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Science Informatics (SCIF)

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Science Informatics

	Prerequisites	SASE 684, SASE 685, and one specialization course.
	Corequisites	Second specialization course.
	Number and type of credits	1 hour lab.
	Course Description	Teacher leaders will conduct a capstone research project under the close supervision of an assigned faculty member who has expertise in the area of research. Teacher leaders will collect data based upon the proposal designed in SASE 685, analyze that data, and present their findings (in a formal venue). Successful completion of Research Mentorship meets the Graduate School's Comprehensive Exam/Capstone Project requirement for graduation. May be repeated once for a maximum of 2.0 credits. Previous course CURR 693 effective through Spring 2014.
SCIF110	Title	Introduction to Science Informatics.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture.
	Course Description	This course introduces students, including Science Informatics majors, to timely topics encompassed in the interdisciplinary field of science informatics. Students learn about genomics, drug discovery, geographic information systems and other science topics with a hands-on, ethics-focused
SCIF110	Course Description	case study approach.
SCIF151	Title	Colloquium in Science Informatics I.
	Prerequisites	Science Informatics majors only.
	Number and type of credits	1 hour seminar.
	Course Description	This course introduces Science Informatics majors to the University, the department of the College of Science and Mathematics, the culture of higher education and the field of science informatics. Students learn about campus resources and activities, careers in science informatics and techniques that foster the development of good study skills and academic success. Issues related to health, wellness, diversity and prejudice are investigated. Meets Gen Ed 2002 - New Student Seminar.
SCIF152	Title	Colloquium in Science Informatics II.
	Prerequisites	Science Informatics majors only.
	Number and type of credits	1 hour seminar.

	Course Description	This second of a series of four colloquia will continue to build a science informatics identity among students while exploring the field of science informatics, options for post-baccalaureate study and careers in the discipline. Students will explore both scientific and societal issues related to contemporary problems such as genetic engineering. Students will explore potential topics for future investigation and research.
SCIF250	Title	Science Informatics Sophomore Summer Internship.
	Prerequisites	Permission of program advisor. Only for Science Informatics majors who have completed their sophomore year.
	Special Fee	Special fee.
	Course Description	During the summer under the guidance of a sponsor in a medical or industrial site outside of the University, students will investigate advanced, individual research problems appropriate to science informatics. Although students are strongly encouraged to enroll in an off-campus externship, an equivalent on-campus experience with the Biology and Molecular Biology, Chemistry and Biochemistry, Computer Science or Mathematical Sciences department will be accepted for credit.
SCIF253	Title	Colloquium in Science Informatics III.
	Prerequisites	SCIF 152.
	Number and type of credits	1 hour seminar.
	Course Description	In this third of a series of four colloquia, students continue their guided examination of contemporary issues investigated with the varied methodologies and tools of science informatics. Information about how disciplines within science informatics prepare research results and associated recommendations for their colleagues, government agencies and the public. The influence of public opinion and the political decision-making process upon scientific research is explored. Students explore possible research problems for later investigation.
SCIF254	Title	Colloquium in Science Informatics IV.
	Prerequisites	SCIF 253.
	Number and type of credits	1 hour seminar.
	Course Description	This fourth of a series of four colloquia is a continuation of the third colloquium, SCIF 253, in which students continue their guided examination of contemporary issues investigated with the varied methodologies and tools of

		science informatics. Information about how disciplines within science informatics prepare research results and associated recommendations for their colleagues, government agencies and the public. The influence of public opinion and the political decision-making process upon scientific research is explored. Students explore possible research problems for later investigation.
SCIF391	Title	Science Informatics Summer Internship.
SCIF391	Prerequisites	CSIT 212 and CSIT 270 and CSIT 337 and BIOL 434.
	Special Fee	Special fee.
	Course Description	During the summer under the guidance of a sponsor in a medical or industrial site outside of the University, students will investigate advanced, individual research problems appropriate to science informatics. Although students are strongly encouraged to enroll in an off-campus externship, an equivalent on-campus experience with the Biology and Molecular Biology, Chemistry and Biochemistry, Computer Science or Mathematical Sciences department will be accepted for credit. Previous course SCIF 350 effective through Spring 2014.
SCIF475	Title	Ethics in Science Informatics.
	Prerequisites	SCIF 350.
	Number and type of credits	2 hours lecture.
	Course Description	This course investigates ethical issues in science informatics research and the application of science informatics to product development and commercialization. For example, topics of accuracy, privacy, confidentiality, accessibility, stability, and completeness are considered in the context of genome databases and their associated computing technology. Science informatics law domains such as intellectual property (patents, trademarks, trade secrets), and licensing (patents, intellectual property or software) are presented. A seminar format and case studies facilitate interaction among faculty, students, and the issues.
SCIF497	Title	Research Experience in Science Informatics I.
	Prerequisites	SCIF 391 and departmental approval.
	Number and type of credits	3 hours lecture.
	Course Description	The student works as a member of an interdisciplinary Science Informatics

		student team and develops a research proposal to a science informatics problem posed by Montclair State faculty, other academic institutions, or industry representatives. Previous course SCIF 491 effective through Spring 2014.
SCIF498	Title	Research Experience in Science Informatics II.
	Prerequisites	SCIF 497 and departmental approval.
	Number and type of credits	3 hours lecture.
	Course Description	The student works as a member of an interdisciplinary Science Informatics student team and implements his/her research proposal developed in SCIF 497 for a science informatics problem posed by Montclair State faculty, other academic institutions, or industry representatives. Previous course SCIF 492 effective through Spring 2014.
SCIM501	Title	Biology for Middle Grade Teaching.
	Prerequisites	Restricted to majors in Elementary School with Subject Matter Specialization: Science 5-8 or program coordinator approval
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture, 2 hours lab.
	Course Description	This course will provide concepts and learning activities for middle school teacher and will emphasize the study of life from molecule to organism, with a focus on the structure and function of cells, mechanisms of heredity and change, biodiversity, phylogenetic relationships among organisms, biology of populations, and communities, and ecosystems.
SCIM502	Title	Physics for Middle Grades Teaching.
	Prerequisites	Restricted to majors in Elementary School with Subject Matter Specialization: Science 5-8 or program coordinator approval
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture, 2 hours lab.
	Course Description	To provide individuals interested in teaching middle school science with knowledge of the principles and applications in physics from a unified energy-based outlook, and how to present the laws of physics to the middle grades students. Emphasis will be placed on problem solving methods and the
SCIM502	Course Description	development of critical thinking skills.
SCIM503	Title	Earth and Space Science for Middle Grade Teaching.