# Survey of Research

**The University of Toledo**

**Department of Chemistry and Biochemistry**

**CHEM 1910- 002 (CRN: 14449)**

**Instructor**: Jon R. Kirchhoff

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**Office Hours**: M, W 9:30-11 am; T 2-3 pm and by appointment)

**Office Location**: BO 2024

**Office Phone**: (419) 530-1592

**Term**: Spring 2021

**Class Location**: BO 1049 **Class Day/Time**: T 10:00-10:55 am

**Lab Location**: n/a **Lab Day/Time**: n/a **Credit Hours**: 1

**SPECIAL UNIVERSITY COURSE EXPECTATIONS DURING COVID-19**

**ATTENDANCE**

Students must perform a daily health assessment, based on based on [**CDC guidelines**](https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html)**,** before coming to campus each day, which includes taking their temperature. Students who are symptomatic/sick should not come to class and should contact the Main Campus Health Center at 419-530-3451.  Absences due to COVID-19 quarantine or isolation requirements are considered excused absences. Students should notify me as soon as possible. These absences may not require written notice.

**FACE COVERINGS**

All students must wear face coverings while on campus, except while eating, alone in an enclosed space, or outdoors practicing social distancing. No students will be permitted in class without a face covering. If you have a medical reason that prevents you from wearing a face covering due to a health condition deemed high-risk for COVID-19 by the Centers for Disease Control and Prevention (CDC), you should submit a request for an accommodation through the Student Disability Services Office (SDS) by completing the [online application](https://teton.accessiblelearning.com/Toledo/). Students will need to provide documentation that verifies their health condition or disability and supports the need for accommodations. If a student is already affiliated with SDS and would like to request additional accommodations due to the impact of COVID-19, they should contact their accessibility specialist to discuss their specific needs.  

**SOCIAL DISTANCING**

Students should practice social distancing inside and outside the classroom. Please follow signage and pay attention to the seating arrangements. Do not remove stickers or tape from seats and/or tables; these items are there to provide guidance on the appropriate classroom capacity based on the recommended six (6) feet of social distancing between individuals. Please be conscious of your personal space and respectful of others. Also be cognizant of how you enter and exit the room; always try to maintain at least six (6) feet of distance between yourself and others.

**DESKS AND WORK SPACES**

Students will need to sanitize their desks and/or work space before and after class with the University provided sanitizing spray and paper towels their desks.

**SPECIAL NOTES**

It is important to note that based on the unpredictability of the COVID-19 virus things can change at any time so please be patient and understanding as we move through the semester. Please keep me informed of concerns you may have about class, completing course work/assignments timely and/or health concerns related to COVID.

**COURSE SPECIFIC INFORMATION**

**CATALOG/COURSE DESCRIPTION**

Survey of current research areas at the frontiers of chemistry, including topics that cross the boundaries with other disciplines. May be taken only as P/NC.

**COURSE OVERVIEW**

Students will participate in a series of lectures or demonstrations covering a range of topics focusing on modern chemistry research with emphasis on areas of ongoing research in the Department of Chemistry and Biochemistry. Chemistry 1910 is designed to give you a perspective of research from all areas of chemistry: analytical, biochemical, inorganic, materials, organic, and physical. Students will see practical applications of chemical research in these areas, as well as descriptions of specific research projects and specialized techniques.

Questions such as *What is research*, *Why is research important for our world*, *What are some research areas in chemistry* and *Why is science a great career choice* will be examined. Students will see firsthand some instrumentation (tools) for conducting research and how these tools can be used to understand and unravel the mysteries of chemical reactions or chemical problems. In many cases you will share the excitement of recent discoveries.

Research is the search for new knowledge about the unknown. Research involves continued questioning and examination. As you begin your career as a scientist at The University of Toledo in Chemistry 1910, please feel free to ask questions of all the faculty or staff. The questions you ask today maybe tomorrow's new knowledge.

## **STUDENT LEARNING OUTCOMES**

Students will

* learn about the importance and significance of research
* examine specific research projects in the Department of Chemistry and Biochemistry
* explore instrumentation and various important chemistry techniques for studying chemical systems
* learn about opportunities for undergraduate research in the department
* meet potential faculty mentors for future research projects.

**TEACHING STRATEGIES**

Students will be exposed to scientific research through face-to-face lectures, demonstrations and hands on activities. Students may contact Dr. Kirchhoff with any questions or concerns. Specific research questions can be directed to any of the faculty or staff presenters.

**PREREQUISITES AND COREQUISITES**

None, except a willingness to listen, think and explore

**TEXTS AND ANCILLARY MATERIALS**

None

**TECHNOLOGY REQUIREMENTS**

Computer access to the internet will be necessary at times.

**ACADEMIC POLICIES**

All students at the University of Toledo are expected to read, understand, and follow the academic policies that govern their attendance at the University. These policies include, but are not limited to, academic dishonesty, academic forgiveness, adding and dropping a course, grades and grading, and the missed class policy. Please use the following URL to read a comprehensive list of academic policies that pertain to you in this class and throughout your academic journey. If you have any questions after reading through the policies, please let me know.

[**Undergraduate Policies**](http://www.utoledo.edu/policies/academic/undergraduate/)**:** <http://www.utoledo.edu/policies/academic/undergraduate/>

**COURSE EXPECTATIONS**

Attendance at each class period and a willingness to participate in class discussions and demonstrations. Use of cell phones or laptop computers during class is not allowed.

**OVERVIEW OF COURSE GRADE ASSIGNMENT**

The course is graded as pass (PS) or no credit (NC). To receive a pass, students are required to attend each class period unless a valid excuse is obtained. Attendance will be taken. **Three or more unexcused absences will result in a grade of NC.**

**Midterm Grading**

Midterm grades are assigned the 8th week of class and are used to assist students with determining their academic standing. Attendance is also recorded during the 8th week to meet state and federal laws regarding financial aid disbursement. Please note, if you are not attending class it could affect your financial aid (scholarships, grants, loans or Federal Work Study). If you decide you are not going to attend this class (or any other class you have registered for), you must formally withdraw (drop) from the course. You can do this by logging on to the myUTportal, clicking on the “Student” tab, and then under “MyToolkit” clickon Register/Drop/Withdraw.

**Drop, Withdrawal, and Incomplete Grades:** Course drop and withdrawal procedures have been set by the University faculty. Pay attention to the add/drop dates as they pass very quickly during the semester. Dates can be found at <https://www.utoledo.edu/offices/registrar/registration_dates_fall.html>

**The last day to withdraw from a course is Friday March 26, 2021.** Please note that course registration changes might change your financial aid.

A course grade of incomplete is given only to those who have completed all but a small percentage of course requirements for an unexpected and acceptable reason.

**UNIVERSITY POLICIES**

Students can find a summary of university policies listed by audience on the [University Policy webpage](http://www.utoledo.edu/policies/audience.html/#students) (<http://www.utoledo.edu/policies/audience.html/#students>) and (<https://www.utoledo.edu/title-ix/policies.html>).

**Policy Statement on Non‐Discrimination.** The University is an equal opportunity educational institution. Please read the relevant policies related to non-discrimination.

* Nondiscrimination 3364-50-02
* Nondiscrimination on the basis of disability - Americans with Disability Act (ADA) 3354-50-03

**Policies for Student Safety.** Your safety and well-being as a University of Toledo student is important to the faculty, staff, and administration. Please review the following policies:

* Student Code of Conduct 3364-30-04
* The University of Toledo's Title IX (Sexual Misconduct) Policy - 3364-50-01
* Consensual romantic and/or sexual relationships - Policy 3364-25-65

**Academic Accommodations.** The University of Toledo embraces the inclusion of students with disabilities. We are committed to ensuring equal opportunity and seamless access for full participation in all courses. For students who have an accommodations memo from Student Disability Services, I invite you to correspond with me as soon as possible so that we can communicate confidentially about implementing accommodations in this course. For students who have not established affiliation with Student Disability Services and are experiencing disability access barriers or are interested in a referral to healthcare resources for a potential disability or would like information regarding eligibility for academic accommodations, please contact the [Student Disability Services Office](http://www.utoledo.edu/offices/student-disability-services/index.html)

(http://www.utoledo.edu/offices/student-disability-services/) by phone: 419.530.4981 or email at [StudentDisability@utoledo.edu](mailto:StudentDisability@utoledo.edu).

## **ACADEMIC AND SUPPORT SERVICES**

## Please follow this link to view a comprehensive list of [Student Academic and Support Services](http://www.utoledo.edu/studentaffairs/departments.html) (http://www.utoledo.edu/studentaffairs/departments.html) available to you as a student.

The university provides a variety of academic and support services on campus to help you succeed and reach your fullest potential. Whether you need to ask a question, get help with an assignment, seek advice from a counselor, find a job or join a club, UToledo is there for you! Examples of some of the resources for academic support or service are:

Tutoring: <http://www.utoledo.edu/success/lec/>

Library: <http://www.utoledo.edu/library/>

Success Coaching: <https://www.utoledo.edu/successcoach/>

Student Affairs: <http://www.utoledo.edu/studentaffairs/>

Career Services: <http://www.utoledo.edu/success/career/>

**SAFETY AND HEALTH SERVICES FOR UTOLEDO STUDENTS**

Please use the following link to view a comprehensive list Campus Health and Safety Services available to you as a student. <https://www.utoledo.edu/offices/provost/utc/docs/CampusHealthSafetyContacts.pdf>. One example is the food pantry.

**Food Pantry:** <http://www.utoledo.edu/studentaffairs/food-pantry/>

**INCLUSIVE CLASSROOM STATEMENT**

In this class, we will work together to develop a learning community that is inclusive and respectful. Our diversity may be reflected by differences in race, culture, age, religion, sexual orientation, gender identity/expression, socioeconomic background, and a myriad of other social identities and life experiences. We will encourage and appreciate expressions of different ideas, opinions, and beliefs so that conversations and interactions that could potentially be divisive turn, instead, into opportunities for intellectual and personal development.

**COURSE SCHEDULE**

**January 19** Jon Kirchhoff

**January 26** Wei Li

**February 2** Andy Jorgensen

**February 9** Jennifer Gadient

**February 16 Instructional Break**

**February 23** Cora Lind-Kovacs

**March 2** Eamon King

**March 9** Emanuela Gionfriddo

**March 16** Dragan Isailovic

**March 23** Yong Wah Kim

**March 30** Mike Young

**April 6** Matt Wohlever

**April 13** Jianglong Zhu

**April 20** Jennifer Gadient

**April 27** Jon Kirchhoff

**TOPICS**

**Emanuela Gionfriddo** *Microextraction Devices: A Convenient Tool for Chemical Analysis of Complex Matrices*

**Jennifer Gadient** *Scanning Electron Microscopy*

**Jennifer Gadient**  *X-ray Crystallography*

**Dragan Isailovic** *Analysis of* *Biomolecules and Biomarker Discovery by Mass Spectrometry*

**Andrew Jorgensen** *Energy Sources and Energy Uses*

**Yong-Wah Kim** *Molecular Structure by Nuclear Magnetic Resonance or NMR*

**Jon Kirchhoff** *Tales from the Periodic Table*

**Wei Li** *Photochemistry*

**Cora Lind-Kovacs** *Unusual Molecules: Negative Thermal Expansion Oxides*

**Eamon King**  *The Art of Scientific Glassblowing: Cuts and Burns 101*

**Michael Young** *Game of Amines: A Song of Pd and CO2*

**Matt Wohlever** *Quality Control of Mitochondrial Membrane Proteins*

**Jianglong Zhu** *Chemical Synthesis of Biologically Significant Oligosaccharides*