

# Course Information: Principles of Toxicology PHC7410 (CRN13738) / BIO7011 (CRN13739)

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**Office hours:** M & F, 12 noon – 12:45 pm by Zoom (link is integrated into course calendar in the Syllabus); Alternate office hours can be arranged by email.

**Course schedule:** Class is held Monday, Wednesday and Friday from 10:30 am until 11:20 am. Normal WSU holiday schedule applies.

**Mode of presentation:** Course is will be either an in-person or an on-line (Synchronous via Zoom) format according to Wayne State University's policy. A Zoom link for each lecture will be integrated into the course's calendar in the Syllabus if the on-line lecturing format is used for the course.

## Major objectives of the course:

- Provide an overview of 'toxicology' as a scientific discipline
- Acquaint the student with basic principles of the discipline
- Acquaint students with types of toxicants
- Cover mechanistic aspects of toxicity
- Introduce examples of organ-specific toxicity
- Discuss toxicology in the context of regulatory issues
- Discuss the evolution of technology and informatics in toxicology research

**Course Structure:** The course consists of lectures that are grouped on the basis of a similar genera; topic (e.g., general principles of toxicology, pharmacogenetics and phase 1 and 2 metabolism, types of toxicants and mechanism of action, physiological function and organ-specific toxicity). Lecture presentations, supplemented by lecturer provided notes, additional reading materials, study guides and/or practice tests will be posted in appropriate lecturer "modules" in CANVAS. There are no formal discussion periods scheduled in the course. However, students can ask for clarification of presented material during a lecture or afterwards

**Attendance:** The course is listed as Synchronous which means that you are required to attend each lecture. The "Course Participation Verification" program occurring at the beginning of the semester requires that I certify on line that you have attended the class, participated in an assigned study group, or initiated a contact with me to ask questions about course material. This verification program runs the first couple of weeks of the semester. It is important to be verified, especially if you are receiving any type of financial aid.

**Course textbook:** None required. However, most lecture material is closely related to topics that can be found in "Casarett & Doull's Toxicology: The Basic Science of Poisons", McGraw Hill Medical publishers. Some lecturers will have specific reading assignments from non-textbook

literature, or extremely detail notes related to their lectures. These materials will be available in CANVAS in the lecturer's module.

**Course Lectures and recordings:** Course lectures will be available in two formats. Instructors will upload their lectures (as pdf or pptx files) into a dated file within the Module section of CANVAS no later than the night before the lecture. There is no audio for these files. Zoom presentations will be recorded (audio and visual) and available on the Cloud, and can be accessed via the course Zoom link in CANVAS.

Lecture Schedule of Fall 2022.

**Fall 2022 Schedule for Principles of Toxicology  
PHC7410 & BIO7011**

**Time: Mon, Wed and Fri from 10:30 – 11:20am**

| <b>Date</b> | <b>Day</b> | <b>Lecture</b>            | <b>Topic</b>   |
|-------------|------------|---------------------------|--|
| Aug. 31     | Wednesday  | Wang                      | Introduction to course: History of Poisons and Evolution of Toxicology |
| Sep. 2      | Friday     | Kassotis                  | Nature of Toxicants & Dose Response                                    |
| Sep. 5      | Monday     | University closed-holiday |  |
| Sep. 7      | Wednesday  | Wang                      | Absorption, distribution, and elimination                              |
| Sep. 9      | Friday     | Kocarek                   | Phase I Metabolism   |
| Sep. 12     | Monday     | Runge-Morris              | Phase II Metabolism  |
|             |            |                           |  |
| Sep. 13     | Tuesday    |                           | Last day to drop with tuition refund                                   |
|             |            |                           |  |
| Sep. 14     | Wednesday  | Lash                      | Energetics and Mitochondrial Toxicity                                  |
| Sep. 16     | Friday     | Wang                      | Oxidative stress: Reactive oxygen and nitrogen species                 |
| Sep. 19     | Monday     | Wang                      | Oxidative stress: Nature of oxidative damage                           |
| Sep. 21     | Wednesday  | Wang                      | DNA damage and DNA repair  |
| Sep. 23     | Friday     | Reiners                   | Tissue injury and response   |
|             |            |                           |  |
| Sep. 26     | Monday     | Exam #1                   | Covers lectures from Aug. 31 through Sep. 21                           |
|             |            |                           |  |

|         |           |             |   |
|---------|-----------|-------------|---|
| Sep. 28 | Wednesday | Reiners     | Cell death and survival mechanisms  |
| Sep. 30 | Friday    | Pilsner     | Epigenetics and Toxicology  |
| Oct. 3  | Monday    | Reiners     | Carcinogenesis - I  |
| Oct. 5  | Wednesday | Reiners     | Carcinogenesis - II   |
| Oct. 7  | Friday    | Yang        | Toxicant effects on signaling: overview of components and network interactions                          |
| Oct. 10 | Monday    | Ibrahim     | Toxicant effects on Kinases and signaling   |
| Oct. 12 | Wednesday | Stemmer     | Toxicant effect on Phosphatases and signaling   |
| Oct. 14 | Friday    | Stemmer     | Metal Toxicology - I  |
| Oct. 17 | Monday    | Stemmer     | Metal Toxicology - II   |
| Oct. 19 | Wednesday | Jamesdaniel | Food Toxicology   |
|         |           |             |   |
| Oct. 21 | Friday    | Exam #2     | Covers lectures from Sep. 23 through Oct. 17  |
|         |           |             |   |
| Oct. 24 | Monday    | Kassotis    | Endocrine Toxicology  |
| Oct. 26 | Wednesday | Kassotis    | Mixture Toxicology  |
| Oct. 28 | Friday    | Pilsner     | Reproductive Toxicology - I   |
| Oct. 31 | Monday    | Pilsner     | Reproductive Toxicology - II  |
| Nov. 2  | Wednesday | LeFauve     | Developmental Toxicology - I  |
| Nov. 4  | Friday    | LeFauve     | Developmental Toxicology - II   |
| Nov. 7  | Monday    | Petriello   | Cardiovascular Toxicology - I   |
| Nov. 9  | Wednesday | Petriello   | Cardiovascular Toxicology - II  |
| Nov. 11 | Friday    | Petriello   | Environmental impacts on Gut Microbiota   |
|         |           |             |   |
| Nov. 13 | Sunday    |             | Last day to withdraw. However, withdraw requires course director's approval. "SMART Check" is required. |
|         |           |             |   |
| Nov. 14 | Monday    | Exam #3     | Covers lectures from Oct. 19 through Nov 11.  |
|         |           |             |   |
| Nov. 16 | Wednesday | Rosenspire  | Immunotoxicology - I  |

|         |                                   |                     |  |
|---------|-----------------------------------|---------------------|--|
| Nov. 18 | Friday                            | Rosenspire          | Immunotoxicology - II                        |
| Nov. 21 | Monday                            | Reiners             | Cutaneous Toxicology                         |
| Nov. 23 | Wednesday                         | Holiday- no classes |  |
| Nov. 25 | Friday                            | Holiday- no classes |  |
| Nov. 28 | Monday                            | Jamesdaniel         | Toxic responses of the Respiratory system    |
| Nov. 30 | Wednesday                         | Jamesdaniel         | Neurotoxicology - I                          |
| Dec. 2  | Friday                            | Jamesdaniel         | Neurotoxicology - I                          |
| Dec. 5  | Monday                            | Kocarek             | Hepatic toxicity - I                         |
| Dec. 7  | Wednesday                         | Kocarek             | Hepatic toxicity - II                        |
| Dec. 9  | Friday                            | Kassotis            | Regulatory issues and testing in toxicology  |
| Dec. 12 | Monday                            | Lash                | Toxic responses of the kidney                |
|         |                                   |                     |  |
| Dec. 14 | Wednesday<br>10:30am –<br>12:30am | Final Exam          | Covers lectures from Nov. 16 through Dec. 12 |

Home base of Lecturers and number of lectures:

| Faculty Member             | Role                        | Home Unit   | Secondary Affiliation | # of lectures |
|----------------------------|-----------------------------|---|-----------------------|---------------|
| <b>Wang, Gan</b>           | Course Director<br>Lecturer | Institute of Environmental Health Sciences (IEHS) | Pharmacology          | 5             |
| <b>Reiners, Jr., John</b>  | Lecturer                    | IEHS  | Pharmacology          | 6             |
| <b>LeFauve, Matthew</b>    | Lecturer                    | IEHS  | Pharmacology          | 2             |
| <b>Jamesdaniel, Samson</b> | Lecturer                    | IEHS  | Family Medicine       | 3             |
| <b>Kocarek, Thomas</b>     | Lecturer                    | IEHS  | Pharmacology          | 3             |
| <b>Lash, Lawrence</b>      | Lecturer                    | Pharmacology                                      |                       | 2             |

|                              |          |                           |                         |   |
|------------------------------|----------|---------------------------|-------------------------|---|
| <b>Yang, Zhao</b>            | Lecture  | IEHS                      |                         | 1 |
| <b>Ibrahim, Ahmed</b>        | Lecturer | Pharmacology              |                         | 1 |
| <b>Petriello, Michael</b>    | Lecturer | IEHS                      | Pharmacology            | 3 |
| <b>Rosenspire, Al</b>        | Lecturer | Immunology                |                         | 2 |
| <b>Runge-Morris, Melissa</b> | Lecturer | IEHS                      |                         | 1 |
| <b>Stemmer, Paul</b>         | Lecturer | IEHS                      | Pharmaceutical Sciences | 3 |
| <b>Kassotis, Chris</b>       | Lecturer | IEHS                      | Pharmacology            | 4 |
| <b>Pilsner, Rick</b>         | Lecturer | Obstetrics and Gynecology | IEHS                    | 3 |

**Tests:** There will be 4 exams. The fourth exam constitutes the final and will not be comprehensive in nature. Each test will consist of questions related to a block of 9 to 11 lectures. Each lecture will be worth 10 points. Question format is left to the instructor composing the questions.

Exams will be administered either in-person or on-line depending on the COVID-19 pandemic situation. If the exams are hold on-line, exams will be based on the “honor system”. However, there will be ‘technology’ overlooking your exam taking. Specifically, the Respondus system (or if the University has newer software) will be used for monitoring overt cheating. This system requires that you have a webcam and that you are using a fairly new computer to take the exam. Specifics will be provided early in the semester as to software requirements.

**Missing an exam/make-up exams:** You are expected to take the exams on the designated days and times. If you miss an exam without a pre-approved valid excuse you will receive a “zero” for the test.

**Extra Credit:** There is no formal/informal mechanism (*e.g.*, doing additional reading and writing a report) for earning extra credit in this course. However, extra points can be earned by completing SET forms (see below).

**Grades:** Grades are based on aggregated test points plus extra points gained by timely turning in Student Evaluation of Teaching (SET) forms. Grades for “Principles of Toxicology” are based on a percentage calculated as total points (test + extra) accumulated over the course of the semester, divided by the total test points available, multiplied by 100. Grades are based on the following percentages.

| Final Percentage | Grade |
|------------------|-------|
| ≥ 85             | A     |
| 79-84            | A-    |
| 74-78            | B+    |
| 69-73            | B     |
| 63-68            | B-    |
| 60-62            | C+    |
| 55-59            | C     |
| 52-54            | C-    |
| 45-51            | D     |
| < 45             | F     |

**SET forms:** There will be two opportunities to fill out “Student Evaluation of Teaching” (SET) forms. The first will be just after the second exam. The second will be during the last week of class, and before the final. Both will be on-line electronic evaluations. In order to get extra points for filling out the evaluations send a screen shot of the acknowledgement that you will get after filling out the forms to me via email. For each of the two SET evaluations I will award 3 extra points.

**The following additional University policies also apply to this course:**

**Religious holidays** (from the online Academic Calendar):

Because of the extraordinary variety of religious affiliations of the University student body and staff, the Academic Calendar makes no provisions for religious holidays. However, it is University policy to respect the faith and religious obligations of the individual. Students with classes or examinations that conflict with their religious observances are expected to notify their instructors well in advance so that mutually agreeable alternatives may be worked out.

**Student Disabilities Services:** If you have a documented disability that requires accommodations, you will need to register with Student Disability Services for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. The SDS telephone number is 313-577-1851 or 313-202-4216 for videophone use. Once you have your accommodations in place, I will be glad to meet with you privately during my office hours to discuss your special needs. Student Disability Services’ mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University. You can learn more about the disability office at [www.studentdisability.wayne.edu](http://www.studentdisability.wayne.edu)

To register with Student Disability Services, complete the online registration form at:

[https://wayne-accommodate.symphlicity.com/public\\_accommodation/](https://wayne-accommodate.symphlicity.com/public_accommodation/) (Links to an external site)

**Academic Dishonesty -- Plagiarism and Cheating**

Academic misconduct is any activity that tends to compromise the academic integrity of the institution or undermine the education process. Examples of academic misconduct include:

- Plagiarism: To take and use another's words or ideas as your own without appropriate referencing or citation.
- Cheating: Intentionally using or attempting to use or intentionally providing unauthorized materials, information or assistance in any academic exercise. This includes copying from another student's test paper, allowing another student to copy from your test, using unauthorized material during an exam and submitting a term paper for a current class that has been submitted in a past class without appropriate permission.
- Fabrication: Intentional or unauthorized falsification or invention of any information or citation, such as knowingly attributing citations to the wrong source or listing a fake reference in the paper or bibliography
- Other: Selling, buying or stealing all or part of a test or term paper, unauthorized use of resources, enlisting in the assistance of a substitute when taking exams, destroying another's work, threatening or exploiting students or instructors, or any other violation of course rules as contained in the course syllabus or other written information.

Such activity may result in failure of a specific assignment, an entire course, or, if flagrant dismissal from Wayne State University. <https://doso.wayne.edu/conduct/academic-misconduct>

**Course Drops and Withdrawals:** In the first two weeks of the (full) term, students can drop this class and receive 100% tuition and course fee cancellation. After the end of the second week there is no tuition or fee cancellation. Students who wish to withdraw from the class can initiate a withdrawal request on Academics. You will receive a transcript notation of WP (passing), WF (failing), or WN (no graded work) at the time of withdrawal. No withdrawals can be initiated after the end of the tenth week. Students enrolled in the 10th week and beyond will receive a grade. Because withdrawing from courses may have negative academic and financial consequences, students considering course withdrawal should make sure they fully understand all the consequences before taking this step. More information on this can be found at: <https://reg.wayne.edu/students/information#dropping>