Discover Schoolcraft College

Metallurgy and Materials Science

You're already employed in industry, working with metals or other materials like rubber, ceramics, polymers, and glass every day. But you need something more—an educational boost—to advance in your field. That something can be found at Schoolcraft College.

Schoolcraft also offers Welding. See our catalog or website for details.

Schoolcraft offers three programs in Metallurgy. The first, a one-year certificate, covers the basics, then moves on to topics like properties, processes, and structure. The second program, an associate degree, includes many of the certificate courses plus electives that can help you develop a specialization: in processing, for example, or industrial research.

Already earned a degree, but want to add to your knowledge base? Then take a look at our Materials Science post-associate degree certificate program. In just five short courses, you'll be introduced to the newest technologies in metallurgical and materials science applications, processing, and control environments. This is good background for managers and technical personnel. It will also prepare you to meet requirements for future certification.

FREQUENTLY ASKED QUESTIONS

What Does a METALLURGIST Do? What Does a MATERIALS SCIENTIST Do?

A Metallurgist explores the structure and chemical properties of natural and man-made materials. A Materials Scientist determines ways to strengthen or combine these materials and develops new materials to meet specific needs.

What Characteristics Do I Need To Work In This Field?

You need to be a problem solver and comfortable in a laboratory setting. You'll be expected to use standard analytical techniques and communicate the results of your research in oral and written presentations. Knowledge of mathematics, chemistry, and physics is critical, and the ability to work on a team is an important skill.

Where Could I Find a Job?

As a Metallurgist, you may work in mining or metal-producing and -processing industries. Materials Scientists tend to find employment in industries that manufacture aircraft and its parts, machinery, and electrical equipment; in engineering consulting firms, research and testing services; and in government agencies.

What Is My Employment Outlook?

Employment opportunities for Metallurgists and Materials Scientists are expected to grow as fast as the average for all occupations through the year 2020.

Related Websites

American Society for Testing and Materials: www.astm.org

ASM International/The Materials Information Society: www.asm-intl.org

Materials Research Society: www.mrs.org

Minerals, Metals and Materials Society: www.tms.org

NACE International/The Corrosion Society: www.nace.org

For More Information

Visit www.schoolcraft.edu where you can view course and program information, schedule a campus tour, apply for admission, register for courses, and request more information.

Contact the Admissions and Enrollment Center at 734-462-4426 with additional questions.

employment

JOB TITLES & MEDIAN SALARIES OR HOURLY RATES

Metallurgical Engineering Technician
$40,662 (Michigan)

Program Requirements 2012–2013 CATALOG

METALLURGY AND MATERIALS SCIENCE ASSOCIATE DEGREE

Schoolcraft program code # AAS.00184

The Metallurgy and Materials Science Program has been specifically designed to accommodate most areas of industry associated with research, development, manufacturing and materials control. Carefully selecting electives will prepare students for specialization. Students interested in the laboratory control of processing may wish to select electives in welding, fabrication, manufacturing processes or quality control. Likewise, students interested in development or industrial research may wish to complete electives in materials or physical science, design or computer technology.

Metallurgy and Materials Science graduates have knowledge of the philosophy of metallic and nonmetallic materials used in industry and can apply principles basic to scientific laboratory investigation, research, product development and process control.

All courses are not offered each semester. Students should work with the Counseling Department to set up a schedule that will work for them. Students who satisfactorily complete all College Requirements qualify for the Associate in Applied Science Degree.

Students seeking transfer to a baccalaureate program should request transfer guides provided by the department.

Virtually any program at Schoolcraft College can be a transfer program if you plan to continue at a four-year institution to earn a bachelor's degree in your major. Visit www.schoolcraft.edu/transfer for information about transfer options. To ensure that the Schoolcraft courses you select are the specific ones required by the four-year college of your choice, be sure to consult regularly with your counselor/advisor.

SAMPLE SCHEDULE OF COURSES

FIRST YEAR — Fall Semester

MET 102	Introduction to Materials Science	3
MET 120*	Hazardous Materials Management	2
ENGR 100	Introduction to Engineering and Technology	3
MET 152	Structure and Properties Laboratory	3
MATH 113	Intermediate Algebra for College Students	4
HUM 106	Introduction to Art and Music	1
		16

Winter Semester

English	Select 1	3
ENG 100	Communication Skills	
ENG 101	English Composition 1	
CAD 103	Engineering Graphics	3
MET 114	Engineering Materials	3
BIOL 140	Scanning Electron Microscopy	4
MET 211*	Physical Metallurgy Structures	3
		16

Spring/Summer Session

Social Science	Select 1	3
POLS 105	Survey of American Government	
PSYCH 153	Human Relations	
SOC 201	Principles of Sociology	
English	Select 1	3
ENG 102	English Composition 2	
ENG 106	Business English	
ENG 116	Technical Writing	
		6

SECOND YEAR — Fall Semester

MET 215*	Mechanical Properties of Metals	3
MET 217*	Computer Applications in Materials Science	3
MFG 102	Basic Machining Processes	3
WELD 113	Shielded Metallic Arc Welding (S.M.A.W.)	3
		12

Winter Semester

MET 248*	Electron Microscopy and Image Analysis	3
MET 280*	Special Problems in Materials Science	4
WELD 262	Welding Metallurgy	3
Elective	*Select from the list below*	3–4
		13–14

PROGRAM TOTAL 63–64 CREDITS

* These classes are offered on a rotational basis. Contact Metallurgy faculty for current and projected offerings.

Students planning to transfer should check the transfer institution's requirements/guides or discuss their options with a counselor or advisor. Number of credits may vary depending on the course selection.

ELECTIVES

BUS 103	Organizing a Small Business	3
MET 160*	Composite Materials	3
MET 271*	Corrosion and Corrosion Analysis	4
MFG 105	Manufacturing Processes	4

ID MATERIALS SCIENCE

METALLURGY—APPLIED PHYSICAL CERTIFICATE

Schoolcraft program code # 1YC.00124

The Applied Physical Metallurgy Certificate Program is designed to provide people currently employed in the field with an opportunity to reinforce skills and acquire the academic foundations necessary for advancement in the laboratory and related process situations. The program is oriented to property, process and structure areas of study and is designed and scheduled with consideration for part-time students.

All courses are not offered each semester. Students should work with the Counseling Department to set up a schedule that will work for them. Students who satisfactorily complete the Program Courses qualify for a Certificate of Program completion.

SAMPLE SCHEDULE OF COURSES

FIRST YEAR	Fall Semester	
MET 102	Introduction to Materials Science	3
MFG 102	Basic Machining Processes	3
MET 120*	Hazardous Materials Management	2
MET 152	Structure and Properties Laboratory	3
		11
	Winter Semester	
MET 114	Engineering Materials	3
WELD 113	Shielded Metallic Arc Welding (S.M.A.W.)	3
Elective**	MET	3
		9
SECOND YEAR	**Fall Semester**	
MET 211*	Physical Metallurgy Structures	3
MET 215*	Mechanical Properties of Metals	3
		6
	Winter Semester	
MET 280*	Special Problems in Materials Science	**4**
	PROGRAM TOTAL 30 CREDITS	

* These classes are offered on a rotational basis. Contact Metallurgy faculty for current and projected offerings.

** Any Metallurgy course not previously taken.

MATERIALS SCIENCE POST-ASSOCIATE CERTIFICATE

Schoolcraft program code # PAC.00179

This post-associate certificate in Materials Science is designed for working professionals who have industrial experience and/or training in the materials science field and who wish to study current technologies applied to laboratory practice and other materials-related endeavors.

Completion of this program will enhance students' abilities to meet the needs of current and changing industrial technologies in metallurgical and materials science applications, processing, and control environments. It will also provide support background for managerial and technical personnel who have direct responsibilities in industrial materials operations and planning. These courses are also intended to meet requirements for current and future professional certification.

Prior to admission students must have earned a minimum of an accredited Associate Degree in Applied Science.

All courses are not offered each semester. Students should work with the Counseling Department to set up a schedule that will work for them. The post-associate certificate is awarded upon successful completion of 16 credit hours (exact number may vary slightly due to credit value or content of courses).

SAMPLE SCHEDULE OF COURSES

FIRST YEAR	Fall Semester	
MET 211*	Physical Metallurgy Structures	3
MET 215*	Mechanical Properties of Metals	3
Elective	Select any applicable MET 200-level course	3–4
		9–10
	Winter Semester	
MET 280*	Special Problems in Materials Science	4
Elective	Select any applicable MET 200-level course	3–4
		7–8

Completion of a minimum of 16 credit hours is required.

Courses can be taken through independent study.

* These classes are offered on a rotational basis. Contact Metallurgy faculty for current and projected offerings.

Go to www.schoolcraft.edu/academicprograms to see the Gainful Employment Disclosure which includes additional information about this program, such as program costs, student graduation rates, and the median debt of students who complete the program.

Schoolcraft College

18600 Haggerty Road
Livonia, MI 48152-2696

PROGRAM INFORMATION UPDATED 4-12