

# *Industrial Technology Curriculum*

## *Graduate Degree Programs*

### Master of Science: Hazardous Materials Management

<u>Course</u>	<u>Title</u>	<u>Semester Hours</u>	<u>Elective Courses</u>	<u>Semester Hours</u>	
ITHM 520	Intro to Hazardous Mat. Mgmt	3	ITHM 521	System Modeling	3
ITHM 523	Statistics/Data Analysis	3	ITHM 522	Chemistry of Hazardous Materials	3
ITHM 524	Public Issues in Hazardous Materials	3	ITHM 526	Environmental Regulations	3
ITHM 525	Natural Resources & Conservation	3	ITHM 527	Water & Wastewater Treatment	3
ITHM 529	Env. Toxicology and Risk Assess.	3	ITHM 528	Waste Minimization	3
			ITHM 530	Industrial Waste Treatment and Tech.	3
	<b>Total Hours</b>	<b>15</b>	<b>Total Hours</b>	<b>30, 33, or 36</b>	

### Master of Science: Technology Education

<u>Course</u>	<u>Title</u>	<u>Semester Hours</u>	<u>Elective Courses</u>	<u>Semester Hours</u>	
TE 501	Current Literature, Issues and Research	3	TE 511	Technical Education	3
TE 504	Laboratory Planning & Management	3	TE 515	Career Education	3
TE 505	History & Philosophy of Tech. Ed	3	TE 516	Curriculum Development	3
TE 512	Administration and Funding	3	TE 521	Problems in Electronics	3
TE 513	Instructional Aids	3	TE 522	Problems in Drafting/Design	3
			TE 523	Problems in Metals	3
	<b>Total Hours</b>	<b>15</b>	TE 524	Problems in Woods	3
	<b>Courses in Education</b>				
EDFL 514	Elementary Statistics	3			
EDFL 515	Methods of Educational Research	3			
EDFL 568	Curriculum Methods	3			
	<b>Total Hours</b>	<b>9</b>			
			<b>Total Program Hours</b>	<b>30, 33, or 36</b>	

# DESCRIPTION OF COURSES

## Hazardous Materials Management

### **ITHM 500 Graduate Research/Thesis.** (1-4 hours)

The student is required to select an appropriate topic with approval from advisor and do a presentation.

**ITHM 520 Introduction of Hazardous Materials Management.** (3 Hours) (For Non-hazardous Materials Management Majors). An introduction to contemporary national problems of air and water pollution, environmental monitoring, toxicology, hazardous waste; general problems of environmental contamination; legal and political aspects of current regulations; general scientific principles applied to the evaluation and control of specific problems.

**ITHM 521 System Modeling.** (3 Hours) Practical application of simulation to diverse environmental systems including air, land, surface, sub-surface, water systems and also, the hazardous materials management models.

**ITHM 522 Chemistry of Hazardous Materials.** (3 Hours) This course shows how chemistry can be applied to hazardous materials. The course is designed to introduce and train students' awareness of the unique requirements involved in handling hazardous materials when they are encountered in different situations, thus reducing the loss of lives and property. Prerequisite: Chemistry 135 & 235.

**ITHM 523 Statistics/Data Analysis.** (3 Hours) This course is designed for the development and maintenance of proficiency in statistical interface. It contains a comprehensive overview of how statistics work in actual cases and how it can be applied in hazardous materials management. Prerequisite: Math 111, CSC 115, & 203.

**ITHM 524 Public Issues In Hazardous Materials/Waste.** (3 Hours) This course is an overview of the strategies, tactics and techniques regarding environmental affairs, both public and private.

**ITHM 525 Natural Resources and Conservation.** (3 Hours) This course is designed to give students pertinent information of our natural resources with emphasis on their origin, properties, use, misuse and conservation practices.

**ITHM 526 Environmental Regulations.** (3 Hours) A study of Federal Laws and Regulations concerning hazardous materials and wastes. This course will introduce students to laws and regulations in Mississippi and the nation. The course emphasizes how to implement and comply with laws.

**ITHM 527 Water and Wastewater Treatment.** (3 Hours) Students will be given an overview on waste/wastewater treatment through discussions of various selected topics. The primary focus of these topics will be to introduce students to treatment methods. Prerequisite: BIO 115 and CHEM 142.

**ITHM 527 Water and Wastewater Laboratory.** (1 hour) This course is the supplementary course of ITHM 527; laboratory activities which develop techniques for testing water and wastewater. This will involve tests for COD, BOD, Alkalinity, Nitrogen, Colonial Count, TCLP and several other tests. Prerequisite: Bio 101, CHEM 135 & 235, and ITHM 401.

**ITHM 528 Waste Minimization.** (3 Hours) This course is designed to make students aware of the vast number of problems encountered as a result of disposing waste. Also, students will be given lectures on methods of recycling, reuse and reducing our waste.

**ITHM 529 Environmental Toxicology and Risk Assessment.** (3 Hours) This course will involve studying chemicals and harmful actions of chemicals on biological issues. This will include understanding chemical reactions and interactions of biological organisms. Students will also be introduced to scientific data and methods currently used to assess human risk to environmental chemicals.

**ITHM 530 Industrial Waste Treatment and Technology.** (3 Hours) This course is an advanced course for hazardous waste treatment technology. It includes training in pretreatment of hazardous materials, chemical/physical process, stabilization, recovery processes, final disposal of, and secured landfill stabilization. EPA requirements for each process will be addressed in this class. Prerequisite: ITHM 302.

## Technology Education

**TE 500 Seminar/Workshop.** (3 Hours) Designed for offering courses on subjects which are current and important to industrial education.

**TE 501 Current Literature, Issues and Research.** (3 Hours) Identification, analysis, and discussion of the periodicals, topical books, major issues, and research in the field of industrial education.

**TE 504 Laboratory Planning and Management.** (3 Hours) Designing various industrial education laboratories and facilities. Includes attention to purpose, recommended sizes and other specifications.

**TE 505 History and Philosophy of Technology Education.** (3 Hours) Factors involved in developing the trends and leaders in industrial and vocational education. Analysis of objectives, current concepts, practices and anticipated policies in industrial education.

**TE 511 Technical Education.** (3 Hours) Emphasis on trends, community surveys, curricula, definitions, and needs of post-secondary technical education programs.

**TE 512 Administration and Funding.** (3 Hours) Identifying current legislation and funding practices concerning industrial education. Function and relationship of directors, supervisors and instructors in all fields of industrial education.

**TE 513 Instructional Aids.** (3 Hours) Studying the many instructional aids available for teaching industrial subjects. The course includes instruction in the common audio-visual aids but also making models, cutaways and other industrial teaching aids.

**TE 515 Career Education.** (3 Hours) Current career education programs and their relationship to industrial education. Emphasis on integrating career education goals in industrial education with attention to the goals of each field.

**TE 516 Curriculum Development.** (3 Hours) Principles and techniques of designing and writing industrial education curricula. Attention will be given to goals, behavioral objectives, designing programs to meet objectives and evaluating results.

**TE 521 Problems in Electricity/Electronics** (3 Hours) Opportunity to study problems related to the area of electricity/electronics. Problems based on needs of students with approval of the advisor and the Dean of the School.

**TE 522 Problems in Drafting.** (3 Hours) Opportunity to study problems related to the area of drafting. Problems based on needs of students with approval of the Dean of the School and his advisor.

**TE 523 Problems in Metals.** (3 Hours) Opportunity to study problems related to the area of metals. Problems based on needs of students with approval of the Dean of the School and his adviser.

**TE 524 Problems in Woodworking.** (3 Hours) Opportunity to study problems related to the area of woodworking. Problems based on needs of students with approval of the Dean of the School and his adviser.

**TE 581W Residential Plumbing.** (3 Hours) Residential Plumbing is designed to acquaint the student with the fundamentals of basic residential and commercial plumbing. Much of the class time will be given to hands-on activities. Graduate students in residual plumbing are required to do a research project in air-conditioning and refrigeration.

**TE 590 Thesis.** (3 Hours) The candidate selects an appropriate topic with approval of adviser and his committee.

**TE 599 Independent Research.** (1-3 Hours) Opportunities for studying special problems and doing research in the major area. Developed and defined in consultation with the professor.

**TE 600 Seminar in Industrial Education.** (3 Hours) Seminar in the various fields of industrial and

technical education.

**TE 601 Selection and Organization of Subject Matter.** (3 Hours) Analysis and selection of materials for junior and senior high school, and also, adult industrial technical education.

**TE 602 Evaluation of Programs of Industrial and Technical Education.** (3 Hours) Evaluation principles and practices in the specialized areas of industrial arts, technical and industrial education.

**TE 603 Research in Industrial Education.** (3 Hours) Rationale for and methods of research in education. Emphasis is given to the identification of researchable problems and interpretation of research studies in industrial education.

**TE 621 Coordination in Occupational Training and Placement Program.** (3 Hours) Analysis of objectives and scope of trade and industrial cooperative education program, apprenticeship, and general education work experiences.

**TE 622 Developing Occupational Curricula in Two-Year Colleges.** (3 Hours) Approaches to occupational curriculum development and course construction in junior colleges. For prospective teachers and administrative personnel.

**TE 688 Internship.** (variable credit) Supervised graduate internship and externship in various areas of industrial education.

**TE 699 Reading and Independent Study.** (variable credit) Study on an individual or group basis in industrial education.