SCHOOL OF GREEN CHEMISTRY AND ENGINEERING
THE UNIVERSITY OF TOLEDO

MINOR IN

GREEN CHEMISTRY AND ENGINEERING

PROOF

Green Chemistry and Engineering at UT

Do you want to solve major, chemical-related environmental, human health, and sustainability issues facing the world today? Do you have interests in chemistry, chemical engineering, environmental engineering, environmental science, materials science, or related science and engineering fields? If so, a degree in green chemistry and engineering may be just for you.

Green chemistry aims to reduce or eliminate the use or generation of hazardous substances in the design, manufacture and application of chemical products. Green engineering is complementary and focuses on the development and commercialization of industrial processes that are economically feasible and reduce the risk to human health and the environment. Together, green chemistry and green engineering result in safer chemical products and competitive advantages to companies that implement these principles.

MINOR IN GREEN CHEMISTRY AND ENGINEERING (MGCE)

The MGCE is designed for students who want to expand the breadth of their undergraduate majors by incorporating the principles of green chemistry and green engineering into their BA or BS degrees in chemistry, chemical engineering, environmental science or a related area. The MGCE addresses a need for scientists and engineers broadly trained in chemistry, environmental chemistry, chemical engineering, toxicology, life cycle assessment, chemical alternatives assessment, and environmental regulations and policy.

SUMMARY OF REQUIREMENTS FOR THE MGCE

Students must complete at least 21 hours of course work according to the guidelines presented in this document. Students completing the MGCE must be sure that at least 12 credit hours of the minor requirements are unique to the MGCE, and are not being used to satisfy requirements in the major or another minor. For example, CHEM 3810 can be used to satisfy a requirement for the MGCE or the minor in renewable energy, but not both.

Degree Requirements

COURSE		HOURS
The following are required:		
CHEM 2410	Organic Chemistry I	3
CHEM 2420	Organic Chemistry II	3
CHEM 4200	Green Chemistry	3
CHEE 4010	Green Engineering Principles for Chemical Processes*	3
Select at least one of the following courses:		
CHEM 4210	Environmental Chemistry	3
CHEE 4110	Green Engineering Applications in Chemical Industries	3
Select at least one of the following courses:		
CHEM 3810	Chemistry of Sustainable Energy Resources	3
CHEE 4120	Biofuels	3
EEES 4220	Environmental Geochemistry	3
EEES 4450	Hazardous Waste Management	3
ECON 3240	Environmental Economics	3
PSC 4340	Environmental Policy	3
TOTAL		**21**

**In lieu of taking CHEE 4010, chemical engineering majors must take one additional class from the two lists of optional classes.*

SGCE@utoledo.edu

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Representative examples of how a student might fulfill the requirements for the MGCE are provided below. Note that many options are possible. Students are encouraged to tailor the minor to their personal interests through selection of electives from the lists provided.

MAJOR IN CHEMICAL ENGINEERING

A student majoring in chemical engineering could complete the requirements for the MGCE as follows: CHEM 2410, CHEM 2420, CHEM 4200, CHEM 4210, CHEE 4110, CHEE 4120 and EEES 4450.

MAJOR IN CHEMISTRY

A student majoring in chemistry could complete the requirements for the MGCE as follows: CHEM 2410, CHEM 2420, CHEM 4200, CHEM 4210, CHEE 4010, CHEE 4120 and EEES 4450.

MAJOR IN ENVIRONMENTAL SCIENCE

A student majoring in environmental science with a chemistry concentration could complete the requirements for the MGCE as follows: CHEM 2410, CHEM 2420, CHEM 4200, CHEE 4010, CHEM 4210, CHEM 3810 and EEES 4220 or EEES 4450.

For more information, visit *utoledo.edu/nsm/sgce* or contact:

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