

PHM 816: Integrative Toxicology: Mechanisms, Pathology and Regulation Course information

This course covers

- biochemical, molecular, and physiological mechanisms of toxicology
- functional and pathological responses of major organ systems to chemical insult
- mechanisms of mutagenesis and carcinogenesis
- concepts in risk and safety assessment.

Students are expected to attend and participate in class, take written examinations, and give an oral presentation. They are also expected to provide evaluation of instructors by means of a survey.

Grades and exams: Student grades will be based on their performance on:

Four exams on content presented in class (see class schedule). Exams will require short answers to questions on class material.

Participation in a presentation, either individually or as a group. Evaluation of performance will include evidence of participation, quality of presentation, and peer review. For more on this, refer to information found in the “Special topics” folder on D2L.

Instructor evaluations: Students are expected to evaluate instructors in this course. Students are asked to evaluate instructors immediately after the exam in which those instructors participated. A survey instrument is posted on D2L in the “Instructor evaluations” folder. Students should fill in the survey and return it to Patty Gregory in the Department of Pharmacology and Toxicology office (pgregory@msu.edu). Evaluations can be submitted electronically or as hard copies. The course moderator will be informed when all students have submitted evaluations. We appreciate your cooperation.

Office hours: There are no regularly scheduled office hours. If students have questions about the course, they should contact the course moderator (Dr. Ganey, ganey@msu.edu) or Dr. Tewari-Singh (tewarisi@msu.edu). If they have questions regarding specific lectures presented in class, they are encouraged to contact the

faculty responsible for those lectures. Email contact is the easiest way to reach a professor.

Academic integrity: MSU policy governing Graduate Student Rights and Responsibilities states: "The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards."

Article 2.3.7: <http://splife.studentlife.msu.edu/graduate-student-rights-and-responsibilities/article-2-academic-rights-and-responsibilities-for-graduate-students>

Inform your course moderator of any accommodations needed: Michigan State University is committed to providing equal opportunity for participation in all programs, services and activities. If you have a documented disability and verification from the [Resource Center for Persons with Disabilities](#) (RCPD), and wish to discuss academic accommodations, please contact the course moderator as soon as possible. It is the student's responsibility to provide documentation of disability to RCPD and meet with an RCPD specialist to request special accommodation *before* classes start. RCPD is located in 120 Bessey Hall. RCPD may be contacted by phone at (517) 884-7273 (884-RCPD), or [via their website](http://www.rcpd.msu.edu) (<http://www.rcpd.msu.edu>).

PHM/PDI/ANS/BMB 816, Fall 2019

Integrative Toxicology: Mechanisms, Pathology and Regulation

MWF 9:10 – 10:00 AM, A148 Plant and Soil Sciences Building

Course Moderators: Dr. Patti Ganey, ganey@msu.edu

Dr. Neera Tewari-Singh, tewarisi@msu.edu

Lecture Schedule

Date,Day	Topic	Instructor	Lecture #
Aug 28, Wed	Pathways to cell death 1	Ganey	1
Aug 30, Fri	Pathways to cell death 2	Ganey	2
Sept 2, Mon	No class - University holiday		
Sept 4, Wed	Dose-response considerations	Roth	3
Sept 6, Fri	Inflammation	Roth	4
Sept 9, Mon	Injury, adaptation and repair	Wagner	5
Sept 11, Wed	Respiratory system toxicology/pathology 1	Wagner	6
Sept 13, Fri	Respiratory system toxicology/pathology 2	Wagner	7
Sept 16, Mon	Oxidative stress	Roth	8
Sept 18, Wed	Special topic #1 e-cigarettes	Wagner Ganey	9
Sept 20, Fri	Hypoxia and chemical hypoxia	Roth	10
Sept 23, Mon	Exam 1 – Lectures 1- 9		
Sept 25, Wed	Liver toxicology/pathology 1	Roth	11
Sept 27, Fri	Liver toxicology/pathology 2	Roth	12
Sept 30, Mon	Liver toxicology/pathology 3	Roth	13
Oct 2, Wed	Special topic #2 Dermal toxicology	Tewari-Singh Ganey	14
Oct 4, Fri	Detoxification mechanisms	Rockwell	15
Oct 7, Mon	Special topic #3 Microbiome in toxic responses	Tewari-Singh Ganey	16
Oct 9, Wed	Receptor-mediated toxicity 1	Zacharewski	17

Oct 11, Fri	Receptor-mediated toxicity 2	Zacharewski	18
Oct 14, Mon	Receptor-mediated toxicity 3	Zacharewski	19
Oct 16, Wed	Exam 2 – Lectures 10-19		
Oct 18, Fri	Michigan SOT meeting in Ann Arbor PFAS exposure and toxicology in Michigan and beyond or assigned chapter		20
Oct 21, Mon	Neurotoxicology 1	Hegg	21
Oct 23, Wed	Neurotoxicology 2	Hegg	22
Oct 25, Fri	Mutagenesis and carcinogenesis 1	Goodman	23
Oct 28, Mon	Mutagenesis and carcinogenesis 2	Goodman	24
Oct 30, Wed	Mutagenesis and carcinogenesis 3	Goodman	25
Nov 1, Fri	Mutagenesis and carcinogenesis 4	Goodman	26
Nov 4, Mon	Mutagenesis and carcinogenesis 5	Goodman	27
Nov 6, Wed	Toxicology of the immune system 1	Kaminski	28
Nov 8, Fri	Toxicology of the immune system 2	Kaminski	29
Nov 11, Mon	Toxicology of the immune system 3	Kaminski	30
Nov 13, Wed	Toxicology of the immune system 4	Kaminski	31
Nov 15, Fri	Special topic #4 Environmental lead	Roth Ganey	32
Nov 18, Mon	Exam 3 – Lectures 20-27		
Nov 20, Wed	Special topic #5 Chemical threat agents	Tewari-Singh Ganey	33
Nov 22, Fri	Safety assessment - cancer	Goodman	34
Nov 25, Mon	Case study – regulatory toxicology	Goodman	35
Nov 27, Wed	Adverse Outcome Pathways	Ganey	36
Nov 29, Fri	No class – University holiday		
Dec 2, Mon	Drug development and regulatory toxicology	Goodman	37
Dec 4, Wed	Epigenetic, transgenerational effects of chemicals	Goodman	38
Dec 6, Fri	Special topic #6 10 key characteristics of carcinogens	Goodman Ganey	39

Dec 12, Thurs
tentative

Final exam 7:45-9:45 AM – Lectures 28 – 38

Participating faculty email addresses:

P. Ganey	ganey@msu.edu
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