

Department of Applied Medical Sciences

Chair of the Department: W. Douglas Thompson, 106 Science Building, Portland
Professors: Ng, Thompson, Wise; *Associate Professors:* Duboise, Pelsue; *Research Assistant Professors:* Meyer, Lichter, Paulu, Xie; *Adjunct Professors:* Ault, Rhodes, Rice; *Adjunct Associate Professors:* Allan, Chandler, Craig, Davidoff, Fletcher, Follansbee, Friesel, Liaw, Lindner, Smith, Vary; *Adjunct Assistant Professor:* Beckett

In addition to its graduate program (with concentrations in toxicology and cancer biology, immunology and infectious disease, epidemiology, and biotechnology) the Department of Applied Medical Sciences offers an undergraduate minor in toxicology and environmental health.

Minor in Toxicology and Environmental Health

The undergraduate minor in toxicology and environmental health provides students with a comprehensive overview of the scientific disciplines that are most relevant to understanding the effects of environmental hazards on human health. The effects of pollutants on various organ systems in humans and in marine mammals are emphasized.

Students can minor in toxicology and environmental health by completing 18 credits of curriculum involved in the minor with a grade of C (2.0) or higher. Interested students should contact the AMS office for additional information.

All students will be required to take the following core courses (11 credits):

AMS	490	Introduction to Toxicology I	(3 credits)
AMS	491	Introduction to Toxicology II	(3 credits)
AMS	435	Introduction to Epidemiologic Research	(3 credits)
AMS	495	Seminar in Biomedical Sciences	(2 credits)

Select 7 credits from below:

AMS	493	Introduction to Research Techniques in Toxicology and Environmental Health	(4 Credits)
BIO	321	Neurobiology	(3 Credits)
CHY	461	Biochemistry	(3 Credits)
ESP	375	Environmental Risk Assessment and Management	
PSY	365	Physiological Psychology	(3 Credits)
PSY	366	Drugs, Mind, and Behavior	(3 Credits)

AMS 435 Introduction to Epidemiologic Research

This course is intended to give students a basic foundation in principles for the conduct and interpretation of population-based studies of the distribution, etiology, and control of disease. Topics will include randomized experiments, non-randomized cohort studies, case-control studies, cross-sectional and ecological studies, causal inference, sources of bias, and measures of effect. Recent publications from the epidemiologic and general medical literature will be used to illustrate the application of the concepts to specific epidemiologic issues. Cr 3.

AMS 450 Principles of Immunology

An introduction to the fundamentals of immunology, especially as they relate to human diseases. Topics include history of immunology, basic elements of immune systems, principles of natural and acquired immunity, cellular and molecular basis of B cell and T cell development and diversity, and clinical aspects of immunology. Prerequisites: CHY 105 or CHY 115, junior standing, and grade of C- or higher in either BIO 109 or BIO 211; or permission of instructor. Cr 3.

AMS 490 Introduction to Toxicology I

This course introduces students to the principles and practice of toxicology. The major focus of the course is on basic principles, mechanisms, and common methods underpinning the science of toxicology. Selected target organ systems (e.g., respiratory, nervous, and immune systems) are studied with respect to understanding how representative chemicals damage and impair their ability to function. Students will develop a fundamental understanding of how chemicals may exert toxic effects and gain insight into the importance of organ specific effects. Prerequisite: admission to the minor, cell biology, or molecular biology, or biochemistry, or permission of the instructor. Cr 3.

AMS 491 Introduction to Toxicology II

The course continues to focus on basic principles, mechanisms, and common methods underpinning the science of toxicology. Selected toxicants are studied with respect to their source of exposure and mechanisms of effect. Selected disease processes (e.g. mutagenesis, carcinogenesis, and teratogenesis) are studied with respect to understanding their basic pathways and common mechanisms. Selected fields are presented to give students insight into the applications of toxicology and its relationship with other fields. Prerequisite: AMS 490, or permission of the instructor. Cr 3.

AMS 493 Introduction to Research Techniques in Toxicology and Environmental Health

The student learns a laboratory approach and techniques to study toxicology and environmental health. The term is spent under the direction of a faculty member engaged in a research project. This is a

hands-on course with close supervision by technically trained personnel. For those sections in laboratories working with biohazards, laboratory safety and use of biosafety hoods are emphasized. Prerequisite: permission of instructor. Cr 4.

AMS 495 Advanced Seminar in Biomedical Sciences

The student participates in a weekly seminar on biomedical sciences. The seminar focuses on current topics in biomedical research. Prerequisite: permission of instructor. Seminar is offered in both fall and spring semesters. Cr 1.

BIO 321 Neurobiology

This course presents an overview of nervous system function, structure, and development. Content focuses on the cellular and molecular properties that underlie normal function. Prerequisite: grade of C or higher in BIO 109 or BIO 111, or permission of instructor. Cr 3.

CHY 461 Biochemistry

Application of chemical methods and principles to understanding biological processes. Topics include structure and action of nucleotides, proteins, lipids, and carbohydrates; enzyme kinetics and mechanisms; membranes and transport; and metabolism and energy conversion. This one-semester course provides a survey of the major areas of biochemistry, except for nucleic acids. Prerequisite: a grade of C- or better in CHY 253. Cr 3.

ESP 375 Environmental Risk Assessment and Management

The focus of this course is to provide students with an understanding of human health risk assessment as an organized, multidisciplinary approach to evaluating scientific data by studying basic toxicology and fate and transport of contaminants using generally accepted principles and terminology used in the field. Students will examine the limitations of current risk assessment methods and be introduced to the basics of ecological risk assessment. Finally, students will study the scientific, political, social, ethical, and economic dimensions of managing risks. Prerequisite: ESP 101/102K or permission of instructor. Cr 3.

PSY 365 Physiological Psychology

Basic neuroanatomy, neurophysiology, and endocrinology, and the relationships between nervous system functioning and behavior. Physiological analysis of sensory function, motivation, and learning. Prerequisites: PSY 101J, 102, and BIO 111. Cr 3.

PSY 366 Drugs, Mind, and Behavior

The physiological and behavioral effects of drugs are examined in light of current research. Also considered are theories relating to the use/abuse of drugs, tolerance, addiction, and drug interactions. Prerequisites: PSY 101J and one semester of biology. Cr 3.