

Kakos School of Science - General Information

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Historical Note

Since its establishment as a separate school of Manhattan College in 1993, the Kakos School of Science has maintained its traditional ties with the School of Liberal Arts while striving to assure the continuation of Manhattan's tradition of excellence in education in Science. This tradition is reflected in the success of Manhattan's Science graduates and the position of Manhattan among a select number of colleges which are recognized as important sources of the nation's professional scientists.

Mission Statement

We are a vibrant community of student and faculty scholars working together to advance cutting-edge research, teaching and learning. We combine Lasallian values (<https://manhattan.edu/about/lasallian-catholic.php>), a person-centered approach to education, and the scientific method in order to find innovative solutions to modern problems and challenges, building a more compassionate and just world. To develop well-rounded scientists who value compassion as highly as innovation, we will:

- Build our community of scholars within the Kakos School of Science through the continued recruitment of diverse and outstanding faculty and students.
- Develop high quality faculty and students by providing them with professional and career development opportunities.
- Retain high quality faculty and students through enhanced and streamlined career pathway and student success efforts.

To these ends, each of our programs includes a core curriculum with courses in humanities, natural science, behavioral and social science. Class size is kept small, so students get individual attention from our expert faculty members.

Curriculum and Programs

Undergraduate studies in the Sciences are most challenging, but provide a unique opportunity to learn and develop problem-solving and analytical skills while gaining a deeper understanding and appreciation of physical laws and their applications. The choice of a Science major is based upon the individual's interests, educational and career goals, and abilities. Majors may be chosen from several areas: biology, biochemistry, chemistry, computer science, environmental science, game design and production: coding, mathematics, and physics. Elective components of the major curricula provide the opportunity to explore other areas of interest, enhance knowledge in a specialized area of the major, or construct minor sequences in other disciplines. Minors may be earned in all of the departments of the Kakos School of Science. At Manhattan, our Science curricula contain a strong core component in the Liberal Arts to provide a foundation

for our graduates to contend with the humanistic and ethical issues they will face after graduation. Once a student is admitted to Manhattan College, all major, minor, and core courses should be taken at Manhattan College. Under unusual circumstances, and with the approval of the Dean after consultation with the Chair of the student's major department, courses may be approved to be taken at another institution.

A minimum grade of C is necessary in any course used to satisfy major or minor requirements.

Students may only enroll in courses offered by the Kakos School of Science twice to earn a passing grade of C.

Major Fields of Study

The Kakos School of Science provides the eight major fields of study that are listed below.

- Biochemistry
- Biology
- Chemistry
- Computer Science
- Environmental Science
- Game Design and Production: Coding
- Mathematics
- Physics

The Kakos School of Science is unique among the five traditional undergraduate schools in that it offers each of its majors in a Bachelor of Science track as well as a Bachelor of Arts track. Although program differences will vary from major to major, the Bachelor of Arts track is generally less restrictive allowing greater flexibility for students pursuing a second major or minors.

Second Majors

By carefully constructing their plan of study, students can pursue a second major either within the Kakos School of Science or in any discipline in the other schools in Manhattan College. Students wishing to complete a second major must complete the requirements for both majors. Pursuing a second major might require taking courses during the summer and/or additional expense. If you are interested in doing a second major, please consult with the Assistant Dean.

Minor Fields of Study

In order to provide an opportunity for students to broaden their educational experiences, students in Manhattan College are able to minor in any of the following areas:

- Astronomy
- Biochemistry
- Biology
- Chemistry

- Computer Science
- Environmental Science
- Mathematics
- Physics

Minors in the Kakos School of Science consist of a minimum of fifteen credits in the discipline. Details of these programs may be found under the separate headings for each department in the Kakos School of Science.

Science students who are interested in pursuing a minor outside the Kakos School of Science must contact the chair of the respective department for further information.

Program Concentrations

In addition to the regular course of study, the programs of study in the Kakos School of Science deliver focused instruction in subjects of contemporary interest such as:

- Applied Mathematics
- Machine Learning & Intelligence
- Nanoscience
- Theoretical Physics

For students interested in health careers, Manhattan College also offers a Pre-Health Concentration. Please see this link (<http://catalog.manhattan.edu/undergraduate/science/prehealth/>) for more information.

Student Course Load

In the Kakos School of Science, a student's course load is determined by the major selected. Full-time status is considered 12 credits or higher. Loads vary from semester to semester. Students should consult the Program of Study for their selected major. Enrolling in more credits than the prescribed major could incur over credit charges.

Master's Degree Programs

In addition to all of the undergraduate degrees, the Kakos School of Science also offers graduate degrees in Computer Science and Mathematics. Academically qualified undergraduate students can begin taking graduate courses in their senior year. It may then be possible to obtain a Master's degree with only an additional year of study. Please consult the Graduate Catalog (<http://catalog.manhattan.edu/graduate/science/>) for more information.

Kakos School of Science Curriculum

To complete their degree, students in the Kakos School of Science have various requirements broken down into different categories: First Year Seminar, Liberal Arts Core, Cognate Requirements, Major Requirements, and Free Electives. If a student elects to do a minor then they would also have Minor Requirements.

The First Year Seminar is the same for all majors in the Kakos School of Science and consists of SCI 100 Science First Year Seminar I and SCI 101 Science First Year Seminar

II. The Liberal Arts Core is generally the same for all majors in the Kakos School of Science and consists of the courses listed below. The Cognate Requirements, Major Requirements, and Free Electives vary from major to major. These requirements can be found under each department.

Liberal Arts Core Requirements

College Writing (ENGL 110 First Year Composition or ENGL 210 Advanced First Year Composition)		3
Religious Studies (three courses in RELS) ¹		9
Modern Language (a full year requirement of the same language)		6
ENGL 150	Roots: Literature	3
HIST 150	Roots: History	3
PHIL 150	Roots: Philosophy	3
One of the following:		3
LLRN 102	Classical Origins: West Culture	
PHIL 213	Introduction to Logic	
PHIL 214	Critical Thinking	
One of the following:		3
ART 150	Roots: Art	
MUSC 150	Roots: Music	
Two of the following social sciences:		6
ECON 150	Roots: Economics	
POSC 150	Roots: Government	
SOC 150	Roots: Sociology	
PSYC 150	Roots: Psychology	
Total Credits		39

¹ *RELS 110 The Nature and Experience of Religion, a 200 level RELS course in Catholic Studies, an upper level RELS course in Global Studies or Contemporary Issues.*

Kakos School of Science Honors Program

The Kakos School of Science Honors Program is designed to provide talented, highly qualified, and highly-motivated science and mathematics undergraduate students with an enriching experience that develops rigorous and cutting-edge scientific skills, select opportunities with top research faculty, leaders, and mentors, and exposure to and lived experience with Lasallian values.

Students with majors in the Kakos School of Science are accepted into the Honors Program based on academic performance, involvement in extracurricular activities, and potential for leadership and scholarship. They join a community of students who are focused on academic and leadership achievement. They enter a curriculum designed to enhance their science and interpersonal skills through seminar-style core classes,

specialized major courses, and a senior capstone research experience/thesis. Additional career-related networking activities are also offered.

The curriculum consists of at least 22 credits of Honors courses (at least 8 courses) to be taken over 4 years at Manhattan College. Please note that all of the Honors courses, excluding the 1 credit Honors Thesis Writing course, are enriched versions of courses in a student's program of study and are *not* additional courses. At least two of those Honors courses must be outside the student's major department, one of which may be outside the Kakos School of Science. The remaining courses will be in the major department and will include at least 3 credits of Honors Thesis Research in the senior year. Students will give a presentation on their thesis. All students must maintain a cumulative GPA of at least 3.5 at Manhattan College to remain in the program.

For more information on the Kakos School of Science Honors Program, visit our website at: School of Science Honors Program (<https://manhattan.edu/academics/schools-and-departments/school-of-science/School-of-Science-Honors-Program.php>).

Academic Advising

Academic advisement for students in Science is conducted by the Assistant Dean in conjunction with the Department Chairs and faculty. The Assistant Dean counsels all students throughout their academic careers on not only policy and procedures, but any challenges - personal and academic - that may arise in a student's time at the College. All students should select their major by the end of their freshman year. Programs of study are approved each semester by the Assistant Dean. Additionally, Department Chairs and faculty are responsible for advising all students in their majors. The faculty are closely associated with professional organizations and industrial groups carrying out related activities, thus assuring maximum service to the student in preparing to meet the requirements for the degree, for advanced professional study, and for career placement.

Science students who plan to enter graduate health professions programs should consult with the Pre-Health Professions Advisor. The Advisor will guide the students through the preparation and application process required for admission to health related schools.

Academic Standing

To be considered in good academic standing, all students in the Kakos School of Science must maintain a cumulative GPA of at least 2.0 regardless of class level. Grade point averages are computed at the end of each semester or term.

Students are expected to make adequate progress towards fulfilling their degree requirements every term. Students who are not making adequate progress are subject to academic sanctions.

Study Abroad

Students interested in studying abroad should discuss their interest with the Assistant Dean by the beginning of sophomore year. Students may opt to study abroad for either a full semester or on one of the College's short-term programs during the winter intersession or summer break. If planning to go abroad for a full semester, it is best to plan the

semester of study abroad for the sophomore or junior year. Further information about study abroad opportunities is available through the Study Abroad Office.

Honor Societies and Research Opportunities

A number of national honor societies have been established on campus in order to encourage and recognize the achievements of Manhattan College students.

Phi Beta Kappa, founded in 1776, is dedicated to recognizing excellence in the liberal arts and sciences. The Manhattan College chapter, The Upsilon of New York, was established in 1971. Election to Phi Beta Kappa is generally regarded as a mark of the highest distinction.

Sigma Xi is a national honor society founded in 1896 to encourage research in the sciences. Students are elected to membership on the basis of their accomplishments in research and their enthusiasm for continued scientific investigation.

Departments of the Kakos School of Science sponsor local chapters of national honor societies in their disciplines as well: Beta Beta Beta (Biology), Gamma Sigma Epsilon (Chemistry and Biochemistry), Tau Sigma Kappa (Computer Science), Pi Mu Epsilon (Mathematics), Sigma Pi Sigma (Physics), and Alpha Epsilon Delta (Health Pre-Professional).

The Science faculty are dedicated to encouraging student research efforts. Manhattan's small classes and close student-faculty interactions generate an atmosphere which has produced many important student-faculty research collaborations. Every summer over twenty students receive financial support to conduct research with their faculty on campus.

The students' research is presented at regional and national conferences and potentially leads to published papers in professional journals.

Professional and Career Development

Prelegal Advisory Committee

While there is no single major or minor here at Manhattan College that is a prerequisite for applying to law school, students who do well in the application process have strong analytic and problem-solving skills, critical reading skills, writing skills, communication skills, research skills, task management skills and a dedication to public service and promotion of justice, according to the American Bar Association. It is important to work with the pre-law advisors throughout the undergraduate process in order to be prepared for the law school application process. Contact the Center for Graduate and Fellowship Advisement in Thomas Hall 3.50, 718-862-7399, gfsa@manhattan.edu, for more information.

Preparation for Medicine, Dentistry and other Health Professions

Required coursework for admission into schools of the health professions are established by the Association of American Medical Colleges, the American Dental Association, and other professional associations in the health fields. The pre-professional requirements

in the sciences are met within the context of a broad liberal education. Pre-professional students are expected to maintain an average of at least a B in all their courses.

Successful applicants to schools of the health professions demonstrate academic excellence, strong analytical skills, an aptitude for science, and a commitment to service.

In general, there is no preferred major for any Health Profession. The requirements vary, but all require numerous courses in the Sciences and Liberal Arts, including Biology, Chemistry, and Mathematics. This information can be found at the Center for Graduate School and Fellowship Advisement (CGSFA) (<http://catalog.manhattan.edu/undergraduate/academicssupportandresources/fellowshipadvisement/>).

Students seeking entry to health professions schools are encouraged to enroll in the P (<http://catalog.manhattan.edu/undergraduate/science/prehealth/>)re-Health Concentration (<http://catalog.manhattan.edu/undergraduate/science/prehealth/>). Students are not required to join the concentration in order to receive a Health Professions Advisory Committee (HPAC) evaluation letter, however participation is recommended in order to be included in the competitive cohort that applies to health profession schools each year.

Health Professions Advisory Committee

The Health Professions Advisory Committee (HPAC) is a body of faculty members from several schools who give guidance to students interested in preparing for careers in medicine, dentistry and other health professions. The Committee advises students on the selection of programs of study that will equip them with specialized pre-professional courses in the sciences and with a broad liberal education to prepare them for effective participation in the health-care community. Further information is available from the Chair of the HPAC, Dr. Bruce Liby of the Physics and Astronomy Department.