

Art History – Biochemistry

ARTH 450 Modern Scandinavian Art History (4 credits)

The golden age of Scandinavian art history witnessed the establishment of national art academies and museums in the nineteenth century and the amassing of avant garde collections of European masters and non-Western art in the twentieth, along with the emergence of prize-winning Nordic designers in industrial settings. Although on the periphery of Europe, Scandinavian masters' art reflected contemporary styles but also displayed the austerity and fantasy of traditional folk designs which evolved out of the poverty and isolation of its largely rural population in the centuries before the modern era. The art of the five Nordic countries provides a model for examining the integration of ethnic folk art motifs with mainstream European styles as well as the acceptance of both fine and applied arts as equal in importance. In addition, indigenous art of the Sami and the Greenlandic Inuit enriched folk and international design motifs. The art of those artists who participated in the great emigration of Scandinavian peoples to North America in the late nineteenth into twentieth centuries will also be examined in relation to the influences of mother country and the American artistic mainstream.

Prerequisite: one ARTH course or permission of instructor

ARTH 475, 476 Experiential Learning (2 credits)

ARTH 477, 478 Experiential Learning (4 credits)

These courses allow students to gain credit for certain non-classroom experiences. (These do not include studio art courses.) Normally open to junior and senior students. Permission of the department chair is required. Credit for experience is normally sought prior to its occurrence. See the complete description of these courses at the beginning of the "Curricula" section of this catalog.

Prerequisite: previous course or courses in art history

ARTH 481 Senior Paper and Presentation (4 credits)

During the senior year, art history majors are expected to write a major research paper with an abstract and to describe the results of their research in an oral presentation to a departmental symposium to be held prior to graduation. The purpose of this paper and presentation is to allow the student to demonstrate competency in art historical methodology and to gain experience from presenting the results to a group of peers and faculty. The topic and instructor must be chosen in consultation with the department chair during the semester prior to writing the senior paper.

Prerequisite: ARTH 110 (or 151 and 152 from previous catalog) and 211

ARTH 483, 484 Seminar (2 credits)

ARTH 485, 486 Seminar (4 credits)

See the description of these courses at the beginning of the "Curricula" section of this catalog.

ARTH 487, 488 Topics (2 credits)

ARTH 489, 490 Topics (4 credits)

The subject matter of these courses will vary from year to year, but will not duplicate existing courses. Descriptions of these courses are available in the Searchable Class Schedule on Murphy Online,

<https://banner.stthomas.edu/pls/banner/prod/bwckschd>.

ARTH 491, 492 Research (2 credits)

ARTH 493, 494 Research (4 credits)

See the description of these courses at the beginning of the "Curricula" section of this catalog.

ARTH 495, 496 Individual Study (2 credits)

ARTH 497, 498 Individual Study (4 credits)

See the description of these courses at the beginning of the "Curricula" section of this catalog.

Prerequisite: permission of the instructor or supervisor and previous work in art history

Biochemistry

College of Arts and Sciences, Interdisciplinary Program

O'Shaughnessy Science Hall (OSS) 201, (651) 962-5599

Marsh (CHEM) committee chair; Advisory committee: Brom (CHEM), Ditty (BIOL), Emms (BIOL), Kay (BIOL), Ippoliti (CHEM)

Biochemistry is an interdisciplinary major that draws upon faculty and courses in the departments of Biology and Chemistry. The major is administered by a committee of representatives from both departments and is designed to meet the needs of students interested in gaining an understanding of the chemistry of life processes. Students who fulfill the requirements will receive a Bachelor of Science (B.S.) degree in biochemistry. The program is appropriate for students pursuing graduate studies in biochemistry, medicine, or related fields. The major is also suitable for students interested in positions in biotechnology after graduation.

Entering students interested in this major should inform Academic Counseling. Students are advised to begin their introductory biology, chemistry, and mathematics coursework in their freshman year. The Biochemistry Committee will coordinate advising. Students should talk with an adviser as soon as possible following their freshman year in order to select the elective courses that will be most appropriate to their interests. A research course in

either biology or chemistry can be counted as one of the electives and is highly encouraged if the student will be seeking admission to a graduate program in biochemistry or molecular biology.

All graduating seniors are required to take achievement exams in both biology and chemistry for purposes of assessment of the major and College accreditation. Students choosing this major may not take a second major or a minor in either biology or chemistry.

Graduation with Honors in Biochemistry

Students graduating with a B.S. in biochemistry may also qualify for honors. Students interested in this designation must consult with the chair of the Biochemistry Committee one year or more prior to graduation.

Requirements include:

- An overall minimum cumulative GPA of 3.25.
- A cumulative GPA of 3.50 in the courses in both biology and chemistry combined.
- Completion of four credits in research. This may consist of a 4-credit course or two 2-credit courses in either biology or chemistry.
- Preparation of a written thesis in the form of the primary literature.
- Successful defense of the thesis before an examining panel which includes the thesis director, a representative from each of the departments of biology and chemistry, a faculty member from outside the departments of chemistry and biology and a faculty member from another institution. The panel members should be selected in consultation with the thesis adviser.
- Presentation of the research at an off-campus meeting.

Note: All requirements should be completed by April 20 for a spring graduation, or by November 15 for a fall graduation.

Major in Biochemistry (B.S.)

BIOL 201 Diversity and Adaptation (4 credits)

BIOL 202 Genetics, Evolution, and Ecology (4 credits)

BIOL 204 Cellular and Molecular Biology (4 credits)

Plus:

CHEM 111 General Chemistry I (4 credits) *and* CHEM 112 General Chemistry II (4 credits)

or

CHEM 115 Accelerated General Chemistry (4 credits)

Plus:

CHEM 201 Organic Chemistry I (4 credits)

CHEM 202 Organic Chemistry II (4 credits)

CHEM 440 Biochemistry I (4 credits)

CHEM 442 Biochemistry II (4 credits)

Plus four credits from the following:

CHEM 331 Chemical Thermodynamics and Reaction Dynamics (4 credits)

CHEM 332 Quantum Chemistry and Molecular Spectroscopy (4 credits)

Plus:

Twelve additional credits numbered BIOL 295 or higher.

Note: Four credits must be at the BIOL 400-level, excluding Research. Four credits may be in Research at the BIOL 300-level.

Four additional credits in CHEM, selected in consultation with the adviser.

Note: CHEM 300 is strongly recommended for this elective.

Plus:

BCHM 301-303 Biochemistry Seminar Series (0-2 credits)

Allied requirements

MATH 113 Calculus I (4 credits) (or equivalent)

MATH 114 Calculus II (4 credits)

PHYS 111 Introduction to Classical Physics I (4 credits)

PHYS 112 Introduction to Classical Physics II (4 credits)

BCHM 301-303 Biochemistry Seminar Series (0-2 credits)

This sequence of courses is begun the first semester of the junior year and progresses for a total of three semesters. The first (BCHM 301) course is two credits and is graded on the usual letter grade scale. The second two courses (BCHM 302 and 303) are no credit and are graded on a pass-fail basis (S/R). The first course (BCHM 301) is an in-depth investigation of selected current topics in biochemistry designed to develop critical scientific reading, writing, and presenting skills while exploring biochemical primary literature. The subject matter will vary from year to year and will be available on the Searchable Class Schedule on Murphy Online,

<https://banner.stthomas.edu/pls/banner/prod/bwckschd>. The class will meet for one and a half hours once a week with evaluation based upon in-class discussion and quality of written and oral assignments. The second and third courses

Biology

(BCHM 302 and 303) are a two-semester seminar requirement whereby students must attend Biology and Chemistry departmental seminars. Required of all biochemistry majors.

Prerequisites: CHEM 202, completion or current enrollment in BIOL 204, and junior standing

Biology (BIOL)

College of Arts and Sciences, Department of Biology

Owens Science Hall (OWS) 352, (651) 962-5206

Emms (chair), Chaplin, Cruise, Ditty, Hartung, Kay, Manske, Sherer, Verhoeven, Zimmer; Lewno, Schroeder, Trost, Wilson

Modern biology encompasses an extraordinary range of disciplines, from molecular genetics at one end of the spectrum to global ecology at the other. The biology curriculum at St. Thomas reflects this diversity, providing the breadth of experience that students need in their freshman and sophomore years with the depth that they value as juniors and seniors. Courses at all levels of the curriculum emphasize two fundamentals: mastering the essential material of each discipline and developing the intellectual skills needed to do science – asking the right questions, developing methods to answer these questions and critically evaluating the results of these investigations. As well as providing a broad-based liberal arts education in the biological sciences, the biology program serves as an excellent basis for students planning careers in academia, agricultural and forest science, bioinformatics and genomic research, biotechnology, biomedical research, conservation biology, environmental science, forestry and wildlife management, medicine, dentistry, and other health professions, and veterinary medicine.

A principle objective of the Department of Biology is to provide students with an excellent preparation for post-graduate pursuits. Graduates of the program command an understanding of core concepts in biology as well as an ability to design and implement studies of biological questions. The department evaluates its success in achieving these objectives using several tools, including assessments of seniors and alumni.

The curriculum for a major in biology is divided into three tiers, offering increasing levels of challenge, greater emphasis on independent work, and more extensive use of the primary literature. All biology majors take an introductory series of fourteen credits (BIOL 201, 202, 204 and 206) in the first of these tiers. These core courses cover the central concepts of modern biology and provide a foundation for more specialized study at higher levels of the curriculum.

The second-tier courses (BIOL 301-399) build on this foundation and offer a broad range of topics at an intermediate level, including research (BIOL 391-392). Some second-tier courses may be taken by students prior to completion of BIOL 204 and/or 206.

All third-tier courses (BIOL 401-498) require the completion of specific second-tier courses and involve advanced scholarship, independent research projects, and extensive use of the primary literature. Research courses (BIOL 491-494) are available to students wishing to pursue in-depth studies in laboratory and/or field situations. Individual Study courses (BIOL 495-498) allow for tutorial study in a specialized subject area of the student's choosing that is not otherwise available. Additional offerings in the form of Seminar (BIOL 483-486) or Topics (BIOL 487-490) courses are available from time to time. Courses numbered between BIOL 483-498 may, with approval of the department chair, be used to fulfill the 400-level requirement for the major.

Courses numbered BIOL 101-199 are intended for non-biology majors and cannot be used to fulfill either the major or minor requirements in biology. All of these courses fulfill the laboratory science requirement in the core curriculum.

Students planning to enter graduate school or a professional program after leaving St. Thomas should consult the entrance requirements of these programs while planning their choice of undergraduate courses. Students are strongly encouraged to consult with their biology adviser while making these plans.

Courses taken at other colleges by students already matriculated at St. Thomas may be credited toward the requirements of the major only with prior and explicit written approval of the departmental transcript evaluator. Approval will be granted only to reconcile schedule conflicts which otherwise would be unavoidable, to provide opportunities to enroll in appropriate courses that are not available in the St. Thomas curriculum, or to rectify problems arising from other special circumstances. These limitations apply to all requirements of the major, including courses in the allied requirements.

Transfer students desiring credit toward the major for work completed prior to matriculation at St. Thomas should contact the transcript evaluator in the Office of the University Registrar before seeking departmental approval. For biology courses numbered higher than BIOL 206, no more than 12 transfer credits can be counted towards the major. Of these 12, no more than 8 credits can be from academic institutions within the U.S.A, and no more than 8 credits can be from study abroad courses registered through St. Thomas.

Non-majors receiving a 4 or 5 on the Biology Advanced Placement Exam or 5-7 on the International Baccalaureate exam will receive college credit for BIOL 101 (fulfills a natural science with laboratory course requirement). Students intending to major in biology who score 4-5 on the AP exam or 5-7 on the IB exam will receive credit for the BIOL 201 lecture section (3 credits); such students will normally be required to take the BIOL 201 lab (1 credit) at St. Thomas.

Extracurricular Expectations

All students are expected to participate in departmental assessment activities. In particular, graduating seniors are expected to take the Major Field Test in Biology and complete the departmental Senior Survey in the spring of their final year. All students are also strongly encouraged to attend the Biology Seminar Program on a regular basis.