SCIENCE (SCI)

SCI 501 HISTORY OF SCIENCE FOR SCIENCE TEACHERS
3, 3/0
Historic development of major scientific discoveries and achievements within a narrow range that directly impacts the teaching of science. Contextual forces that affect science discovery. Contributions from other disciplines such as mathematics, technology, navigation, military actions and engineering.

SCI 502 SECONDARY SCIENCE EDUCATION TEACHING: THEORY, CONTENT AND PEDAGOGY
3, 2/0
Prerequisites: SCI 545 or EDU 609 or equivalent; may be taken concurrently. Acceptance into the graduate program. Use of inquiry-based teaching techniques in middle and high school science classrooms to develop candidates' science teaching skills. Current directions of research in science education. Teaching, curriculum design and lesson planning strategies and techniques, classroom management, lab safety, science resources, the nature of science, assessment, unit and lesson planning and professional dispositions for teachers.

SCI 521 LABORATORY TECHNIQUES FOR ELEMENTARY SCHOOL TEACHERS
3, 3/0
Appropriate laboratory exercises designed to acquaint the elementary teacher with the subject matter, laboratory equipment, and techniques necessary to effectively teach elementary science.

SCI 527 CURRENT TOPICS IN SCIENCE
3, 3/0
Prerequisites: 6 credit hours each in two science areas. Implications of science research for present and future living; implications of research in science for the secondary school science curriculum.

SCI 540 LOCAL ENVIRONMENTAL PROBLEMS SEMINAR
3, 3/0
In-depth discussions of environmental problems on the Niagara Frontier by local experts, designed to supply in-service science teachers and others concerned with the local environment with current local environmental information.

SCI 545 LITERACY FOR TEACHING SCIENCE
3, 2/2
Prerequisites: Acceptance into a graduate science teacher degree program. Study of literacy related to secondary science. Promotion of literacy; action research project on identifying literacy levels of students; planning literacy activities based on data collection.

SCI 587 TOPICS IN SCIENCE EDUCATION
1-6, 1/0
In-depth examination of important disciplinary issues, topics, or practices in science education; offered occasionally.

SCI 588 TOPICS COURSE
3, 3/0

SCI 590 INDEPENDENT STUDY
1-3, 0/0

SCI 628 SEMINAR IN SECONDARY SCIENCE EDUCATION
3, 3/0
Recent research in educational psychology and its application for science teaching; contemporary trends in science education; sociological and philosophical implications of science; recent research in science education; issues identified by students enrolled in class.

SCI 632 CURRICULAR TRENDS IN SCIENCE TEACHING IN THE SECONDARY SCHOOL
3, 3/0
Prerequisite: One year of teaching science as a subject, assignment to an administrative position with responsibility for science curriculum, or instructor permission. Recent curriculum developments, philosophies, objectives, and materials; current understandings of the psychology of inquiry; historical events leading to changes in curriculum.

SCI 650 CURRICULAR RESEARCH TOPICS IN SCIENCE
3, 3/0
Prerequisites: Acceptance into M.S.ED: Science Education graduate program. Nature of science educational research: problem analysis; descriptive and inferential statistics; experimental design; strategy of historical, descriptive, and experimental studies. Analysis of contemporary educational research.

SCI 664 TEACHING SCIENCE WITH TECHNOLOGY
3, 2/3
Prerequisite: Acceptance to the graduate science education program. Development and integration of a variety of visual and audio technologies for the creative enhancement of visual and auditory communication in the science classroom. Specialized technology needs of science teachers.

SCI 677 INITIAL MIDDLE SCHOOL SCIENCE TEACHING EXPERIENCE
6, 0/0
Prerequisites: EDU 609, EXE 500, SCI 502, SCI 545, SCI 664 and SPF 503. Assignment to a supervised middle school science teaching placement for five full days a week for 8 consecutive weeks. Candidates effectively demonstrate content knowledge; pedagogical preparation, instructional delivery; classroom management; knowledge of student development. They collaborate with school professionals and implement reflective practice.

SCI 678 INITIAL HIGH SCHOOL SCIENCE TEACHING EXPERIENCE
6, 0/0
Prerequisites: EDU 609, EXE 500, SCI 502, SCI 545, SCI 664 and SPF 503. Assignment to a supervised high school science teaching placement for five full days a week for 8 consecutive weeks. Candidates effectively demonstrate content knowledge; pedagogical preparation, instructional delivery; classroom management; knowledge of student development. They collaborate with school professionals and implement reflective practice.

SCI 679 SEMINAR IN SCIENCE EDUCATION
1, 1/0
Prerequisites: Acceptance into M.S. ED: Science Education graduate program. SCI 677 and SCI 678 taken as co-requisites. Taken simultaneously with student teaching. Supplements student teaching courses in areas connecting pedagogical theory with in-class experiences and practice.

SCI 685 EVALUATION IN SCIENCE EDUCATION
3, 3/0
Prerequisite: 6 credit hours of graduate-level coursework. Philosophy of evaluation as applied to science education; models of evaluation; techniques used in the practical application of the models; examples and procedures directly related to science teaching.

SCI 690 MASTER'S PROJECT
3, 3/0
A study undertaken by one or more individuals on a problem of special interest submitted in acceptable form according to directions given by the Earth Sciences and Science Education Department.

SCI 694 RESEARCH METHODS AND TECHNIQUES IN SCIENCE EDUCATION
3, 3/0
Prerequisite: 9 credit hours of graduate-level coursework in science or science education. Nature of educational research: problem analysis; descriptive and inferential statistics; experimental design; strategy of historical, descriptive, and experimental studies. Recommended for students planning educational research projects or theses.

SCI 695 MASTER'S THESIS
3, 0/0

SCI 721 THESIS/PROJECT CONTINUATION
0, 0/0

SCI 722 THESIS/PROJECT EXTENDED
0, 0/0

SCI 795 MASTER'S THESIS
3, 0/0
Individual investigation of an original problem submitted in acceptable form according to directions given by the Graduate School.