

College of Arts and Sciences – Departments

270 Level I Recital **0 credit**
A Level I recital can be given in any semester. It requires a minimum of 15 minutes of music. A student performing at this level usually will be presented on a program with two or three other students.

290 Jazz Recital **0 credit**
A Jazz recital is required of all students in the Jazz Studies minor. A minimum of five songs is required with one from each of the following categories: standard; ballad; swing; bossa nova, samba or other Latin style; and bop. Brass, winds and singers must be accompanied by piano, bass and drums. Piano and guitar must be accompanied by bass and drums and play one selection as a soloist without the rhythm section. Bassists will be accompanied by piano and drums and must play the melody on all selections. Percussionists will appear with piano and bass, and will be required to play one selection on vibraphone.

350 Level II Recital **0 credit**
A Level II recital can be given in any semester. It requires a minimum of 25 minutes of music. Students performing at this level usually will be presented with one or two other students in the recital.
Prerequisite: 270

400 Festival Orchestra Honors Concert **0 credit**
This concert is presented in the spring semester. Professional musicians from the Twin Cities area are hired to form the orchestra, and students are auditioned in December to perform vocal or instrumental music that originally was intended to be presented with orchestra. Festival Orchestra auditions are open to all full-time St. Thomas undergraduate students and graduate students currently enrolled in performance studies. See the *Handbook for Music Students* for details.

450 Level III Recital **0 credit**
A Level III recital usually is given in the last semester of the student's work. This is a solo recital and requires a minimum of 45 minutes of music.
Prerequisite: 350

Philosophy (PHIL)

Atkinson (chair), Barnes, Clemenson, Coulter, Deavel, Degnan, Discher, Evans, Giebel, Grant, Heaney, Hubbard, Long, Kemp, Kronen, Laumakis, Lemmons, Menssen, Nash-Marshall, Sullivan, van Ingen, Vlahovic, Weitzman, Winter

The philosophy program offers students the opportunity to study principal figures in the major periods of the history of philosophy (ancient, medieval, modern, and contemporary). Special attention will be given to the thought of Aristotle and St. Thomas Aquinas.

Graduates with a major in philosophy should be able to present and defend philosophical positions using standard logical techniques, to formulate effective criticisms of opposing arguments, and to explain the relevance of such positions to broader questions in philosophy or related disciplines.

The two core curriculum requirements, Philosophy of the Human Person and Introductory Ethics, are intended to introduce all students to the fundamental philosophical questions about human nature and conduct, and to help them develop basic skills in critical reasoning.

Philosophy Honor Society

Phi Sigma Tau is a society whose objectives are to serve as a means of awarding distinction to students having high scholarship and personal interest in philosophy; to promote student interest in research and advanced study in this field; to provide opportunities for the publication of student research papers of merit; to encourage a professional spirit and friendship among those who have displayed marked ability in this field; and to popularize interest in philosophy among the general collegiate public.

Students are eligible for membership if they have a manifest interest in research and study of philosophy (having completed a minimum of eight semester credits in the field); hold a cumulative GPA of at least 3.00 in either philosophy or general courses; and have completed at least two semesters of college education.

Major in Philosophy

115 Philosophy of the Human Person
214 Introductory Ethics
220 Logic

Plus sixteen credits in Philosophy through the Ages

Four credits in ancient philosophy
Four credits in medieval philosophy
Four credits in modern philosophy
Four credits in contemporary philosophy

Plus:

Sixteen additional credits in Philosophy, four of which must be at the 400-level. These 400-level courses may be taken more than once and are open to non-majors. Topics and prerequisites will be listed in the annual *Class*

Schedule. These courses may meet a requirement in Philosophy Through the Ages, depending on choice of materials. All 400-level course require a major paper to be presented and defended in some public forum.

Minor in Philosophy

- 115 Philosophy of the Human Person
- 214 Introductory Ethics

Plus:

Twelve additional credits in philosophy chosen in consultation with the chair of the department.

115 Philosophy of the Human Person

An examination of fundamental conceptions of the human person in ancient, medieval and modern philosophy. Possible topics include: the existence and immortality of the human soul, free will and determinism, the immateriality of the intellect, the relationship between mind and body, and the relevance of different conceptions of the human person for ethics and religion. Attention is given to relevant issues of human diversity. The development of logical and critical thinking receives special attention. This course, with PHIL 214, fulfills the Moral and Philosophical Reasoning requirement in the core curriculum.

200 Ancient Philosophy

A survey of the roots of philosophical inquiry in the classical period. The pre-Socratics, Plato, Aristotle, the Stoics. Satisfies requirement in ancient philosophy.

Prerequisite: 115

202 Medieval Philosophy

An investigation of major philosophical problems in their medieval context. Possible topics include: faith and reason, free will, the role of authority, and the existence of God. Satisfies requirement in medieval philosophy.

Prerequisite: 115

204 Modern Philosophy

An examination of major philosophers of the early modern period from René Descartes to Immanuel Kant, with emphasis on methodology and claims to knowledge. Satisfies requirement in modern philosophy.

Prerequisite: 115

206 Continental Philosophy and Existentialism

An examination of major Continental philosophies of the nineteenth and twentieth centuries, with special attention to existentialism and phenomenology. Satisfies requirement in contemporary philosophy.

Prerequisite: 115

208 Indian Philosophy

An examination of the primary texts and problems that form the basis of Hindu, Buddhist, or Zoroastrian thought. Metaphysical and ethical themes will be considered.

Prerequisite: 115

210 Chinese Philosophy

An examination of the primary texts and problems that form the basis of Confucianism, Daoism, or Chinese Buddhism. Metaphysical and ethical themes will be considered.

Prerequisite: 115

214 Introductory Ethics

An inquiry into the rational foundations and methods of ethics, with attention to the application of ethical principles to areas of personal conduct, institutional behavior and public policy, and diversity within and across cultures. This course, with PHIL 115, fulfills the Moral and Philosophical Reasoning requirement in the core curriculum.

Prerequisite: 115

220 Logic

This course provides students with skills for identifying, analyzing, and evaluating the sorts of reasoning encountered in natural language. Emphasis will be placed on attaining facility with different formal systems for representing and evaluating arguments – including propositional logic, Aristotelian syllogistic, first-order predicate calculus, and some of their simple extensions – as well as on acquiring the ability to apply these systems in the analysis and evaluation of arguments in ordinary and scientific discourse. Required of majors, recommended for minors.

Prerequisite: 115

234 Love, Sex and Friendship (CATH 234)

A philosophical examination of the nature of human love. Possible topics include reciprocity and permanence, fidelity, romantic love, human sexuality, kinds of friendship. Special attention will be given to the thought of John Paul II.

Prerequisite: 115

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240 Faith and Doubt (CATH 240)

Philosophical arguments for and against the possibility of divine revelation. Special attention will be given to the claim that the faith of the Catholic Church is revealed. Possible topics include tests of alleged revelations and miracles, evil as a barrier to belief in revelatory claims, the compatibility of science and religion, the role of reason and faith in religious commitment, and personal decision-making in a state of doubt about evidence.

Prerequisite: 115

250 Christian Mysteries from a Philosophical Viewpoint (CATH 250)

A consideration of philosophical problems associated with Catholicism. Possible topics include divine providence, creation, the soul, freedom of the will, faith, the Eucharist, the Incarnation, and the variety of religious beliefs.

Prerequisite: 115

260 Philosophy of Science and Nature

An examination of central topics in the philosophy of science and nature. Possible topics include reductionism in science, the analysis of change, the nature of scientific explanation, causation and natural teleology, and the meaning of scientific theories. Attention will be paid to works in both the classical and contemporary periods. May satisfy a requirement in Philosophy through the Ages, depending on choice of materials.

Prerequisite: 115

272 Evolution and Creation (CATH 272)

A philosophical examination of the relation between the doctrine of creation and theories in the evolutionary sciences. The course will consider arguments concerning evolution and creation from a variety of disciplines (including philosophy, theology, and natural science). The course will also examine historical and philosophical aspects of the relation between science and religion on the origins of the material world and the human race.

Prerequisite: 115

295, 296 Topics

2 credits

297, 298 Topics

The subject matter of these courses, announced in the annual *Class Schedule*, will vary from year to year, but will not duplicate existing courses. See the description of these courses at the beginning of the “Curricula” section of this catalog.

320 Aristotelian Logic

A study of Aristotle’s *Organon*, covering such topics as the categories, the nature of propositions, forms of argument. Emphasis on demonstration (proof of necessary truths) and its distinction from dialectical reasoning. Applications to philosophical texts. Satisfies requirement in ancient philosophy.

Prerequisite: 220

325 Intermediate Symbolic Logic

A study of developments in twentieth-century symbolic logic. Possible topics include axiomatic systems, set theory, extensions of predicate logic (such as predicate logic with identity, quantified modal logic, relevance logic, deviant logics), and metatheorems (such as soundness and completeness theorems).

Prerequisite: 220

330 Philosophy of Mind

A study of central issues in the philosophy of mind and soul. Possible topics include the relation between mind and body; the senses, emotions, intellect and will; personal identity. Attention will be given to both the Aristotelian/Thomistic tradition and contemporary philosophy. May satisfy a requirement in Philosophy through the Ages, depending on choice of materials.

Prerequisites: 115 and either 200 or 202 or 204 or 220

340 Thought of Thomas Aquinas

An examination of some major topics in the philosophy of Thomas Aquinas. Possible topics include: Aquinas’ conception of philosophy and its relation to faith; God; and the destiny of the human being. Satisfies requirement in medieval philosophy.

Prerequisite: 214

350 Advanced Ethical Theory

An advanced treatment of central aspects in ethical theory. Possible topics include justification of normative theories (*e.g.*, eudaimonism, deontology, consequentialism) and metaethical issues (*e.g.*, the is/ought problem, moral realism, naturalism). May satisfy a requirement in Philosophy through the Ages, depending on choice of materials.

Prerequisite: 214

353 Machiavelli, Hobbes and Nietzsche

An examination of three central figures in the history of political theory, and the challenge each presents to the moral evaluation of the use of political power.

Prerequisite: 214

356 Contemporary Social Issues

An investigation into conceptions of the human person, ethics, and the law related to current issues with public policy implication. Issues chosen at the discretion of the instructor. Satisfies requirement in contemporary philosophy.

Prerequisite: 214

357 Political Philosophy

A study of the nature and justification of political authority. Possible topics include natural rights, liberty and equality, the common good and its relation to the individual good, the place of liberty and equality and the common good in justifying state action. Attention is given to both classical and contemporary authors. May satisfy a requirement in Philosophy through the Ages, depending on choice of materials.

Prerequisite: 214

358 Environmental Ethics (ENVR 301)

Consideration of the ethical issues arising from human interaction with the environment, including population pressure, pollution, conservation and preservation. Focus is on the grounds of our obligation to resolve such issues; the question of what persons and things are worthy of moral consideration; and the respective roles of individuals, organizations and government in addressing environmental problems. Case studies will be used to trace the implications of various ethical and political theories. Satisfies requirement in contemporary philosophy.

Prerequisites: 214 and ENVR 151

359 Philosophy of Law

A study of philosophical problems connected with human law and legal institutions. Possible topics include the nature and kinds of law, the relation of law and morality, analysis of legal concepts, the nature and justification of punishment, the principles of legal interpretation and reasoning. Attention will be given to both classical and contemporary authors. May satisfy a requirement in Philosophy through the Ages, depending on choice of materials.

Prerequisite: 214

360 Philosophy of Religion

This course examines such topics as the nature and existence of God, the problem of evil, the compatibility of free-will with divine foreknowledge, the rationality of religious belief, and the relation between morality and religion. Attention will be paid to main figures in the western tradition as well as to contemporary authors. May satisfy a requirement in philosophy through the Ages, depending on choice of materials.

Prerequisites: 115 and one other PHIL course

370 Twentieth-Century Analytic Philosophy

An introduction to the analytic tradition founded by Frege, Russell, and Wittgenstein, with special emphasis on the core areas of language and philosophy of logic. Possible topics include theories of truth, the meaning of "meaning," logical empiricism and recent criticisms, and logical paradox. Satisfies requirement in contemporary philosophy.

Prerequisite: 220

380 Epistemology

This course considers various accounts of the nature, origin, and limits of human knowledge. Attention will be paid to the main figures in the western tradition as well as to contemporary authors. May satisfy a requirement in Philosophy through the Ages, depending on choice of materials.

Prerequisite: 220

390 Metaphysics

This course examines the possibility of, as well as the need for, a general study of reality beyond that pursued by the particular science. Possible topics include the appearance/reality distinction, substance, the self, universals and particulars, unity, truth, goodness, beauty, and God. Attention will be paid to both classical and contemporary authors. May satisfy a requirement in Philosophy through the Ages, depending on choice of materials.

Prerequisite: 220

410 Colloquium: Philosophical Research

An advanced course in philosophical research, writing, and presentation. On a topic chosen in consultation with the instructor, students will submit at least two drafts of a substantial paper on a major problem or debate in philosophy. Students will be expected to meet every other week as a group to discuss the progress of their projects and critique preliminary drafts of one another's work. An oral presentation of the final draft is required.

Prerequisites: 214 and 220

475, 476 Experiential Learning**2 credits****477, 478 Experiential Learning**

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

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483, 484 Seminar	2 credits
485, 486 Seminar	
See the description of these courses at the beginning of the “Curricula” section of this catalog.	
487, 488 Topics	2 credits
489, 490 Topics	
The subject matter of these courses, announced in the annual <i>Class Schedule</i> , will vary from year to year, but will not duplicate existing courses. See the description of these courses at the beginning of the “Curricula” section of this catalog.	
491, 492 Research	2 credits
493, 494 Research	
See the description of these courses at the beginning of the “Curricula” section of this catalog.	
495, 496 Individual Study	2 credits
4497, 498 Individual Study	
See the description of these courses at the beginning of the “Curricula” section of this catalog.	

Physics (PHYS)

Johnston (chair), Feng, Lane, Ohmann, Tommet; Blilie, Koser, Nesmelova, Rada

Physics majors learn the fundamental laws that govern the physical universe, from the smallest subatomic particle to the largest galaxies to the very structure of space and time. Emphasis is placed on general understanding, problem solving, and the communication skills essential for success in a career grounded in science. In the laboratory, students use state-of-the-art instrumentation in applying physics to a wide variety of systems. Opportunities are available for students to participate in research projects during the school year and over the summer.

There are three educational options from which to choose: a Bachelor of Science (B.S.) degree; a Bachelor of Arts (B.A.) degree; or a minor in physics. The B.S. degree provides the necessary background for students interested in graduate school, engineering or industrial work; for students interested in professional programs such as medicine or patent law, or students double majoring in areas such as mathematics or chemistry, the Bachelor of Arts degree gives a solid background in physics with the flexibility to meet other needs.

For students interested in teacher licensure, see the various combinations of science education in the School of Education Department of Teacher Education in this catalog.

The department offers courses for non-majors to fulfill the laboratory science component of the core curriculum.

Graduation with Honors in Physics

Students graduating with a B.A. or B.S. degree in physics may also qualify for departmental honors. Students interested in this designation must consult with the department chair one year or more before graduation. All requirements must be met one month before graduation.

- 1) Complete four credits in 400-level physics research
- 2) Prepare a written thesis in the format of primary literature
- 3) Defend the thesis before a panel composed of:
 - thesis director (chair of committee)
 - two additional UST physics faculty
 - one UST faculty member outside of physics
- 4) Achieve a final cumulative grade point average in physics department courses of 3.50 and 3.00 overall
- 5) Present their research at a scientific meeting beyond the St. Thomas community

Major in Physics (B.S.)

111	Introduction to Classical Physics I
112	Introduction to Classical Physics II
225	Introduction to Modern Physics I
226	Introduction to Modern Physics II
300	Physics Seminar I (1 credit)
301	Physics Seminar II (1 credit)
323	Methods of Experimental Physics
331	Theoretical Mechanics
341	Electricity and Magnetism
342	Electromagnetic Waves
347	Optics
410	Statistical Mechanics and Thermodynamics
431	Quantum Mechanics