BIO 348	The Biology of Infection
BIO 355	Genetic Toxicology
BIO 365	Principles of Toxicology
BIO 370	Immunobiology
BIO 375	Introduction to Pharmacology
BIO 380	Cancer Biology
BIO 386	Introduction to Endocrinology
MAT 150	Calculus I
MAT 151	Calculus II
MAT 152	Calculus III
PSY 105 or PSY 106	Introductory Psychology I or II

NURSING TRACK:

BIO 201	Mammalian Anatomy
NSG 481	Nursing Biostatistics & Epidemiology
PSY 303	Human Development
CHE 228/229 or CHE 230/231	Survey of Organic Chemistry (Lecture and Laboratory) or Organic Chemistry I (Lecture and Laboratory)

Choose six from:

CHE 134/135	General Chemistry III (Lecture and Laboratory)
CHE 232/233	Organic Chemistry II (Lecture and Laboratory)
CHE 234/235	Organic Chemistry III (Lecture and Laboratory)
CHE 340/341	Biochemistry (Lecture and Laboratory)
PHY 150	General Physics I
PHY 151	General Physics II
PHY 152	General Physics III

BIO 230	Epidemiology
BIO 260	Genetics
BIO 270	Comparative Vertebrate Anatomy
BIO 311	Histology
BIO 330	Developmental Biology
BIO 339	Cellular Neurobiology
BIO 340	Systems Neurobiology
BIO 347	Topics in Medical Bacteriology
BIO 348	The Biology of Infection
BIO 355	Genetic Toxicology
BIO 360	Molecular Biology
BIO 365	Principles of Toxicology
BIO 370	Immunobiology
BIO 375	Introduction to Pharmacology
BIO 380	Cancer Biology
BIO 386	Introduction to Endocrinology
MAT 150	Calculus I
MAT 151	Calculus II
MAT 152	Calculus III
PSY 105 or PSY 106	Introductory Psychology I or II

College of Science and Health - Undergraduate Studies □ Programs of Study □ Health Sciences □ II. Health Care, Policy, and Practice Concentration

II. Health Care, Policy, and Practice Concentration

CORE

HLTH 201	Introduction to Health Sciences
HLTH 202	Health Research Literacy
HLTH 350	Health Science Capstone
BIO 191	General Biology I
BIO 210	Microbiology

HEALTH CARE POLICY AND PRACTICE CONCENTRATION:

Statistics	One selected from: BIO 305 Biometry, MAT 242 Elements of Statistics, PSY 240 Statistics I, NSG 480 Statistical Methods, and SOC 279 Introductory Statistics for the Social Sciences
PSY 106	Introductory Psychology II
HLTH 210	Introduction to Public Health
HLTH 310	Social Epidemiology
SOC 221	Introduction to the US Health Care System
SOC 351	Health Disparities
CMNS 315	Health Communication
ANT 360	Medical Anthropology

Students will select and complete the requirements of one of the following tracks: General, Health Education,

Community and Public Health or Health Policy and Administration.

GENERAL HEALTH CARE, POLICY AND PRACTICE TRACK

Choose nine courses from the following:

At most one from: CMNS 212 CMNS 251 PSY 355 PSY 382	Small Group Communication Introduction to Organizational Communication Groups and Organizations Organizational Behavior
At most one from: PE 273 SOC 370	Health and Nutrition People, Places and Food
PRAD 338	Health and Public Relations
PSY 105	Introductory Psychology I
PSY 215	Human Sexuality
At most one from: PSY 302 PSY 353 SOC 353	Personal Adjustment and Mental Health Abnormal Psychology Sociology of Mental Illness
At most one from: PSY 364 SOC 372	Health Psychology and Stress Management Health Care Systems: A Comparative Perspective
At most one from: PSY 241 SOC 380	Research Methods I Research Methods I
At most one from: PSY 242 SOC 381	Research Methods II Research Methods II
PSY 345	Cultural Issues in Psychology
PSY 354	Community Psychology
PSY 363	Alcoholism, Drug Addiction and Recovery
SOC 250	Group Diversity
SOC 307	Sociology of Substance Use and Abuse
SOC 321	Health and Human Service Organizations
SOC 342	Organizational Dynamics
SOC 373	Public Health and High Risk Behavior
SOC 390	Special Topics in Community Health

HEALTH EDUCATION TRACK:

PE 273 or SOC 370	Health and Nutrition or People, Places and Food
PSY 105	Introductory Psychology I
One from: PSY 302 PSY 353 SOC 353	Personal Adjustment and Mental Health Abnormal Psychology Sociology of Mental Illness
PSY 364	Health Psychology and Stress Management
PSY 363 or SOC 307	Alcoholism, Drug Addiction and Recovery Sociology of Substance Use and Abuse
SOC 390	Special Topics in Community Health

Choose three from the following:

At most one from: CMNS 212 CMNS 251 PSY 355 PSY 382	Small Group Communication or Introduction to Organizational Communication Groups and Organizations Organizational Behavior
PRAD 338	Health and Public Relations

PSY 215	Human Sexuality
At most one from: PSY 241 SOC 380	Research Methods I Research Methods I
At most one from: PSY 242 SOC 381	Research Methods II Research Methods II
PSY 345	Cultural Issues in Psychology
PSY 354	Community Psychology
SOC 250	Group Diversity
SOC 321	Health and Human Service Organizations
SOC 342	Organizational Dynamics
SOC 373	Public Health and High Risk Behavior

COMMUNITY AND PUBLIC HEALTH TRACK

Choose one from: CMNS 212 CMNS 251 PSY 355 PSY 382	Small Group Communication or Introduction to Organizational Communication Groups and Organizations Organizational Behavior
PSY 364 or SOC 372	Health Psychology and Stress Management Health Care Systems: A Comparative Perspective
PSY 354	Community Psychology
SOC 250 or PSY 345	Group Diversity Cultural Issues in Psychology
SOC 373	Public Health and High Risk Behavior
SOC 390	Special Topics in Community Health

Choose three from the following:

At most one from: PE 273 SOC 370	Health and Nutrition People, Places and Food
PRAD 338	Health and Public Relations
PSY 105	Introductory Psychology I
PSY 215	Human Sexuality
At most one from: PSY 302 PSY 353 SOC 353	Personal Adjustment and Mental Health Abnormal Psychology Sociology of Mental Illness
At most one from: PSY 241 SOC 380	Research Methods I Research Methods I
At most one from: PSY 242 SOC 381	Research Methods II Research Methods II
PSY 363	Alcoholism, Drug Addiction and Recovery
SOC 307	Sociology of Substance Use and Abuse
SOC 321	Health and Human Service Organizations
SOC 342	Organizational Dynamics

HEALTH POLICY AND ADMINISTRATION

One from: CMNS 251 PSY 355 PSY 382	Introduction to Organizational Communication Groups and Organizations Organizational Behavior
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SOC 342	Organizational Dynamics
PRAD 338	Health and Public Relations
SOC 372	Health Care Systems: A Comparative Perspective
PSY 241 or SOC 380	Research Methods I Research Methods I
PSY 242 or SOC 381	Research Methods II Research Methods II
SOC 321	Health and Human Service Organizations

Choose three from:

At most one from: PE 273 SOC 370	Health and Nutrition People, Places and Food
PSY 105	Introductory Psychology I
PSY 215	Human Sexuality
At most one from: PSY 302 PSY 353 SOC 353	Personal Adjustment and Mental Health Abnormal Psychology Sociology of Mental Illness
PSY 345	Cultural Issues in Psychology
PSY 354	Community Psychology
PSY 363	Alcoholism, Drug Addiction and Recovery
SOC 250	Group Diversity
SOC 307	Sociology of Substance Use and Abuse
SOC 373	Public Health and High Risk Behavior
SOC 390	Special Topics in Community Health

College of Science and Health - Undergraduate Studies [Programs of Study](#) [Health Sciences](#) [Courses](#)

Courses

Please visit Campus Connection at <https://campusconnect.depaul.edu> for current course information. If you do not have a password for Campus Connection you may log on as a guest. Once you are on Campus Connection please select Course Descriptions followed by the department.

Mathematical Sciences

College of Science and Health - Undergraduate Studies [Programs of Study](#) [Mathematical Sciences](#)

Introduction

The Department of Mathematical Sciences offers courses in pure and applied mathematics to help students reach a wide variety of intellectual, academic, and career goals.

Many students come to the department to obtain the mathematical background needed to be successful in programs in the natural sciences, computer science, and social sciences, and business. Such students may choose to supplement their major in their home department by obtaining a minor in mathematics.

Other students come to the department seeking a program leading to an undergraduate or graduate degree in

one of the mathematical sciences. Undergraduate students majoring in mathematical sciences may choose one of seven areas of concentration:

- Pure Mathematics
- Statistics
- Actuarial Science
- Teacher of Mathematics: Secondary Level
- Financial Mathematics
- Quantitative Analysis and Operations Research
- Applied and Computational Mathematics

In consultation with a mathematics faculty advisor, undergraduate students may also create an individualized program of courses leading to a degree in mathematical sciences.

A thesis option is available to mathematics majors who wish to pursue an extended independent project related to a theoretical or applied focus of the program. Students would work under the guidance of a faculty mentor. At least 4 credits must be completed over one or two quarters prior to the thesis submission. Interested students are strongly encouraged to enroll in MAT 390 during their junior year.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Mathematical Sciences □ Faculty

Faculty

AHMED ZAYED, Ph.D.,
Professor and Chair
University of Wisconsin

MOHAMED AMEZIANE, Ph.D.,
Assistant Professor
University of Central Florida

J. MARSHALL ASH, Ph.D.,
Professor
University of Chicago

ALLAN BERELE, Ph.D.,
Professor
University of Chicago

JEFFREY BERGEN, Ph.D.,
Professor
University of Chicago

WILLIAM BUTTERWORTH, Ph.D.,
Associate Professor
Northwestern University

STEFAN CATOIU, Ph.D.,
Associate Professor
University of Wisconsin

WILLIAM CHIN, Ph.D.,
Professor
University of Wisconsin

JONATHAN COHEN, Ph.D.,
Professor
Washington University

BARBARA CORTZEN, Ph.D.,

Associate Professor
University of California, San Diego

SUSANNA EPP, Ph.D.,
Professor
University of Chicago

A. EDUARDO GATTO, Ph.D.,
Associate Professor
Universidad de Buenos Aires

CONSTANTINE GEORGAKIS, Ph.D.,
Associate Professor
Illinois Institute of Technology

LAWRENCE GLUCK, Ph.D.,
Associate Professor
Illinois Institute of Technology

YEVGENIA KASHINA, Ph.D.,
Associate Professor
University of Southern California

LEONID KROP, Ph.D.,
Associate Professor
University of Chicago

TIMOTHY MCMURRY, Ph.D.,
Assistant Professor
University of California, San Diego

CAROLYN NARASIMHAN, Ph.D.,
Professor
Northwestern University

T. KYLE PETERSEN, Ph.D.,
Assistant Professor
Brandeis University

NICHOLAS RAMSEY, Ph.D.,
Assistant Professor
Harvard University

AYSE SAHIN, Ph.D.,
Professor
University of Maryland, College Park

CLAUDIA SCHMEGNER, Ph.D.,
Assistant Professor
University of Texas, Dallas

BRIDGET TENNER, Ph.D.,
Assistant Professor
Massachusetts Institute of Technology

ILIE UGARCOVICI, Ph.D.,
Assistant Professor
Pennsylvania State University

GANG WANG, Ph.D.,
Professor
University of Illinois at Urbana-Champaign

PO YANG, Ph.D.,

Major Requirements

- Liberal Studies Requirements
- Departmental Requirements
- B.S. in Mathematical Sciences
- B.S. in Mathematics and Computer Science

Liberal Studies Requirements

First Year Program	
Chicago Quarter	LSP 110 or LSP 111
Focal Point	LSP 112
Writing	WRD 103* and WRD 104*
Quantitative Reasoning & Technological Literacy	Not Required
Sophomore Year	
Multiculturalism in the US	LSP 200
Junior Year	
Experiential Learning	Required
Senior Year	
Capstone	Required*
Learning Domains	
Arts and Literature (AL)	3 Courses Required
Philosophical Inquiry (PI)	2 Courses Required
Scientific Inquiry (SI)	1 Lab Course Required
Self, Society and the Modern World (SSMW)	3 Courses Required
Religious Dimensions (RD)	2 Courses Required
Understanding the Past (UP)	2 Courses Required
Note:	* Students must earn a C- or better in this course.

Note: Courses offered in the student's primary major cannot be taken to fulfill LSP Domain requirements. If students double major, LSP Domain courses may double count for both LSP credit and the second major. Students who choose to take an experiential learning course offered by the major may count it either as a general elective or the JYEL requirement.

In meeting learning domain requirements, no more than one course that is outside the students major and is cross-listed with a course within the students major, can be applied to count for LSP domain credit. This policy would apply only to those students in pursuit of a BA or BS degree, and not to those who are double majors or earning BFA or BM degrees.

Departmental Requirements

The Department of Mathematical Sciences enforces all course prerequisites including course placement by the Mathematics Diagnostic Test. Mathematics majors must complete mathematics course prerequisites with a grade of C- or better. This requirement may be waived only with the consent of the chair of the department.

In planning schedules, students should be aware that not all courses are offered every quarter. Some sequences start only in fall or winter quarters, and some 300 level courses are not offered every year. Students should consult with their advisors and the department to develop a program that they can complete in a timely fashion.

B.S. in Mathematical Sciences

COMMON CORE

Mathematics Requirements:

- 160, 161, 162 Calculus for Mathematics and Science Majors I, II, III, or 150, 151, 152 Calculus I, II, III, or 147, 148, 149 Calculus with Integrated Precalculus, or 170, 171 Calculus I and II with Scientific applications and 149, 152 or 162
- 260, 261 Multivariable Calculus I and II, 262 Linear Algebra.
- 215 Introduction to Mathematical Reasoning or both 140 and 141 Discrete Mathematics I and II

Computer Science Requirements:

CSC 211 Programming in Java I or CSC 261 Programming language I: C/C++, or a more advanced course in any programming language.

I. PURE MATHEMATICS CONCENTRATION

Requirements:

Common Core plus:

At least three courses to be chosen from among 310, 311 (Abstract Algebra I, II) and 335, 336 (Real Analysis I, II).

Three additional mathematics courses can be chosen from the following: MAT 301 History of Mathematics; MAT 302 Combinatorics; MAT 303 Theory of Numbers; MAT 311-312 Abstract Algebra II and III; MAT 320-321 Geometry I and II; MAT 336 Real Analysis II; MAT 337 Complex Analysis; MAT 304 Differential Equations; MAT 340 Topology; MAT 348 Applied Statistical Methods; MAT 351-352-353 Probability and Statistics I, II, and III; MAT 370 Advanced Linear Algebra; MAT 372 Logic and Set Theory; MAT 385-386 Numerical Analysis I and II."

Recommended Mathematics Courses:

Students interested in graduate study in mathematics are encouraged to take both sequences 310-311-312 and 335-336-337. Students interested in graduate study in economics, finance, or statistics are encouraged to take 351-352-353 and 335-336.

II. STATISTICS CONCENTRATION

Requirements:

Common Core plus:

- 351, 352, 353 Probability and Statistics I, II, III, 341 Statistical Methods Using SAS, 356 Applied Regression Analysis, and either 326 Sample Survey Methods or 328 Design of Experiments

OR

- 348, 349 Applied Statistical Methods I, II, 326 Sample Survey Methods, 328 Design of Experiments, 341 Statistical Methods Using SAS, and 356 Applied Regression Analysis.

Additional Recommended Courses:

354 Multivariate Statistics, 355 Stochastic Processes, 357 Nonparametric Statistics, 358 Applied Time Series and Forecasting, 335-336 Real Analysis I-II, 370 Advanced Linear Algebra, 385 Numerical Analysis, 386 Advanced Numerical Analysis. Students interested in graduate study in mathematical statistics are encouraged to take the entire sequences 351-352-353 and 335-336.

III. ACTUARIAL SCIENCE CONCENTRATION

Requirements:

Common Core plus:

- 351, 352, 353 Probability and Statistics I, II, III.
- 361, 362, 363 Actuarial Science I, II, III.

Recommended Mathematics Courses:

341 Statistical Methods Using SAS, 356 Applied Regression Analysis, 358 Applied Time Series and Forecasting, 355 Stochastic Processes, 364 Stochastic Risk Models, 367 Credibility Theory, 368 Mathematical Methods in Finance, 359 Simulation Models and the Monte Carlo Method.

Additional Recommended Courses:

Accountancy: ACC 101 Introduction to Accounting I.

Economics: ECO 105 Principles of Microeconomics; 106 Principles of Macroeconomics.

Finance : FIN 310-311 Financial Management I-II, FIN 320 Money and Banking, FIN 330 Investments: Securities and Markets, FIN 335 Portfolio Management, FIN 362 Risk Management, and FIN 363 Derivatives: Pricing and Applications.

IV. TEACHER OF MATHEMATICS: SECONDARY LEVEL CONCENTRATION

In cooperation with the School of Education, the Department of Mathematics offers concentrations of study which combine the requirements for a major in Mathematics with certification for teaching mathematics at the middle and high school levels. A student electing such a program should consult the School of Education Counselor as soon as possible after entering DePaul. At the present time students who satisfy all the requirements in this program earn their degree in secondary education through the School of Education. In addition to fulfilling the requirements listed below, students in this program must meet the requirements from the School of Education.

Requirements:

Common Core plus:

301 History of Mathematics.

348 Applied Statistical Methods or 351 Probability and Statistics I.

309 Teaching and Learning Secondary School Mathematics.

303 Number Theory and 310 Abstract Algebra I, or 310 and 311 Abstract Algebra I-II.

320 and 321 Geometry I-II, or 320 Geometry I and 335 Real Analysis I

V. FINANCIAL MATHEMATICS CONCENTRATION

This concentration is a Mathematics Major that is attached to a Finance Minor. It includes courses that are relevant to contemporary financial mathematical modeling, along with courses in Finance and their prerequisites. The Finance Minor is designed to complement the mathematics coursework.

Mathematics Major Requirements:

Common Core plus:

351,352,353 Probability and Statistics I, II, III; 355 Stochastic Processes; 368 Mathematical Methods in Finance; 304 Differential Equations or 385 Numerical Analysis.

Finance Minor Requirements:

Accountancy: ACC 101 and 102 Introduction to Accounting I and II;

Economics:

ECO 105 Principles of Microeconomics, ECO 106 Principles of Macroeconomics;

Finance:

- FIN 202 Quantitative Reasoning, FIN 310 Introduction to Finance, FIN 311 Corporate Finance, FIN 320 Money and Banking, FIN 330 Investments: Theory and Practice
- Two electives chosen from FIN 313 Investment Banking, FIN 323 Commercial Banking, FIN 333 Financial Statements Analysis, FIN 335 Portfolio Management, FIN 340 International Finance, FIN 362 Risk Management, FIN 363 Derivatives: Pricing and Applications, FIN 380 Cases in Financial Decision Making, FIN 393 Finance Internship, FIN 395 Investment Seminar, FIN 397 Finance Seminar, FIN 398 Special Topics, and FIN 399 Independent Study.

Additional Recommended Courses:

341 Statistical Methods Using SAS, 370 Advanced Linear Algebra, 358 Applied Times Series and Forecasting, 356 Applied Regression Analysis.

VI. QUANTITATIVE ANALYSIS AND OPERATIONS RESEARCH CONCENTRATION

Requirements:

Common Core plus:

351, 352, 353 Probability and Statistics I, II, III.

Three courses from 356 Applied Regression Analysis, 358 Applied Time Series and Forecasting, 387 Operations Research I: Linear Programming, 388 Operations Research II: Optimization Theory.

Additional recommended courses:

Accountancy: ACC 101, 102 Introduction to Accounting I and II;

Economics: ECO 105 Principles of Microeconomics, ECO 106 Principles of Macroeconomics;

Finance: FIN 310 Financial Management I, FIN 330 Investments: Securities and Markets, FIN 335 Portfolio Management.

VII. APPLIED AND COMPUTATIONAL MATHEMATICS CONCENTRATION

The concentration in Applied and Computational Mathematics is intended for any student who enjoys mathematics, problem solving, and applications to solving practical problems in business, government, and science. The concentration is especially intended for students seeking a career as quantitative analysts, computational scientists, and applied mathematicians, and for those thinking of continuing the study of applied or discrete mathematics at the graduate level.

Requirements:

Common Core plus:

Three courses chosen from 302 Combinatorics, 304 Differential Equations, 384 Mathematical Modeling, 385 Numerical Analysis I.

Two additional courses chosen from among the above and the following:

335 Real Analysis I, 351-352 Probability and Statistics I, II, 370 Advanced Linear Algebra, 381 Fourier Series, 386 Numerical Analysis II.

One additional course chosen from among the above and the following:

303 Theory of Numbers, 310-311 Abstract Algebra I, II, 330-331 Methods in Computational and Theoretical Physics I, II, 336 Real Analysis II, 337 Complex Analysis, 340 Topology, 353 Probability and Statistics III, 355 Stochastic Processes, 387-388 Operations Research I, II.

Allied Field Requirement: A second quarter of Java or C++, or another approved computer science course.

Students interested in graduate study in applied mathematics are encouraged to take 335-336, 370, 385-386.

VIII. INDIVIDUALIZED CONCENTRATION

Students may consult with a mathematics faculty advisor and the department chair to create an individualized program of study leading to a degree in mathematics. Such a program will normally consist of the Common Core in Mathematics plus six mathematics courses chosen from those included in concentrations I-VII above and approved by the department chair.

B.S. in Mathematics and Computer Science

Mathematics is a key element to the theory and practice of computer science and technology:

- Number theory forms the basis for encryption algorithms for messages sent over the Internet.
- Facts from projective geometry and multivariable calculus underlie the computer algorithms that control computer animation.
- Properties of abstract groups are instrumental in correcting transmission errors that occur when information is sent from one computer to another.
- Graph theory and combinatorics are used to create algorithms for Internet search engines and analyze Internet routing protocols.

This joint major program is intended to appeal to academically talented students. It is designed to prepare them for graduate study in various areas of computer science such as theoretical computer science, graphics, data analysis, artificial intelligence, and computational methods and in areas in applied mathematics such as numerical analysis or discrete mathematics. The program is also designed to prepare students to compete for the more theoretical complex jobs found in computer software development.

PROGRAM REQUIREMENTS

The BS in Mathematics and Computer Science consists of five parts:

- The Liberal Studies Program (19 Courses, not including the capstone course)
- Core Courses (14 Courses)
- Advanced Classes (7 Courses)
- Capstone (1 course)
- Open Electives (7 Courses)

The courses in the Core build the necessary foundation in discrete and continuous mathematics, problem solving, algorithmic thinking and programming. The Advanced Classes allow the student to explore the different areas of mathematics and computer science in more depth.

CORE COURSES (14 Courses):

Mathematical Foundations

MAT 150-151-152, or MAT 160-161-162, or MAT 170-171- 172
Calculus I, II, & III (MAT 147-148-149 may also be used to satisfy this requirement.)

MAT 140-141 Discrete Mathematics I & II

MAT 260 Multivariable Calculus I

MAT 262 Linear Algebra

Problem Solving, Algorithms and Structured Programming

CSC 241 Introduction to Computer Science I

CSC 242 Introduction to Computer Science II

CSC 321 Design and Analysis of Algorithms

CSC 383 Data Structures in C++ or

CSC 393 Data Structures and Algorithms in Java

Object-Oriented Programming

CSC 224 Java for Programmers or

CSC 309 Object-Oriented Programming in C

Computer Systems

CSC 373 Introduction to Systems I

CSC 374 Introduction to Systems II

ADVANCED COURSES (7 courses):

The students can choose advanced computer science and mathematics classes from different areas including theory of computation, computational mathematics, artificial intelligence, data analysis, graphics, and computer vision. It is recommended that students concentrate on one or two areas for their advanced classes to achieve depth, but they are not required to do so. Students are strongly encouraged to discuss course selection with an advisor.

Students choose seven courses from the following area lists. At least three of the courses have to be in computer science (or graphics) and at least three in mathematics. Courses not on this list need to be approved by an advisor. In particular, students may wish to arrange with a professor to take an independent study or a research experience (MAT 399 or CSC 399 or IT 300) in order to explore a subject more deeply than is possible in a scheduled course.

CONCENTRATIONS

I. Theory of Computation Area

The courses in the theory area explore the mathematical and logical foundations of computer science.

MAT 302 Combinatorics
MAT 303 Number Theory
MAT 351 Probability and Statistics I
MAT 310 Abstract Algebra I
MAT 311 Abstract Algebra II
MAT 312 Abstract Algebra III
MAT 335 Real Analysis
MAT 372 Logic and Set Theory
CSC 235 Problem Solving
CSC 327 Problem Solving for Contests
CSC 333 Cryptology
CSC 344 Automata Theory and Formal Grammars
CSC 347 Introduction to Programming Languages
CSC 348 Compiler Design
CSC 387/MAT 387 Operations Research I
CSC 389 Theory of Computation
CSC 358 Symbolic Programming

II. Computational Methods Concentration

The computational methods area investigates quantitative and computational methods in computer science.

CSC 331 Scientific Computing
CSC 385/MAT 385 Numerical Analysis
CSC 386/MAT 386 Advanced Numerical Analysis
MAT 330 Methods of Computation and Theoretical Physics I
MAT 331 Methods of Computation and Theoretical Physics II
MAT 384 Mathematical Modeling

III. Artificial Intelligence Concentration

For students with an interest in the computational relations between syntax and semantics.

CSC 357 Expert Systems
CSC 358 Symbolic Programming
CSC 380 Artificial Intelligence

IV. Data Analysis Concentration

For students who are interested in statistical and computational analysis of data. Many of the courses in this area require the student to take MAT 351 353.

CSC 328 Data Analysis for Experimenters
CSC 334 Advanced Data Analysis or
MAT 354 Multivariate Statistics
CSC 332 Simulation and Modeling or

MAT 359 Simulation Models & Monte Carlo Methods
CSC 367 Introduction to Data Mining
MAT 261 Multivariable Calculus II
MAT 351-353 Probability & Statistics I, II, & III
MAT 355 Stochastic Processes
MAT 357 Nonparametric Statistics
MAT 370 Advanced Linear Algebra
MAT 356 Applied Regression Analysis
MAT 358 Applied Time Series and Forecasting

V. Graphics Concentration

The graphics courses are intended for students who want to study the technical and mathematical foundations of computer graphics and animation.

MAT 261 Multivariable Calculus II
MAT 337 Complex Analysis
MAT 370 Advanced Linear Algebra
CSC 385/MAT 385 Numerical Analysis I
GPH 211 Perceptual Principles for Digital Environments I
GPH 212 Perceptual Principles for Digital Environments II
GPH 325 Survey of Computer Graphics
GPH 329 Computer Graphics Development
GPH 339 Advanced Rendering Techniques
GPH 336 Advanced Modeling Techniques
GPH 372 Principles of Animation

VI. Computer Vision Concentration

Computer vision studies the mathematical and algorithmic underpinnings of image analysis and image processing.

MAT 261 Multivariable Calculus II
MAT 335 Real Analysis
MAT 381 Fourier Analysis and Special Functions
MAT 370 Advanced Linear Algebra
MAT 384 Mathematical Modeling
CSC 381 Pattern Recognition and Image Processing
CSC 382 Applied Image Analysis
CSC 384 Introduction to Computer Vision

CAPSTONE COURSE (1 course):

Students can choose one course from the following capstone courses, depending on their interest and coursework:

CSC 394 Software Projects
GPH 395 Computer Graphics Senior Project
MAT 398 Senior Capstone Seminar

Students need to make sure that they cover all prerequisites of their respective capstone (possibly using open electives).

OPEN ELECTIVES (7 courses):

Students choose seven (7) open electives. Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Minor Requirements

MATHEMATICS MINOR

Students in other departments may earn a minor in mathematics.

Requirements:

- 160, 161, 162 Calculus for Mathematics and Science Majors I, II, III, or 150, 151, 152 Calculus I, II, III, or 147, 148, 149 Calculus with Integrated Precalculus, or 170, 171, 172, Calculus I, II, III with Scientific Applications.
- 215 Introduction to Mathematical Reasoning or both 140 and 141 Discrete Mathematics I and II.
- Two additional mathematics courses chosen from the 200 or 300-level courses which are admissible for credit as part of the common core or as part of one of the concentrations in mathematics.

Commerce students who have an exceptionally strong background in calculus, including calculus of trig functions, may be permitted by the chair to substitute MAT 135 and 136 for MAT 150 and 151.

STATISTICS MINOR

Students in other departments may earn a minor in statistics.

Requirements:

- 160, 161, 162 Calculus for Mathematics and Science Majors I, II, III, or 150, 151, 152 Calculus I, II, III, or 147, 148, 149 Calculus with Integrated Precalculus, or 170, 171, 172, Calculus I, II, III with Scientific Applications.
- 348 and 349 Applied Statistical Methods I and II.
- One of the following courses: 326 Sample Survey Methods, 328 Design of Experiments, 356 Applied Regression Analysis, or 357 Nonparametric Statistics.

Commerce students who have an exceptionally strong background in calculus, including calculus of trig functions, may be permitted by the chair to substitute MAT 135 and MAT 136 for MAT 150 and 151.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Mathematical Sciences □ Special Programs

Special Programs

COMBINED BACHELOR AND MASTER OF SCIENCE DEGREES IN APPLIED MATHEMATICS OR IN APPLIED STATISTICS

The combined B.S./M.S. degree in applied mathematics or applied statistics allow students to earn both a B.S. in mathematics and either an M.S. in applied mathematics or an M.S. in applied statistics. The program in applied mathematics is designed for undergraduate mathematics students in one of the following concentrations: statistics or actuarial science. The program in applied statistics is intended for undergraduate students who seek a more specialized focus on statistical methodology and application. It is expected that students will complete the Common Core in mathematics by the end of the sophomore year, will begin taking graduate-level courses during the senior year and will complete the requirements for the Master's of Science in Applied Mathematics or the Master's of Science in Applied Statistics approximately one year after satisfying the requirements for the B.S. degree.

To be admitted to this program, students must submit a letter of intent to the program director, no later than the beginning of the junior year. Careful planning of course sequencing in these programs is essential. A maximum of 12 graduate quarter hours, taken while undergraduate, with grade of B or better may be counted toward the M.S. degree. Near the completion of the graduate course work, students are expected to take **two sets of comprehensive examinations.**

For more details, please visit the department website at <http://las.depaul.edu/math>

UNDERGRADUATE REQUIREMENTS

Common core plus

- **MAT 451-452-453**, Probability and Statistics I, II and III
- **Three courses chosen from :**
 MAT 304, Differential Equations
 MAT 335-336, Real Analysis I and II
 MAT 337, Complex Analysis
 MAT 354, Multivariate Statistics
 MAT 355, Stochastic Processes
 MAT 357, Nonparametric Statistics
 MAT 370, Advanced Linear Algebra
 MAT 385, Numerical Analysis
 MAT 387, Operations Research I
 (Note: MAT 335 is strongly recommended.)
- **Recommended Computer Courses:**
 CSC 211 Programming in Java I or CSC 261 Programming language I C/C++

GRADUATE REQUIREMENTS

Applied Mathematics: Statistics Concentration

- MAT 448, Statistical Methods using SAS
- MAT 456, Applied Regression Analysis
- MAT 459, Simulation and the Monte Carlo Method
- MAT 526, Sample Survey Methods; and
- MAT 528, Design of Experiments
- **Four electives from the following graduate courses (provided they were not taken while undergraduate):**
 MAT 454, Multivariate Statistics
 MAT 455, Stochastic Processes
 MAT 457, Nonparametric Statistics
 MAT 458, Statistical Quality Control
 MAT 460, Topics in Statistics
 MAT 470, Advanced Linear Algebra
 MAT 485, Numerical Analysis I
 MAT 512, Applied Time Series and Forecasting

Applied Mathematics: Actuarial Science Concentration

- MAT 461-462-463, Actuarial Science I, II and III
- MAT 456, Applied Regression Analysis
- MAT 459, Simulation and the Monte Carlo Method
- MAT 448, Statistical Methods using SAS
- **Three electives from the following graduate courses (provided they were not taken while undergraduate):**
 MAT 455, Stochastic Processes
 MAT 464, Stochastic Risk Models
 MAT 465, Statistical Survival Models
 MAT 466, Mathematical Demography
 MAT 467, Credibility Theory
 MAT 468, Financial Models
 MAT 470, Advanced Linear Algebra
 MAT 485, Numerical Analysis I
 MAT 512, Applied Time Series and Forecasting

Applied Statistics

- MAT 441, Statistical Data Analysis with SAS-I
- MAT 442, Statistical Data Analysis with SAS-II
- MAT 443, Statistical Data Analysis with SAS-III
- MAT 456, Applied Regression Analysis
- MAT 512, Applied Time Series and Forecasting
- MAT 526, Sample Survey Methods; and
- MAT 528, Design of Experiments
- **Two electives from the following graduate courses (provided they were not taken while undergraduate):**
 MAT 454, Multivariate Statistics
 MAT 455, Stochastic Processes
 MAT 457, Nonparametric Statistics

MAT 458, Statistical Quality Control
MAT 459, Simulation and the Monte Carlo Method
MAT 460, Topics in Statistics
MAT 470, Advanced Linear Algebra
MAT 485, Numerical Analysis I

ADDITIONAL NOTES

- Students choosing the B.S./M.S. in Applied Mathematics or Applied Statistics should take the core calculus courses as early in their programs as practicable. Students needing to take one or more of the mathematics courses that are prerequisite to calculus are especially urged to satisfy these requirements as soon as possible.
- Students placing into MAT 131 are encouraged to take MAT 147-148-149 so as to complete the full year of calculus by the end of Spring Quarter. A possible alternative is to take MAT 131 concurrently with MAT 150-160-170.
- MAT 215 is offered in the winter and spring quarter of each year.
- Students may take MAT 335 concurrently with MAT 260 provided they have previously taken either MAT 141 or MAT 215.
- It is recommended that undergraduate actuarial science students take as electives selected courses from Accountancy 101, Business Law 201, Economics 105-106, Finance 310, and Finance 330.
- Students should apply for graduation with B.S. or B.A. during their senior year. Further, they should formally fill out an application for admission to the graduate program and indicate in the application that they are enrolled in the combined B.S./M.S. program.
- Approval of the student's graduate advisor is required for all graduate electives.
- With the approval of the program director, students may choose to take other graduate courses that are not included in the above lists.
- Students are expected to fulfill all requirements for the Master's of Science in Applied Mathematics or Applied Statistics, including the comprehensive examinations.

COMBINED B.S. (B.A.)/M.S. IN PURE MATHEMATICS

The combined B.S. (B.A.)/M.S. degree in Pure Mathematics allow promising undergraduate students to earn both a B.S. or B.A. in Mathematics and a M.S. in Pure Mathematics within about one year after the completion of the Bachelor degree. The program is designed for undergraduate mathematics majors in the Pure Mathematics concentration. It is expected that students will complete the Common Core in Mathematics by the end of the sophomore year, will begin taking some graduate-level courses during the senior year, and will complete the requirements for the Master of Science in Pure Mathematics degree in approximately one year after earning the Bachelors degree.

To be admitted to this program, students must apply to the program director no later than the beginning of the junior year. Careful planning of course sequencing in this program is essential. A maximum of 12 quarter hours taken at the graduate level while undergraduate may be double-counted toward the B.S. (B.A.) and M.S. degrees provided the grades are B or better. During the senior year, and for formal admission in the graduate program, students in the combined B.S. (B.A.)/M.S. program should submit an application form to the College of Liberal Arts & Sciences admissions office. Please visit the Mathematical Sciences Departments website <http://las.DePaul.edu/math>.

UNDERGRADUATE REQUIREMENTS

Common core plus:

- MAT 310 Abstract Algebra I
- MAT 311 Abstract Algebra II
- MAT 335 Real Analysis I
- MAT 336 Real Analysis II

Students should also take three out of the twelve graduate courses while they are undergraduate.

GRADUATE REQUIREMENTS

All students in the program are required to complete the following eight core courses:

MAT 470 Advanced Linear Algebra
MAT 471 Abstract Algebra I
MAT 472 Abstract Algebra II
MAT 473 Abstract Algebra III

MAT 434 Topology
MAT 435 Measure Theory
MAT 436 Functional Analysis
MAT 437 Complex Analysis

In addition, students must complete at least four elective courses, which are selected from the following:

MAT 451 Probability and Statistics I
MAT 452 Probability and Statistics II
MAT 453 Probability and Statistics III
MAT 485 Numerical Analysis I
MAT 486 Numerical Analysis II
MAT 498 Problem Solving in Mathematics
MAT 596 Advanced Topics in Algebra
MAT 597 Advanced Topics in Analysis
MAT 598 Advanced Problem Solving in Algebra and Analysis

With advisor's approval two of the elective courses can be substituted with graduate courses in allied fields, such as Computer Science or Physics.

In addition, students should pass two comprehensive examinations in Algebra and Analysis.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Mathematical Sciences □ Courses

Courses

Please visit Campus Connection at <https://campusconnect.depaul.edu> for current course information. If you do not have a password for Campus Connection you may log on as a guest. Once you are on Campus Connection please select Course Descriptions followed by the department.

Foundation

MAT 94 Computational Skills
MAT 95 Basic Applied Algebra
MAT 100 Introduction to Quantitative Reasoning
MAT 101 Introduction to College Algebra
MAT 130 College Algebra and Precalculus
MAT 131 Trigonometry and Precalculus Foundation
MAT 135 Business Calculus I
MAT 136 Business Calculus II
MAT 140 Discrete Mathematics I
MAT 141 Discrete Mathematics II
MAT 145 Calculus for Information Systems
MAT 147 Calculus with Integrated Precalculus I
MAT 148 Calculus with Integrated Precalculus II
MAT 149 Calculus with Integrated Precalculus III
MAT 150 Calculus I
MAT 151 Calculus II
MAT 152 Calculus III
MAT 160 Calculus for Mathematics and Science Majors I
MAT 161 Calculus for Mathematics and Science Majors II
MAT 162 Calculus for Mathematics and Science Majors III
MAT 170 Calculus I with Scientific Applications
MAT 171 Calculus II with Scientific Applications
MAT 172 Calculus III with Differential Equations
MAT 215 Introduction to Mathematical Reasoning
MAT 220 Linear Algebra with Applications
MAT 260 Multivariable Calculus I
MAT 261 Multivariable Calculus II
MAT 262 Linear Algebra

Actuarial Science

MAT 361 Actuarial Science I
MAT 362 Actuarial Science II
MAT 363 Actuarial Science III
MAT 364 Stochastic Risk Models
MAT 365 Statistical Survival Models
MAT 366 Mathematical Demography
MAT 367 Credibility Theory

Algebra and Number Theory

MAT 302 Combinatorics
MAT 303 Theory of Numbers
MAT 310 Abstract Algebra I
MAT 311 Abstract Algebra II
MAT 312 Abstract Algebra III
MAT 370 Advanced Linear Algebra
MAT 372 Logic and Set Theory

Applied Mathematics

MAT 330 Methods of Computation and Theoretical Physics I
MAT 331 Methods of Computation and Theoretical Physics II
MAT 384 Mathematical Modeling
MAT 385 Numerical Analysis I
MAT 386 Numerical Analysis II

Education

MAT 110 Foundations of Mathematics for Elementary School Teachers I
MAT 111 Foundations of Mathematics for Elementary School Teachers II
MAT 115 Foundations of Mathematics for Elementary School Teachers III
MAT 295 Functions and Graphs for Teachers
MAT 296 Trigonometric Functions and Analytic Geometry for Teachers
MAT 309 Teaching and Learning Secondary School

Mathematics History

MAT 301 History of Mathematics

Geometry and Topology

MAT 320 Geometry I
MAT 321 Geometry II
MAT 340 Topology

Mathematical Analysis

MAT 304 Differential Equations
MAT 335 Real Analysis I
MAT 336 Real Analysis II
MAT 337 Complex Analysis

Operations Research

MAT 387 Operations Research I: Linear Programming
MAT 388 Operations Research II: Optimization Theory

Statistics and Probability

MAT 137 Business Statistics
MAT 242 Elements of Statistics
MAT 323 Data Analysis and Statistical Software I
MAT 324 Data Analysis and Statistical Software II
MAT 326 Sample Survey Methods
MAT 328 Design of Experiments
MAT 341 Statistical Methods Using SAS
MAT 342 Elements of Statistics II
MAT 348 Applied Statistical Methods
MAT 349 Applied Statistical Methods II
MAT 351 Probability and Statistics I
MAT 352 Probability and Statistics II

MAT 353 Probability and Statistics III
MAT 354 Multivariate Statistics
MAT 355 Stochastic Processes
MAT 356 Applied Regression Analysis
MAT 357 Nonparametric Statistics
MAT 358 Applied Time Series and Forecasting
MAT 359 Simulation Models and the Monte Carlo Method
MAT 368 Mathematical Methods in Finance

Miscellaneous

MAT 390 Mathematics Reading and Research
MAT 395 Topics in Mathematics
MAT 396 Senior Thesis Research
MAT 397 Mathematical Pedagogy: Theory & Practice
MAT 398 Senior Capstone Seminar
MAT 399 Independent Study

Physics

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Physics

Introduction

The Department of Physics offers courses and concentrations designed to teach students about the fundamental processes that govern our universe. Students interested in majoring in physics can choose from several concentrations.

The **Standard Physics** concentration provides a curriculum that highlights the core areas of theoretical and experimental physics. The **Computational Physics** concentration provides a curriculum that emphasizes the use of computer simulations as a tool to visualize and understand natural phenomena.

In both concentrations student participation in faculty research is an important component of the program that prepares students for independent work in graduate school or industry. Each concentration also prepares students for graduate study, either in physics or in applied sciences such as optics, photonics, scientific computing, engineering, or computer science.

For students interested in engineering, the Physics Department offers a concentration in **Engineering Physics**. In this concentration, students take courses in physics at DePaul and engineering courses at another university, leading to degrees in both Physics and Engineering. Through a joint program with the Illinois Institute of Technology, students can complete a five-year dual-degree program while remaining full-time DePaul students.

Additionally, students who are interested in engineering but who are not interested in the dual degree program will have the scientific basis to complete an engineering program at another institution after the first two years of the physics major curriculum at DePaul.

For students who wish to apply a physics degree to a career outside of physics, the Department of Physics offers a concentration called **Interdisciplinary Physics**. This concentration combines a major in physics with a minor in a second field of the student's choosing. A program in **secondary-teacher education**, offered in conjunction with the School of Education, is also available for students who wish to teach physics at the high school level.

Student participation in faculty research is an important component of the Physics program at all levels. Participation in research can be pursued either through independent study during the academic year or full-time during the summer quarter. Such experience is excellent preparation for independent work in graduate school or industry.

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Physics ▫ Faculty

Faculty

JESUS PANDO

Associate Professor and Chair
University of Arizona

GEORGE CORSO, Ph.D.

Instructor
Northwestern University

SUSAN M. FISCHER, Ph.D.

Associate Professor
University of Notre Dame

CHRISTOPHER G. GOEDDE, Ph.D.

Professor
University of California , Berkeley

JOHN GOLDMAN, M.S.

Instructor
Pennsylvania State University

GABRIELA GONZALEZ-AVILES, Ph.D.

Assistant Professor
Northwestern University

ERIC C. LANDAHL, Ph.D.

Assistant Professor
University of California, Davis

W. ROBERT MATSON, Ph. D.

Assistant Professor
Oklahoma State University

ANDREW MORRISON, Ph.D.

Visiting Professor
Northern Illinois University

ANUJ P. SARMA, Ph.D.

Associate Professor
University of Kentucky

GABI MIHALCEA

Laboratory Coordinator
Kansas State University

Associated Faculty

ANTHONY F. BEHOF, Ph.D.

Associate Professor Emeritus
University of Notre Dame

MARY L. BOAS, Ph.D.

Professor Emeritus
Massachusetts Institute of Technology

ZUHAIR M. EL SAFFAR, Ph.D.

Professor Emeritus
University of Wales, Great Britain

GERARD P. LIETZ, Ph.D.

Associate Professor
University of Notre Dame

EDWIN I. SCHILLINGER. Ph.D.

Professor Emeritus
University of Notre Dame

THOMAS G. STINCHCOMB, Ph.D.
Professor Emeritus
University of Chicago

DONALD O. VAN OSTENBURG, Ph.D.
Professor Emeritus
Michigan State University

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Physics ▫ Major Requirements

Major Requirements

Liberal Studies Requirements
Core Requirements
Concentrations

SEQUENCING OF COURSEWORK

Students interested in majoring in physics, applied computational physics, or pre-engineering should enroll in Physics 170 (University Physics I) and Mathematics 160 (Calculus for Mathematics and Science Majors I) in the Autumn quarter of their first year, provided they are adequately prepared in mathematics.

The sequences of Physics 170, 171, and 172 and Mathematics 160, 161, and 162 are prerequisites to Physics 270, Physics 300 and 301, and Physics 370, which should be taken in the sophomore year together with Mathematics 260 and 261.

It is recommended that student interested in the standard concentration or pre-engineering also take the chemistry sequence (111, 113, 115) in their first year.

Because of the predominance of physics, mathematics, and chemistry sequences in the freshman and sophomore years, it is crucial that Physics and Pre-Engineering majors be advised by faculty in the Physics Department as they enter DePaul. Appointments for advising can be made by contacting the department office at **(773) 325-7330**.

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Physics ▫ Liberal Studies Requirements

Liberal Studies Requirements

First Year Program	
Chicago Quarter	LSP 110 or LSP 111
Focal Point	LSP 112
Writing	WRD 103* and WRD 104*
Quantitative Reasoning & Technological Literacy	Not Required
Sophomore Year	
Multiculturalism in the US	LSP 200
Junior Year	
Experiential Learning	Required
Senior Year	
Capstone	Required*

Learning Domains	
Arts and Literature (AL)	3 Courses Required
Philosophical Inquiry (PI)	2 Courses Required
Scientific Inquiry (SI)	Not Required
Self, Society and the Modern World (SSMW)	3 Courses Required
Religious Dimensions (RD)	2 Courses Required
Understanding the Past (UP)	2 Courses Required
Note:	* Students must earn a C- or better in this course.

Note: Courses offered in the student's primary major cannot be taken to fulfill LSP Domain requirements. If students double major, LSP Domain courses may double count for both LSP credit and the second major. Students who choose to take an experiential learning course offered by the major may count it either as a general elective or the JYEL requirement.

In meeting learning domain requirements, no more than one course that is outside the students major and is cross-listed with a course within the students major, can be applied to count for LSP domain credit. This policy would apply only to those students in pursuit of a BA or BS degree, and not to those who are double majors or earning BFA or BM degrees.

College of Science and Health - Undergraduate Studies ▢ Programs of Study ▢ Physics ▢ Core Requirements

Core Requirements

All concentrations require the Common Core. These core courses consist of:

Physics:

- PHY 170, 171, 172, 270, University Physics IIV
- PHY 300, 301, Methods of Computational and Theoretical Physics III

Mathematics:

- A sequence of courses chosen from
 - MAT 160, 161, 162, Calculus for Mathematics and Science Majors IIII
 - MAT 147, 148, 149, Calculus With Integrated Precalculus IIII
 - MAT 170, 171, 172, Promath Calculus for Mathematics and Science Majors IIII)
- MAT 260, Multivariable Calculus I

College of Science and Health - Undergraduate Studies ▢ Programs of Study ▢ Physics ▢ Concentrations

Concentrations

I. Standard Physics

Common Core and

Physics:

- Four courses chosen from
 - 310 Mechanics I
 - 311 Mechanics II

- 320 Electricity and Magnetism I
- 321 Electricity and Magnetism II
- 360 Quantum Mechanics I
- 361 Quantum Mechanics II
- 370 Electronics
- 380 Experimental Physics or 390 Applied Computational Physics Laboratory
- Four additional Physics courses, at least two at the 300 level, as approved by a departmental advisor

Mathematics:

- 261 Multivariable Calculus II

Allied Field: A one year-long sequence of courses in the sciences, mathematics, or computer science, chosen from the following :

- Biology: BIO 101, 102, 103 General Biology IIII
- Chemistry:
 - CHE 111, 113, 115 General and Analytical Chemistry IIII
- or**
- CHE 131, 133 General Chemistry III
- Environmental Science: BIO 215 Ecology, ENV 216 Earth System Science, ENV 217 Human Impacts on the Environment
- Mathematics: 300-level sequence
- Computer Science: as approved by departmental advisor

II. Computational Physics

Common Core and

Physics:

- 310 Mechanics I
- 320 Electricity and Magnetism I
- 360 Quantum Mechanics I
- 342 Computational Physics
- 390 Applied Computational Physics Laboratory
- Three additional physics courses, at least one at the 300 level, as approved by a departmental advisor

Mathematics:

- 261 Multivariable Calculus II

Computer Science:

- CSC 261and CSC 262 Programming in C/C++ III
- or
- CSC 211and CSC 212 Programming in Java III

Supporting Fields: Three courses at the 200 or 300 level in Computer Science, Computer Graphics, or Scientific Data Analysis and Visualization as approved by departmental advisor.

III. Engineering Physics

DePaul University offers a joint program with the Illinois Institute of Technology (IIT) in physics and engineering. This program allows students to enroll in courses at IIT while remaining full-time DePaul students. Students will receive a degree in Physics from DePaul University and a degree in Mechanical, Aerospace, Electrical, or Computer Engineering from IIT upon completion of the five-year program.

Students can also choose a four-year joint program that leads to a degree only from DePaul or can choose to complete their engineering requirements at another university. Students interested in Engineering Physics or the joint program should promptly consult with a Physics Department advisor for information about scheduling, requirements, and admission to the joint program.

Common Core and

Physics:

- 370 Electronics (for Mechanical or Aerospace Engineering) **or** 340 Thermal Physics (for Electrical or Computer Engineering)
- Either 320 and 321 Electromagnetism **or** 360 and 361 Quantum Mechanics (Electrical Engineering Students should take 320 and 321)
- Two additional physics courses at the 300 or 400 level as approved by advisor

Mathematics:

- 261 Multivariable Calculus II

Computer Science:

- 261 Programming Languages I: C/C++

Chemistry:

- 111, 113 General and Analytical Chemistry III, **or** 131 General Chemistry I

Supporting Fields: Twenty quarter hours at 300/400 level from an accredited Mechanical, Aerospace, Aeronautical, Computer, or Electrical Engineering program.

IV. Interdisciplinary Physics

Intended for students that wish to apply their scientific training in a career outside of physics, this concentration allows students to combine a core physics curriculum with a minor from another field. Possible minors include Journalism or Technical Writing for students interested in a career in science writing, Economics for students interested in business, or Biological Sciences for students interested in biophysics.

Common Core and

Physics: Six additional courses, at least three at the 300 level, as approved by a departmental advisor.

Supporting Fields: Six courses which constitute a minor in a second discipline, as approved by a departmental advisor.

V. Teacher of Physics: Secondary Level

The Department of Physics offers a concentration of study which combines the requirements for a major in physics with certification for teaching physics at the junior high, middle, and senior high school levels.

A student electing such a program should consult the School of Education advisor as well as the Physics advisor as soon as possible after entering DePaul.

Common Core and

Physics:

- 310 Mechanics I
- Five additional Physics courses, chosen from Concentration I or IV

Chemistry:

- 111, 113, 115, General and Analytical Chemistry III

Education:

- 339 Teaching Science in the Secondary School

Mathematics:

- 261 Multivariable Calculus II

SEQUENCING

It is extremely important that students interested in majoring in physics begin the calculus sequence in the first year of study so that they can complete the degree requirements in four years.

Two options are available. The student may place directly into the calculus sequence (MAT 160, 161, 162), or the student may place into MAT 131 (Trigonometry and Pre-calculus). Those students that place into MAT 160 should enroll in that course in their first quarter at DePaul.

Students that place into MAT 131 are strongly advised to take MAT 147, 148, 149 (Calculus with Integrated Precalculus I, II and III) during their first year at DePaul. Another option for these students would be to take MAT 131 and MAT 160 concurrently in the autumn quarter.

Students interested in physics should also enroll in University Physics (PHY 170, 171, 172) during their first year. This sequence, along with the Calculus courses discussed above, are prerequisites to PHY 270, PHY 300, PHY 301, and PHY 370, which should be taken in the sophomore year along with MAT 260 and 261, Multivariable Calculus. All remaining courses are determined by the requirements of the concentration.

Students interested in Engineering Physics or Pre-engineering are urged to consult with a Physics Department advisor as soon as practicable.

The predominance of physics, mathematics, and chemistry sequences in the freshman and sophomore years requires that the majority of Liberal Studies courses be postponed until the junior and senior years. Students should therefore take fewer Liberal Studies courses in the first two years, concentrating instead on those major field requirements that are prerequisites to upper division courses.

College of Science and Health - Undergraduate Studies ▢ Programs of Study ▢ Physics ▢ Minor Requirements

Minor Requirements

The Physics Department offers three minors, each requiring 24 credit hours.

Students may complete a **Physics** minor by completing either PHY 150, 151, and 152 (General Physics III) or PHY 170, 171, and 172 (University Physics III), plus three additional physics courses.

Students may complete an **Electronics** minor by completing PHY 110 (Basic Electronics), PHY 231 (Linear Electric Circuits), PHY 232 (Introduction to Digital Electronics), and three additional physics courses.

Students may complete a **Computational Physics** minor by completing PHY 170, 171, 172, and 270 (University Physics IIV), plus PHY 300 and 301 (Methods of Computational and Theoretical Physics III).

College of Science and Health - Undergraduate Studies ▢ Programs of Study ▢ Physics ▢ Special Programs

Special Programs

PRE-ENGINEERING

The Pre-engineering Program is an important component of the Physics Department curriculum. It is an alternative to the Engineering Physics concentration and is designed to provide students that wish to attend DePaul University for one or two years with the scientific background necessary to complete a degree program in engineering at another institution.

Under this program, DePaul University does not grant a degree but students benefit from the high faculty-to-student ratio in courses and the opportunity to work in faculty research labs.

DOUBLE MAJOR

Students interested in a double major such as Mathematics and Physics may elect a sufficient number of advanced mathematical science courses (generally six to eight) to satisfy the requirements of the concentration of their choice.

RESEARCH AT ARGONNE NATIONAL LABORATORY

College juniors and seniors with a minimum GPA 3.0/4.0 who are U.S. citizens or permanent residents may apply for the Science and Engineering Research Semester (SERS) at Argonne. The SERS program pays a stipend, plus housing and travel.

For more details, contact the Physics Department chair and write to:
Science and Engineering Research Semester
Division of Educational Programs
Argonne National Laboratory
Argonne, IL 60439-4845.

TEACH PROGRAM

This program provides students the opportunity to complete in five years an undergraduate Physics major and a Masters of Education degree with State of Illinois secondary teaching certification in Environmental Science. As a combined degree program of the College of Science and Health and the College of Education, the program is collaboratively developed, governed, and taught by faculty from both units.

Students may apply to the Program during the spring of their junior year. They must complete the Junior Year Experiential Course TCH 320, *Exploring Teaching in an Urban High School*, and meet other application criteria prior to applying; these include completion of at least 16 quarter credit hours at DePaul and a 3.0 GPA. During their senior year, students are required to complete a Program capstone course and three 400-level courses that count toward both their undergraduate and graduate degrees. The Masters year comprises teacher-preparation coursework that culminates with student teaching during Spring quarter. Upon graduation and the fulfilling of State of Illinois Certification requirements (which may require some additional course work in the students major and related fields), students are eligible to be certified to teach Physics at the 6th-12th grade levels.

A full description of the Program can be found on the College of Education website in the graduate course catalog. Students interested in the Program should consult with the designated TEACH Program advisor in their home department.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Physics □ Courses

Courses

Please visit Campus Connection at <https://campusconnect.depaul.edu> for current course information. If you do not have a password for Campus Connection you may log on as a guest. Once you are on Campus Connection please select Course Descriptions followed by the department. Unless otherwise specified, all courses carry 4 quarter hours credit. Courses 150 through 156 are offered primarily for students (such as those in programs in the biological and medical sciences) whose requirements call for a one-year course (with laboratory) in General Physics without calculus.

General (approved for Liberal Studies credit; not for majors)

PHY 104 The Sun and Its Planets
PHY 110 Basic Electronics
PHY 114 Exploring Other Worlds
PHY 120 How Things Work
PHY 150 General Physics I
PHY 151 General Physics II
PHY 152 General Physics III
PHY 155 General Physics
PHY 156 General Physics II
PHY 200 Light and Atoms
PHY 204 Frontiers of the Universe
PHY 205 Einsteins Peculiar Ideas
PHY 206 Sound and Acoustics
PHY 220 The Dynamic Ocean
PHY 223 Light, Color, and Photography
PHY 225 Weather and Climate
PHY 231 Linear Electric Circuits
PHY 232 Introduction to Digital Electronics
PHY 236 The Science of Digital Audio

Major Field Courses

PHY 170 University Physics I
PHY 171 University Physics II
PHY 172 University Physics III
PHY 190 Introduction to MatLab Programming
PHY 270 University Physics IV
PHY 300 Methods of Computational and Theoretical Physics I
PHY 301 Methods of Computational and Theoretical Physics II
PHY 310 Mechanics I
PHY 311 Mechanics II
PHY 315 Chaos in Physical Systems
PHY 320 Electricity and Magnetism I
PHY 321 Electricity and Magnetism II
PHY 325 Laser Physics
PHY 330 Senior Capstone Physical Science
PHY 340 Thermal Physics
PHY 342 Computational Physics
PHY 350 Optics
PHY 356 Fiber Optics
PHY 360 Quantum Mechanics I
PHY 361 Quantum Mechanics II
PHY 366 Radiation Physics
PHY 370 Electronics
PHY 375 Intro to Cosmology
PHY 378 Topics in Applied Physics
PHY 380 Experimental Physics I
PHY 381 Experimental Physics II
PHY 384 Advanced Laboratory
PHY 390 Applied Computational Physics Laboratory
PHY 395 Methods of Theoretical Physics
PHY 398 Reading and Research
PHY 399 Independent Study

Psychology

College of Science and Health - Undergraduate Studies ▫ Programs of Study ▫ Psychology

Introduction

The goal of the Department of Psychology is to provide students with an understanding of the methods and content of scientific and applied psychology.

The primary means of attaining our mission is classroom instruction. We offer courses across a wide range of disciplines within psychology; some of our courses also include laboratories that focus on experimental and statistical work. Some of these courses are beginning to be offered as fully online and as hybrid courses (partially online and partially in the classroom). Further learning opportunities are made available through field work, the Honors Program, Experiential Learning, Independent Study, and Internships. Our Internship Program consists of supervised work placements for which students earn academic credit; potential sites include human service organizations as well as community and industrial settings.

Psychology majors must select one of the six B.A. concentrations: Standard, Human Development, Human Services, Industrial/Organizational, Community, Comprehensive Evening Program, or select one of the two Bachelor of Science concentrations: General Bachelor of Science or Cognitive Neuroscience. Three psychology minors are available in Experimental, Industrial/Organizational, and Applied areas.

After completing any of the concentrations, a psychology major should be able to read and understand behavioral science data, design and conduct rudimentary psychological research studies, and apply research findings to everyday situations. These skills are applicable to a wide variety of occupations and professions. Psychology as a major provides excellent opportunities for students planning to go to graduate or professional

school. Psychology as a minor provides a flexible complement to other majors.

There are 32 tenured and tenured-track faculty in the department, nearly half of whom are women and twenty percent of whom are minorities. In addition, the Chicago area provides highly qualified part-time faculty who teach specialized courses. The areas of faculty interest range from basic laboratory research in cognition to on-site applied research in the prevention of adolescent pregnancy.

In addition to the undergraduate curriculum, the department houses five Ph.D. programs in the areas of Clinical Child, Clinical Community, Community, Experimental, and Industrial/Organizational psychology. The department also offers a terminal M.S. program in general psychology as well as a combined B.A./M.S. program in Industrial/Organizational psychology. The department draws upon the metropolitan Chicago area when placing students in practica, internships, and jobs. Additionally, Chicago hosts the annual convention of the Midwestern Psychological Association and meetings of other professional organizations, providing our advanced students ample access to opportunities for scholarly participation in the field of psychology.

Extensive facilities are available to support the departmental programs. The department's offices, classrooms, laboratories, and the DePaul Family and Community Services center occupy four floors of Byrne Hall. University facilities include a networked library and additional computer labs. The DePaul Clinical Child Graduate program was recognized by American Psychological Association as the best training program in the country for 2006.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Psychology □ Faculty

Faculty

JERRY W. CLELAND, Ph.D.,
Professor and Chair
Loyola University, Chicago

DAVID ALLBRITTON, Ph.D.,
Associate Professor
Yale University

SUZANNE BELL, Ph.D.,
Associate Professor
Texas A&M University

KAREN S. BUDD, Ph.D.,
Professor
University of Kansas

LINDA A. CAMRAS, Ph.D.,
Professor
University of Pennsylvania

JOCELYN S. CARTER, Ph.D.,
Assistant Professor
Vanderbilt University

DOUGLAS CELLAR, Ph.D.,
Associate Professor
University of Akron

JESSICA CHOPLIN, Ph.D.,
Assistant Professor
University of California, Los Angeles

SHELDON COTLER, Ph.D.,
Professor

Southern Illinois University

RALPH ERBER, Ph.D.,
Professor and Associate Dean
Carnegie Mellon University

JOSEPH FERRARI, Ph.D.,
Professor
Adelphi University

PATRICK FOWLER, Ph.D.,
Assistant Professor
Wayne State University

PABLO GOMEZ, Ph.D.,
Associate Professor
Northwestern University

KATHRYN E. GRANT, Ph.D.,
Professor
University of Vermont

JANE A. HALPERT, Ph.D.,
Professor
Wayne State University

GARY W. HARPER, Ph.D.,
Professor
Purdue University

FREDERICK H. HEILIZER, Ph.D.,
Associate Professor
University of Rochester

LEONARD A. JASON, Ph.D.,
Professor
University of Rochester

CHRISTOPHER B. KEYS, Ph.D.,
Professor
University of Cincinnati

YAN LI, Ph.D.,
Assistant Professor
Duke University

THERESA LUHRS, Ph.D.,
Senior Long-Term Teaching Professional
DePaul University

SUSAN D. MCMAHON, Ph.D.,
Professor
DePaul University

JOSEPH A. MIKELS, Ph.D.
Assistant Professor
University of Michigan

ANTONIO POLO, Ph.D.,
Assistant Professor
University of California, Los Angeles

CHRISTINE REYNA, Ph.D.
Associate Professor and Associate Chair

University of California, Los Angeles

SHEILA C. RIBORDY, Ph.D.,
Professor
University of Kansas

W. LAVOME ROBINSON, Ph.D.,
Professor
University of Georgia

BERNADETTE SANCHEZ, Ph.D.,
Associate Professor
University of Illinois-Chicago

ALICE STUHLMACHER, Ph.D.,
Professor
Purdue University

ANNETTE TOWLER, Ph.D.,
Associate Professor
Rice University

NATHAN R. TODD, PH.D.
Assistant Professor
University of Illinois

MIDGE WILSON, Ph.D.,
Professor and Associate Dean
University of North Carolina

SANDRA VIRTUE, Ph.D.
Assistant Professor
University of Minnesota

EDWIN S. ZOLIK, Ph.D.,
Professor Emeritus
Catholic University of America

College of Science and Health - Undergraduate Studies □ Programs of Study □ Psychology □ Major Requirements

Major Requirements

Liberal Studies Requirements
Common Core
Bachelor of Arts
Bachelor of Science

College of Science and Health - Undergraduate Studies □ Programs of Study □ Psychology □ Liberal Studies Requirements

Liberal Studies Requirements

First Year Program	
Chicago Quarter	LSP 110 or LSP 111

Focal Point	LSP 112
Writing	WRD 103* and WRD 104*
Quantitative Reasoning & Technological Literacy	LSP 120 and LSP 121 (Note: See information below)
Sophomore Year	
Multiculturalism in the US	LSP 200
Junior Year	
Experiential Learning	Required
Senior Year	
Capstone	Required*
Learning Domains	
Arts and Literature (AL)	3 Courses Required
Philosophical Inquiry (PI)	2 Courses Required
Scientific Inquiry (SI)	3 Courses Required (Note: One course must be a lab)
Self, Society and the Modern World (SSMW)	1 Course Required
Religious Dimensions (RD)	2 Courses Required
Understanding the Past (UP)	2 Courses Required
Note:	* Students must earn a C- or better in this course.

Quantitative Reasoning and Technological Literacy:

Readiness for LSP 120 is determined by the math placement test taken online after admission. Students may need to take developmental coursework prior to LSP 120. The LSP 120 requirement may be waived by credit already earned for advanced math coursework or by passing a dedicated proficiency exam. Students who complete both LSP 120 and LSP 121 take one less Learning Domain course. Students may not apply the course reduction to any Domain where only one course is required, and if taken within the SI Domain, the reduction cannot be applied to the SI Lab requirement.

Note: Courses offered in the student's primary major cannot be taken to fulfill LSP Domain requirements. If students double major, LSP Domain courses may double count for both LSP credit and the second major. Students who choose to take an experiential learning course offered by the major may count it either as a general elective or the JYEL requirement.

In meeting learning domain requirements, no more than one course that is outside the students major and is cross-listed with a course within the students major, can be applied to count for LSP domain credit. This policy would apply only to those students in pursuit of a BA or BS degree, and not to those who are double majors or earning BFA or BM degrees.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Psychology □ Common Core

Common Core

Psychology: 105 Introductory Psychology I; 106 Introductory Psychology II; 240 Statistics I; 241 Research Methods I; and 242 Research Methods II. Psychology 105 and 106 are not sequential, i.e., one is not a prerequisite for the other. They may be taken in either order. For the research sequence, PSY 240 must be taken first; PSY 241 and PSY 242 may be taken in either order. A special note: PSY 340 Statistics II, an elective course, may be taken immediately after the completion of PSY 240. **Capstone:** PSY 361 History and Systems is the required senior capstone. Students who are double majors take only one capstone in either major. University Honors students are not required, however it is recommended.

Bachelor of Arts

The program consists of the common core plus eight additional courses in a concentration area. Bachelor of Arts students are required to take fourteen general electives which may be psychology and/or other department courses. Students may choose to complete a minor or double-major. Bachelor of Arts students must fulfill the Modern Language requirement.

Upon faculty approval psychology majors may register for the following psychology courses: 396 Psychology Honors, 397 Experiential Psychology/Psychology Research, 398 Reading and Research, and 399 Independent Study.

BACHELOR OF ARTS CONCENTRATIONS:

I. STANDARD CONCENTRATION

Psychology: Common Core plus 342 Research Methods III; 347 Social Psychology; 351 Theories of Personality; 377 Physiological Psychology; and *four* additional Psychology courses. Psychology courses must be numbered 317 and above to count toward major field.

II. HUMAN DEVELOPMENT CONCENTRATION

Psychology: Common Core plus 333 Child Psychology; 334 Adolescent Psychology; 347 Social Psychology; and *five* additional Psychology courses. Psychology courses must be numbered 317 and above to count toward major field.

III. HUMAN SERVICES CONCENTRATION

Psychology: Common Core plus 333 Child Psychology; 347 Social Psychology; 353 Abnormal Psychology; 357 Applied Psychology I (winter quarter/junior year); 358 Applied Psychology II (spring quarter/junior year); and 395 Field Work/Internship which is taken three times in the students senior year .

IV. INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY CONCENTRATION

Psychology: Common Core plus 380 Industrial/Organizational Psychology; *two* courses from 355 Groups and Organizations, 381 Personnel Psychology, 382 Organizational Behavior, 383 Psychology of Design, 384 Consumer Behavior and Advertising, and 385 Training and Development in Organizations; either 343 Introduction to Psychological Measurement or 340 Statistics II; and *four* additional Psychology courses. Psychology courses must be numbered 317 and above to count toward major field.

V. COMMUNITY CONCENTRATION

Psychology: Common Core plus PSY 354 Community Psychology, PSY 356 Principles of Field Research and Action (spring/junior year), PSY 359 Field Work in Community Research and Action (which is taken twice: autumn/senior year and winter/senior year); One diversity course from PSY 325 Psychology of Women, PSY 326 Psychology of Men, PSY 345 Cultural Issues in Psychology, and PSY 346 Psychology of African-American Child; One course from PSY 347 Social Psychology or PSY 380 Industrial and Organizational Psychology; One course from PSY 333 Child Psychology and PSY 334 Adolescent Psychology; and One course from PSY 351 Theories of Personality and PSY 353 Abnormal Psychology.

VI. COMPREHENSIVE EVENING PROGRAM

Psychology: Common Core plus *two* courses from 355 Groups and Organizations, 380 Industrial and Organizational Psychology, 381 Personnel Psychology, 382 Organizational Behavior and 385 Training and Development in Organizations; *two* courses from 302 Personal Adjustment and Mental Health, 351 Theories of Personality, and 353 Abnormal Psychology; *two* courses from 303 Human Development, 347 Social Psychology, and 360 Theories of Learning and Cognition; and *two* electives from the remaining above courses.

Bachelor of Science

I. BACHELOR OF SCIENCE (GENERAL)

The program consists of the common core , five required psychology courses, and three psychology electives. Bachelor of Science students must also fulfill the five course major-level Biology and/or Math requirement, plus nine general electives.

Psychology: Common Core plus PSY 340 Statistics II (this course may be taken immediately after the completion of PSY 240 Statistics I), 342 Research Methods III, 343 Introduction to Psychological Measurement, 360 Theories of Learning and Cognition; 377 Physiological Psychology; and *three* additional major-level psychology courses numbered 317 and above.

NOTE: An exceptional student who has completed the required courses in Experimental Psychology may, upon consent of his advisor and the chairman, be admitted in the senior year to certain 400-level courses described in the Graduate School Bulletin.

Allied Fields: *Twenty* quarter hours in major-level biology and/or mathematics are required. This requirement is to be developed in consultation with the departmental advisor. The student is urged to devote some general elective hours to courses in disciplines other than his/her major.

In addition, all psychology majors are encouraged to engage in individual research projects with the supervision of faculty. Upon faculty approval psychology majors may register for the following psychology courses: 396 Psychology Honors, 397 Experiential Psychology/Psychology Research, 398 Reading and Research, and 399 Independent Study.

II. BACHELOR OF SCIENCE - COGNITIVE NEUROSCIENCE CONCENTRATION

The program consists of the common core, five required psychology courses, and three psychology electives. Students must also fulfill the allied field requirement, plus one BIO elective; and 8 general electives.

Psychology: Common core plus five required psychology courses: PSY 340 Statistics II (this course may be taken immediately after the completion of PSY 240 Statistics I), PSY 342 Research Methods III, PSY 343 Introduction to Psychological Measurement, PSY 360 Theories of Learning and Cognition, and PSY 377 Physiological Psychology. The three additional psychology electives should be chosen from the following: PSY 348 Social Cognition & Mental Control, PSY 353 Abnormal Psychology, PSY 363 Alcoholism, Drug Addiction and Recovery, PSY 364 Health Psychology & Stress Management, PSY 373 Happiness, Judgement and Decision Making, and PSY 398 Topics in Neuroscience.

Allied Fields: There are five required Biology courses: Biology 191, Biology 192, Biology 193 (formerly Bio 101, 102, 103), plus; BIO 250 Cell Biology and BIO 339 Cellular Biology. In addition, one BIO elective must be selected from the following list: BIO 206 Brain and Behavior, BIO 239 The Brain: Biology and Behavior, BIO 390 Special Topics, BIO 340 Systems Neurobiology, BIO 375 Introduction to Pharmacology, BIO 220 Biotechnology, and BIO 230 Epidemiology.

The first year chemistry 130, 131, 132 (formerly CHE 111, 113, 115) is recommended but not required for BIO 250 and BIO 339.

Open elective credit also is required in each concentration to meet the minimum graduation requirement of 192 hours.

College of Science and Health - Undergraduate Studies ▯ Programs of Study ▯ Psychology ▯ Minor Requirements

Minor Requirements

For students who are majoring in another department, the Psychology Department offers *three* minors, each requiring *six* courses overall in Psychology.

Experimental minor :

PSY 105, PSY 106 and at least *two* courses in Experimental/Biological foundations (PSY 360, 373, 377) and two PSY classes. It is recommended that all classes be major level (317 and above).

Industrial Organizational minor:

PSY 105, PSY 106, 380 and one more course from the following list: PSY 355, 381, 382, 384, 385 and two additional PSY electives. It is recommended that all classes be major level (317 and above).

Applied Psychology minor:

PSY 105, 106 and at least two from the following list: PSY 317, 345, 347, 348, 353, 363, 364, 366 and two additional PSY electives. It is recommended that all classes be major level (317 and above).

College of Science and Health - Undergraduate Studies □ Programs of Study □ Psychology □ Special Programs

Special Programs

PROGRAM IN INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY

The B.A./M.S. Program in Industrial/Organizational Psychology is a five-year program in which the student can earn both a B.A. and an M.S. in Psychology. The student will begin taking graduate level courses in the senior year and complete requirements for an M.S. in Psychology during the fifth year of study. Students should meet with an I/O area advisor as soon as possible ideally, no later than the end of the sophomore year. Applications for admission to the M.S. portion of the program are available from the I/O Area Director and must be received along with supporting transcripts and Graduate Record Exam scores by June 1 of the junior year. The Liberal Studies requirements and the common core in Psychology must be completed prior to admittance to the program. An overall GPA of 3.2 or better is required to be considered for the program.

Undergraduate courses: The same courses as the B.A. Industrial/ Organizational Concentration (see description above); however, additional undergraduate psychology electives are substituted for two undergraduate courses in Industrial/Organizational beyond 380. Graduate courses: 404 Learning Processes; 430 Advanced Social Psychology; 410 and 411 Advanced Statistics I and II; 420 Advanced Research Methodology; and 597 Masters Thesis Research. A total of five graduate-level Industrial/Organizational courses are selected in consultation with a program advisor. Note: Please see the Graduate Bulletin for course descriptions.

TEACH PROGRAM

This program provides students the opportunity to complete in five years an undergraduate Psychology major and a Masters of Education degree with State of Illinois secondary teaching certification in Social Science. As a combined degree program of the College of Science and Health and the College of Education, the program is collaboratively developed, governed, and taught by faculty from both units.

Students may apply to the Program during the spring of their junior year. They must complete the Junior Year Experiential Course TCH 320, *Exploring Teaching in an Urban High School*, and meet other application criteria prior to applying; these include completion of at least 16 quarter credit hours at DePaul and a 3.0 GPA. During their senior year, students are required to complete a Program capstone course and three 400-level courses that count toward both their undergraduate and graduate degrees. The Masters year comprises teacher-preparation coursework that culminates with student teaching during Spring quarter. Upon graduation and the fulfilling of State of Illinois Certification requirements (which may require some additional course work in the students major and related fields), students are eligible to be certified to teach Social Studies at the 6th-12th grade levels.

A full description of the Program can be found on the College of Education website in the graduate course catalog. Students interested in the Program should consult with the designated TEACH Program advisor in their home department early in their undergraduate career.

College of Science and Health - Undergraduate Studies □ Programs of Study □ Psychology □ Courses

Courses

Please visit Campus Connection at <https://campusconnect.depaul.edu> for current course and prerequisite information. If you do not have a password for Campus Connection you may log on as a guest. Once you are on Campus Connection please select Course Descriptions followed by the department.

Introductory

PSY 105	Introductory Psychology I
PSY 106	Introductory Psychology II
PSY 210	Psychology of Business and industry
PSY 215	Human Sexuality
PSY 216	Mental Health Problems Contemporary Society
PSY 218	Psychological Problems of Contemporary Family

Human Development

- PSY 303 Human Development
- PSY 333 Child Psychology
- PSY 334 Adolescent Psychology
- PSY 346 Psychology of the African-American Child
- PSY 367 Psychology of Exceptional Children
- PSY 370 Social and Emotional Development

Social and Personality

- PSY 317 Psychology of Interpersonal Relationship
- PSY 347 Social Psychology
- PSY 348 Social Cognition and Mental Control
- PSY 351 Theories of Personality
- PSY 355 Groups and Organizations
- PSY 363 Alcoholism, Drug Addiction and Recovery
- PSY 392 Psychology of Alienation

Applied

- PSY 302 Personal Adjustment and Mental Health
- PSY 345 Cultural Issues in Diversity
- PSY 353 Abnormal Psychology
- PSY 354 Community Psychology
- PSY 356 Principles of Field Research and Action
- PSY 357 Applied Psychology I
- PSY 358 Applied Psychology II
- PSY 359 Field Work in Psychological Research and Action
- PSY 364 Health Psychology and Stress Management
- PSY 366 Behavior Problems of Children
- PSY 368 Child Abuse and Neglect
- PSY 393 Psycholinguistics

Biological and Experimental Foundations

- PSY 360 Theories of Learning and Cognition
- PSY 361 History and Systems of Psychology
- PSY 362 Seminar in Cognition
- PSY 373 Happiness, Judgment and Decision-making
- PSY 375 Sensation and Perception
- PSY 377 Physiological Psychology
- PSY 378 Comparative Psychology

Industrial/Organizational Psychology

- PSY 355 Groups and Organizations
- PSY 380 Industrial and Organizational Psychology
- PSY 381 Personnel Psychology
- PSY 382 Organizational Behavior
- PSY 383 Psychology of Design
- PSY 384 Consumer Behavior and Advertising
- PSY 385 Training and Development in Organizations

Statistics and Research Methodology

- PSY 240 Statistics I
- PSY 241 Research Methods I
- PSY 242 Research Methods II
- PSY 340 Statistics II
- PSY 341 Methods in Qualitative Research
- PSY 342 Research Methods III
- PSY 343 Introduction to Psychological Measurement
- PSY 372 Research Methods in Social Psychology

Special Topics

- PSY 213 Lesbian, Gay, Bisexual and Transgender Psychology
- PSY 220 Latino/a Psychology
- PSY 221 Asian American Psychology

PSY 280	Contemporary Issues
PSY 305	Psychology and Social Justice
PSY 306	Service Learning
PSY 310	Connecting w/ Youth through Research, Advocacy, and Service
PSY 311	Connecting w/ Youth through Research, Advocacy, and Service
PSY 312	Connecting w/ Youth through Research, Advocacy, and Service
PSY 325	Psychology of Women
PSY 326	Psychology of Men
PSY 394	Advanced Topics in Psychology
PSY 395	Field Work/Internship
PSY 396	Honors in Psychology
PSY 397	Experiential Learning/Psychology Research
PSY 398	Reading and Research
PSY 399	Independent Study

Course Descriptions

College of Science and Health - Undergraduate Studies ▢ Course Descriptions

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