

# HUMAN PARASITOLOGY

## Biology 545

In Person, MWF 11:30 AM- 12:20 PM

Ackert 231

Spring 2024

Course Number: BIOL545  
Course Credits: 3 credit hours  
Course Site: K-State Canvas

Classroom: MWF 11:30 AM - 12:20 PM.

Instructor: Dr. Kristin Michel  
Email: [kmichel@ksu.edu](mailto:kmichel@ksu.edu)

Office Hours: drop in office hours through T 10:30-11:30 AM and F between 10 -11 AM, in person in Chalmers 267, or via Zoom at <https://ksu.zoom.us/my/kristinmichel> (password: mosquito). If you would like to make sure that you can speak with me at a given time, please email me, I am happy to set up an appointment that accommodates your class schedule.

### **Prerequisites:**

Introductory Biology course, BIOL198 or equivalent

### **Recommended Textbook:**

There is no required textbook for the class! You will be able to successfully complete this course without using the textbook at all.

If you are interested in going beyond the teaching materials provided in this class, here are my recommendations:

1. **Roberts LS, Janovy Jr J., Nadler S., 2012. Foundations of Parasitology, 9<sup>th</sup> ed., McGraw-Hill, New York. 670 pp. ISBN 978-0-07-352419-1.** If you are looking for an excellent comprehensive reference book, this is by far the best text on the market for parasitology. It is comprehensive, and its content is correct – which sometimes can be a challenge for such large topic textbooks. In addition, the book can serve as a marvelous reference book for you for years to come. Copies of the older 8th edition that you might buy used are OK, too. There is an international version of the book available, which is fine to use. Please note however that buyers of used textbooks usually do not accept this version.

2. **Eric Loker, Bruce Hofkin, 2015. Parasitology: A Conceptual Approach, 1<sup>st</sup> ed., Garland Science, New York. 560 pp. ISBN 978-1-31-740772-0.** If you are looking for a more conceptual textbook on parasitology, this is an excellent newish option. It covers the most common individual human parasite species in a catalog at the end of the book, while the majority of this textbook covers principles of transmission, epidemiology, pathology etc.

### **Class overview:**

The class will be divided into **weekly modules**, and each week will always consist of the following same materials and assignments, which will always be due at the same day and time:

1. MW ***in-person* lectures** will be delivered in person and each Friday will be used for ***in-person* case study discussions**.
2. Materials and assignments that students access through Canvas, and work on your own (called ***asynchronous materials and assignments***), accommodating different schedules you may have due to instable internet, work, etc. These will include:
  - a. A **single page with instructions and links** to individual files for the week.
  - b. **In addition to the in person lectures, all lectures are also provided as on-line recorded lectures** and their transcripts (pdfs of the slides)
  - c. **Assignment:** One (or more) **discussion board(s) for case study**, for which you will have to answer a small number of questions, and also comment on a previous reply from one of your colleagues. *Available always Monday 10 AM of the week, due always the following week Monday at 10 AM.*
  - d. **Assignment:** One **quiz** per week in weeks 1-14, each with ten questions each. The quiz will be open book, questions are shuffled, you cannot revisit previous questions, etc. *Available always Monday 10 AM of the week, due always the following week Monday at 10 AM.*
3. **Office hours.** I will have drop in office hours in person (office: Chalmers 267) and through Zoom (<https://ksu.zoom.us/my/kristinmichel>, password: mosquito) on T 10:30-11:30 AM and F between 10-11 AM.

### **Course Format:**

This is a course led by Dr. Kristin Michel, Professor in the Division of Biology at Kansas State University. The course is delivered in an in-person format, meaning that materials will be delivered in an in-person classroom setting, supported by on-line materials and assignments through Canvas, with that are spent in small and large group discussions.

### **Overview:**

Besides, their immediate impact on human well-being, parasites have shaped the biology of many organisms including humans. We will also explore their impact on human evolution, economy and biology, and touch on many fundamental biological processes that enable a parasitic life style. Many people assume that parasitic diseases mainly affect tropical areas. While this is certainly the case of the major parasitic diseases such as malaria, several parasites we will cover in class are very common in the US. So we are not as far removed as we often hope to be. This course aims to teach the fundamentals of diagnosis, treatment, pathology, transmission, and control of human parasites. A large portion of the above is learned simply by knowing the life cycles of the parasites in question and, thus, how to break the chain of infection. Therefore, much of this course will concentrate on the basic life-cycles of parasites. There is nothing tricky about this course; most of it is straight memorization.

### **Outline:**

The course is organized according to the classification (more specifically the phylogenetic classification) of parasites, including: Platyhelminthes (Flatworms including flukes and digenes), Nematoda (Roundworms), Protozoa (Eukaryotic unicellular organisms), and Arthropoda (including ticks, mites and insects). The course material is straight forward; we will cover a significant number of parasites, their principal biology, life cycle, pathology, treatment and prevention. Throughout the course, we will also go over different reasons that make it so

difficult to reduce global disease burden due caused by parasites, using very specific examples of certain parasitic diseases.

For those of you opting to take the laboratory portion of the class, the lecture course have been designed to keep fairly close pace with the laboratory sessions, at least whenever possible. The laboratory manual for Biology 546 is also on-line, and you may wish to look that material over even if you are not enrolled in that course. There is a separate syllabus for Biology 546 available on its Canvas website.

NOTE: Biology 545 and the laboratory, Biology 546, are separate courses. You are NOT required to take the laboratory; it is optional. However, you MAY NOT take the laboratory without being concurrently (or previously) enrolled in the lecture portion of the course.

### **Overview of Course materials:**

**In-person classes:** Each week, Monday and Wednesday lectures will provide an overview of a group of parasites and their biology, life cycle, pathology, treatment and prevention. The lectures provide a synthesis of the knowledge contained in parasitology textbooks, as well as that of many of my colleagues. In addition, they reflect my working experience in Parasitology during active research in the area of vector biology over the last 20+ years. Furthermore, lecture content comes from many additional sources, including primary research literature, and respected organizations/agencies, such as the CDC and WHO. You will need to attend the lectures to be able to complete the weekly quizzes. Each Friday, we will review the material covered in the MW lectures and apply the learnt knowledge to case studies. The Friday in-class case studies will teach you on how to approach real world parasitology cases and help you to complete the weekly case study assignments.

**On-line lectures:** These recordings provide an in-depth overview of the parasites we cover each week. Each lecture is accompanied with a pdf of the slides. The recorded lectures will allow you to revisit the materials of the in-person lectures.

**Parasite handouts:** In addition, to the lecture materials, parasite handouts will provide a brief overview of individual parasite species or a closely related group of parasite species with regards to their life cycle, geography & prevalence, pathology, diagnosis, treatment, personal protection & prevention, and intriguing biology.

**Case Studies:** Case studies provide you with the opportunity to apply your knowledge gained in the lectures to real life situations, where people have suffered from parasite infections. We will go over about two to four case studies each week, usually on Fridays. Cases will be available through canvas and include a number of questions. Students will work in groups to discuss the case and answer the questions in discussion, and then present their case to the entire class with some time for questions.

### **Overview of Assessments:**

- 1. Introduce Yourself Discussion board (10 points):** During the first week of the semester, please introduce yourself to your colleagues, by either posting a video or a written response.
- 2. News story posted to the Parasite in the News discussion board (12 points):** During the **seventh week** of the semester, please post a News article on a human parasite on the "Parasite in the News" discussion board. One way to find such articles is by using a web search engine and selecting the news tab. Your post needs to contain the following:
  - Link to the original article;
  - A couple of sentences summarizing the main message in the article, including the scientific name of the parasite;

- a link to the original scientific article or clinical report the article refers to.
- The link to a second, independent source corroborating the new story.
- Post at least one constructive comment on a colleague's News item.

The assignment is open from the first day of class and is due the following Monday at 10 AM.

- 3. Weekly quizzes (20 points each):** Each weekly quiz will have 10 questions. They are either True/False, multiple choice or fill-in-the-blank questions, or questions to name a particular parasite based on one or several characteristics given in the question. Each quiz is worth 20 points. The quizzes are on-line and open book, and will cover the materials you have reviewed during the week. They cover the material in the on-line lectures and hand-outs for each week, are accessible from Monday morning 10:00 AM and due the following Monday at 10 AM.
- 4. Weekly case studies (12 points each):** Each week there will be a discussion board of a case study that describes the history, clinical presentation, and laboratory results of a patient with suffering from an infection with a parasite that we covered that week. You will answer 5 questions to the discussion board. After you have posted your answers, you will see you colleagues' answers and will comment constructively to at least one of your colleague's answers to the same questions.
- 5. Final Project proposal (5 points):** The final project of the course is you designing an **outreach tool** to educate the public about a particular parasitic disease and its prevention and control – this can be as simple as a poster, or pamphlet or take on other forms that are appropriate and effective – a fabulous example can be found at [https://www.youtube.com/watch?v=RI5i5Mhj\\_do](https://www.youtube.com/watch?v=RI5i5Mhj_do) (the actual performance starts about 5:30 minutes into the video). This serves multiple purposes. Firstly, it is an opportunity for you to focus your attention on one parasite and the disease it causes that you are particularly interested in. Secondly, it ensures that you can synthesize the information you have learnt in this class and apply it in a meaningful way. Third, this project provides you with practice in community outreach. Finally, they are meant to help you look at topics and solutions to problems from a Public Health perspective, which is crucial for combating parasitic diseases.

You will provide an proposal of your proposed outreach tool with the following information: (1) Parasite species to be covered, (2) disease to be covered, (3) target audience for the outreach tool, (4) format you plan to use (poster, pamphlet, gif, video, music video, performance art etc), (5) three specific facts you plan to include in the outreach tool.

- 6. Final Project submission (25 points total):** Once you have cleared our proposal with me, you will submit your Outreach Tool to a discussion board, and include a couple of paragraphs with the following information: 1. Your motivation for choosing the particular parasite/parasitic disease, 2. Your target audience and why you believe this is the most important audience to educate on the disease, 3. The three specific facts your outreach tool tries to convey, with an explanation why these reduce disease burden. Please note that once you submitted you initial outreach tool, you will get feedback from your colleagues and myself, which will allow you to revise the project and resubmit it to improve your point score.

### **Rescheduling of Assessments:**

All assignments are open book and can be completed asynchronously over the time span of one week, with some assignments having longer time spans. If you feel that you require more time to complete a given assignment, please get in touch with me either during class hours, office hours, or by email ([kmichel@ksu.edu](mailto:kmichel@ksu.edu)) at least 72h prior to the due date of the assignment.

**Grading policy:**

**Points available in the course:**

Category	Maximum number of points
Weekly Quizzes (1-14)	280 (20 points each)
Weekly Case Studies (1-13)	178 (12 points each)
Introduction Discussion board	12
Parasite in the News discussion board	12
Final Project Proposal	5
Final Project Outreach tool	25 (with chance for revision)
<b>TOTAL</b>	<b>490</b>

Grading will be 90% (A), 80% (B), 70% (C), and 60% (D). The grades are unlikely to be curved.

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**Academic Honesty:**

Kansas State University has an Honor and Integrity System based on personal integrity, which is presumed to be sufficient assurance that, in academic matters, one's work is performed honestly and without unauthorized assistance. Undergraduate and graduate students, by registration, acknowledge the jurisdiction of the Honor and Integrity System. The policies and procedures of the [Honor and Integrity System](#) apply to all full and part-time students enrolled in undergraduate and graduate courses on-campus, off-campus, and via distance learning. A component vital to the Honor and Integrity System is the inclusion of the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by students. The Honor Pledge is implied, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work." A grade of XF can result from a breach of academic honesty. The F indicates failure in the course; the X indicates the reason is an Honor Pledge violation.

**Students with Disabilities:**

At K-State it is important that every student has access to course content and the means to demonstrate course mastery. Students with disabilities may benefit from services including accommodations provided by the Student Access Center. Disabilities can include physical, learning, executive functions, and mental health. You may register at the [Student Access Center](#) or to learn more contact:

Manhattan/Olathe/Global Campus – Student Access Center  
[accesscenter@k-state.edu](mailto:accesscenter@k-state.edu)  
785-532-6441

Students already registered with the Student Access Center please request your Letters of Accommodation early in the semester to provide adequate time to arrange your approved academic accommodations. Once SAC approves your Letter of Accommodation it will be e-mailed to you, and your instructor(s) for this course. Please follow up with your instructor to discuss how best to implement the approved accommodations.

### **Expectations for Classroom Conduct:**

All student activities in the University, including this course, are governed by the [Student Judicial Conduct Code](#) as outlined in the Student Governing Association [By Laws](#), Article V, Section 3, number 2. Students who engage in behavior that disrupts the learning environment may be asked to leave the class.

### **AI Use in this class:**

You may use Artificial Intelligence (AI) tools to assist your learning in this course, including idea generation and grammar assessments for written assignments. It is your responsibility, however, to be transparent in your AI use. To that end, you are required to read and edit, thoroughly, your assignment submissions, particularly any items created using AI.

For every assignment submission, you will include a 150-300 word AI Acknowledgement that includes the following four components:

1. A citation for the tool/s used, as follows: “Title of AI Tool. Prompt or brief description of topic of search depending on tool. Date of creation.”
2. An explanation of why you decided to use the tool(s)
3. A description of how you used the tool(s) to manage assignment requirements.
4. A reflection on your experience using the tool, exploring what worked or didn’t, and acknowledging limitations of the tool for this assignment, potential biases, etc.

Using an AI tool to generate assignment content without proper attribution would be a violation of the [K-State Honor Pledge](#).

### **Mutual Respect and Inclusion in K-State Teaching and Learning Spaces**

At K-State, faculty and staff are committed to creating and maintaining an inclusive and supportive learning environment for students from diverse backgrounds and perspectives. K-State courses, labs, and other virtual and physical learning spaces promote equitable opportunity to learn, participate, contribute, and succeed, regardless of age, race, color, ethnicity, nationality, genetic information, ancestry, disability, socioeconomic status, military or veteran status, immigration status, Indigenous identity, gender identity, gender expression, sexuality, religion, culture, as well as other social identities.

Faculty and staff are committed to promoting equity and believe the success of an inclusive learning environment relies on the participation, support, and understanding of all students. Students are encouraged to share their views and lived experiences as they relate to the course or their course experience, while recognizing they are doing so in a learning environment in which all are expected to engage with respect to honor the rights, safety, and dignity of others in keeping with the K-State Principles of Community <https://www.k-state.edu/about/values/community/>.

If you feel uncomfortable because of comments or behavior encountered in this class, you may bring it to the attention of your instructor, advisors, and/or mentors. If you have questions about how to proceed with a confidential process to resolve concerns, please contact the Student Ombudsperson Office. Violations of the student code of conduct can be reported here <https://www.k-state.edu/sga/judicial/student-code-of-conduct.html>. If you experience bias or discrimination, it can be reported here <https://www.k-state.edu/report/discrimination/>.



## **Discrimination, Harassment, and Sexual Harassment**

Kansas State University is committed to maintaining academic, housing, and work environments that are free of discrimination, harassment, and sexual harassment. Instructors support the University's commitment by creating a safe learning environment during this course, free of conduct that would interfere with your academic opportunities. Instructors also have a [duty to report](#) any behavior they become aware of that potentially violates the University's policy prohibiting discrimination, harassment, and sexual harassment, as outlined by [PPM 3010](#).

If a student is subjected to discrimination, harassment, or sexual harassment, they are encouraged to make a non-confidential report to the University's [Office for Institutional Equity \(OIE\)](#) using the [online reporting form](#). Incident disclosure is not required to receive resources at K-State. Reports that include domestic and dating violence, sexual assault, or stalking, should be considered for reporting by the complainant to the [Kansas State University Police Department](#) or the [Riley County Police Department](#). Reports made to law enforcement are separate from reports made to OIE. A complainant can choose to report to one or both entities. Confidential support and advocacy can be found with the [K-State Center for Advocacy, Response, and Education \(CARE\)](#). Confidential mental health services can be found with [Lafene Counseling and Psychological Services \(CAPS\)](#). Academic support can be found with the [Office of Student Support and Accountability \(OSSA\)](#). OSSA is a non-confidential resource. OIE also provides a [comprehensive list of resources](#) on their website. If you have questions about non-confidential and confidential resources, please contact OIE at [equity@ksu.edu](mailto:equity@ksu.edu) or (785) 532-6220.

### **Copyright Notification:**

Copyright 2024 (Kristin Michel) as to this syllabus, laboratory manual, and all introductory lectures. During this course, students are prohibited from selling notes to or being paid for taking notes by any person or commercial firm without the expressed written permission of the professor teaching this course. In addition, students in this class are not authorized to provide class notes or other class-related materials to any other person or entity, other than sharing them directly with another student taking the class for purposes of studying, without prior written permission from the professor teaching this course.

### **Academic Freedom:**

Kansas State University is a community of students, faculty, and staff who work together to discover new knowledge, create new ideas, and share the results of their scholarly inquiry with the wider public. Although new ideas or research results may be controversial or challenge established views, the health and growth of any society requires frank intellectual exchange. Academic freedom protects this type of free exchange and is thus essential to any university's mission.

Moreover, academic freedom supports collaborative work in the pursuit of truth and the dissemination of knowledge in an environment of inquiry, respectful debate, and professionalism. Academic freedom is not limited to the classroom or to scientific and scholarly research, but extends to the life of the university as well as to larger social and political questions. It is the right and responsibility of the university community to engage with such issues.

### **Weapons Policy:**

Kansas State University prohibits the possession of firearms, explosives, and other weapons on any University campus, with certain limited exceptions, including the lawful concealed carrying of handguns, as provided in the University [Weapons Policy](#).

You are encouraged to take the [online weapons policy education module](#) to ensure you understand the requirements of the policy, including the requirements related to concealed carrying of handguns on campus. Students possessing a concealed handgun on campus must be lawfully eligible to carry and either at least 21 years of age or a licensed individual who is 18-21 years of age. All carrying requirements of the policy must be observed in this class, including but not limited to the requirement that a concealed handgun be completely hidden from view, securely held in a holster that meets the specifications of the policy, carried without a chambered round of ammunition, and that any external safety be in the “on” position.

If an individual carries a concealed handgun in a personal carrier such as a backpack, purse, or handbag, the carrier must remain within the individual’s exclusive and uninterrupted control. This includes wearing the carrier with a strap, carrying or holding the carrier, or setting the carrier next to or within the immediate reach of the individual.

During this course, you will be required to engage in activities, such as (INSERT YOUR EXAMPLE), that may require you to separate from your belongings, and thus you should plan accordingly.

Each individual who lawfully possesses a handgun on campus shall be wholly and solely responsible for carrying, storing and using that handgun in a safe manner and in accordance with the law, Board policy and University policy. All reports of suspected violation of the weapons policy are made to the University Police Department by picking up any Emergency Campus Phone or by calling 785-532-6412.

### **Campus Safety:**

Kansas State University is committed to providing a safe teaching and learning environment for student and faculty members. In order to enhance your safety in the unlikely case of a campus emergency make sure that you know where and how to quickly exit your classroom and how to follow any emergency directives. To view additional campus emergency information go to the University's main page, [www.k-state.edu](http://www.k-state.edu), and click on the Emergency Information button, located at the bottom of the University’s main page.

### **Safe Zone:**

I am part of the SafeZone community network of trained K-State faculty/staff/students who are available to listen and support you. As a SafeZone Ally, I can help you connect with resources on campus to address problems you face that interfere with your academic success, particularly issues of sexual violence, hateful acts, or concerns faced by individuals due to sexual orientation/gender identity. My goal is to help you be successful and to maintain a safe and equitable campus.

### **Student Resources:**

K-State has many resources to help contribute to student success. These resources include accommodations for academics, paying for college, student life, health and safety, and others. Check out the [Student Guide to Help and Resources: One Stop Shop](#) for more information.

### **Mental Health:**

Your mental health and good relationships are vital to your overall well-being. Symptoms of mental health issues may include excessive sadness or worry, thoughts of death or self-harm, inability to concentrate, lack of motivation, or substance abuse. Although problems can occur anytime for anyone, you should pay extra attention to your mental health if you are feeling academic or financial stress, discrimination, or have experienced a traumatic event, such as loss of a friend or family member, sexual assault or other physical or emotional abuse.



If you are struggling with these issues, do not wait to seek assistance.

- Kansas State University [Counseling and Psychological Services](#) offers free and confidential services to assist you to meet these challenges.
- [Lafene Health Center](#) has specialized nurse practitioners to assist with mental health.
- The [Division of Academic Success and Student Affairs](#) can direct you to additional resources.
- [K-State Family Center](#) offers individual, couple, and family counseling services on a sliding fee scale.
- [Center for Advocacy, Response, and Education \(CARE\)](#) provides free and confidential assistance for those in our K-State community who have been victimized by violence.

### **K-State IFSA Land Acknowledgement:**

As the first land-grant institution established under the 1862 Morrill Act, we acknowledge that the state of Kansas is historically home to many Native nations, including the [Kaw](#), [Osage](#), and [Pawnee](#), among others. Furthermore, Kansas is the current home to four federally recognized Native nations: The [Prairie Band Potawatomie](#), the [Kickapoo Tribe of Kansas](#), the [Iowa Tribe of Kansas and Nebraska](#), and [Sac and Fox Nation of Missouri in Kansas and Nebraska](#).

Many Native nations utilized the western plains of Kansas as their hunting grounds, and others – such as the Delaware – were moved through this region during Indian removal efforts to make way for White settlers. It's important to acknowledge this, since the land that serves as the foundation for this institution was, and still is, stolen land.

We remember these truths because K-State's status as a land-grant institution is a story that exists within ongoing settler-colonialism, and rests on the dispossession of Indigenous peoples and nations from their lands. These truths are often invisible to many. The recognition that K-State's history begins and continues through Indigenous contexts is essential.

### **Technical Difficulties:**

The [K-State IT Help Desk](#) is there to assist you with questions regarding the technology used for your course. Phone: 785-532-7722 or toll-free 1-800-865-6143, Email: [helpdesk@k-state.edu](mailto:helpdesk@k-state.edu)

If you have issues with your technology, please contact them first, they are the technology experts. If you miss a deadline due to technical difficulties, make sure it is documented through communication with the IT Help Desk, then exceptions may be made on a case-by-case basis.

## CLASS SCHEDULE BIOL 545, Spring 2024

(please note that changes are possible)

**In person lectures MWF 11:30 AM-12:20 PM Ackert 321**

**ALL ASSIGNMENTS ARE DUE Mondays at 10 AM, unless otherwise noted**

### Introduction to Human Parasitology (1 week)

#### Week 1: Introduction to Human Parasitology (Jan 16-19)

WF in-person lectures

Optional Online lectures

- Lecture A.1: Introduction, definitions
- Lecture A.2: Definitions, most common parasites

Assignments

- **Introduction Discussion board**
- **Quiz 1**

### Section I: Flatworms/Platyhelminthes (3 weeks)

#### Week 2: Platyhelminthes: Introduction and Digenea (Jan 22-26)

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture I.1: Introduction to Platyhelminthes and their general classification
- Lecture I.2: Introduction to Digenea
- Lecture I.3: Digenea: Echinostomatidiformes
- Lecture I.4: Digenea: Plagiorchiiformes

Assignments

- **Case study Week 2**
- **Quiz 2**

#### Week 3: Platyhelminthes: Digenea & Cestoda (Jan 29-Feb 2)

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture I.5: Digenea: Opisthorchiformes
- Lecture I.6: Digenea: Strigeiformes I
- Lecture I.7: Digenea: Strigeiformes II
- Lecture I.8: Cestoda: Introduction
- Lecture I.9: Cestoda: Pseudophyllidea

Assignments

- **Case study Week 3**
- **Quiz 3**

#### Week 4: Platyhelminthes: Cestoda (Feb 5-9)

*5-Feb last day to drop with 100% refund*

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture I.10: Cestoda: Cyclophyllidea: Taenia
- Lecture I.11: Cestoda: Cyclophyllidea: Hymenolepididae
- Lecture I.12: Cestoda: Extraintestinal tapeworms I
- Lecture I.13: Cestoda: Extraintestinal tapeworms II

Assignments

- **Case Study Week 4**
- **Quiz 4**

### Section II: Roundworms/Nematoda (3 weeks)

#### Week 5: Nematoda: Introduction and Enoplea (Feb 12-16)

*12-Feb last day to drop with 50% refund*

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture II.1: Introduction to Nematoda and their general classification
- Lecture II.2: Enoplea: Trichinellida: *Trichuris*
- Lecture II.3: Enoplea: Trichinellida: *Capillaria*

- Lecture II.4: Enoplea: Trichinellida: *Trichinella*
- Lecture II.5: Enoplea: Dioctophymatida

Assignments

- **Case Study Week 5**
- **Quiz 5**

**Week 6: Nematoda: Rhabditida I (Feb 19-23)**

*20-Feb last day to drop without a W*

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture II.6: Rhabditida: Tylenchina
- Lecture II.7: Rhabditida: Rhabditina: Hookworms
- Lecture II.8: Rhabditida: Rhabditina: the others
- Lecture II.9: Rhabditida: Spirurina: Ascaris and its relatives
- Lecture II.10: Rhabditida: Spirurina: *Enterobius*

Assignments

- **Case study Week 6**
- **Quiz 6**

**Week 7: Nematoda: Rhabditida II (Feb 26-Mar 1)**

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture II.11: Rhabditida: Spirurina: Spiruromorpha
- Lecture II.12: Rhabditida: Spirurina: Filarial worms I
- Lecture II.13: Rhabditida: Spirurina: Filarial worms II
- Lecture II.14: Rhabditida: Spirurina: Dirofilaria
- Lecture II.15: Rhabditida: Spirurina: Dracunculomorpha

Assignments

- **Case Study Week 7**
- **Parasite in the News Discussion Board (Due March 18)**
- **Quiz 7**

**Section III: Unicellular Parasites/Protozoa (4 weeks)**

**Week 8: Protozoa: Introduction & Kinetoplasta (Mar 4-8)**

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture III.1: Introduction to Protozoa and their general classification
- Lecture III.2: Kinetoplasta: *Trypanosoma brucei*
- Lecture III.3: Kinetoplasta: *Trypanosoma cruzi*
- Lecture III.4: Kinetoplasta: *Leishmania sp.*

Assignments

- **Case Study Week 8 (due March 18)**
- **Parasite in the News Discussion Board (Due March 18)**
- **Quiz 8 (due March 18)**

**Spring Break (March 11-15)**

**Week 9: Protozoa: Other flagellated Protozoa & Amoebozoa (March 18-22)**

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture III.5: Other flagellated Protozoa I
- Lecture III.6: Other flagellated Protozoa II
- Lecture III.7: Amoebozoa: *Entamoeba*
- Lecture III.8: Other intestinal Amoebozoa
- Lecture III.9: Extraintestinal Amoebozoa

Assignments

- **Case Study Week 9**
- **Quiz 9**

**Week 10: Protozoa: Apicomplexa (March 25-29)**

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture III.10: Apicomplexa: Introduction
- Lecture III.11: Apicomplexa: Coccidia I
- Lecture III.12: Apicomplexa: Coccidia II
- Lecture III.13: Apicomplexa: Coccidia III

Assignments

- **Case Study Week 10**
- **Quiz 10**

**Week 11: Protozoa: Apicomplexa & Fungi & Odds and Ends (April 1-5)**

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture III.14: Apicomplexa: Plasmodium
- Lecture III.15: Apicomplexa: Malaria prevention
- Lecture III.16: Apicomplexa: Babesia
- Lecture III.17: Ciliophora & Microsporidia
- Lecture III.18: Protozoa with unclear phylogenetic origin

Assignments

- **Case Study Week 11**
- **Quiz 11**

**Section IV: Arthropoda (3 weeks)**

**Week 12: Arthropoda: Ticks & Mites (April 8-12)**

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture IV.1: Introduction
- Lecture IV.2: Chelicerata: Ixodidae I
- Lecture IV.3: Chelicerata: Ixodidae II
- Lecture IV.4: Chelicerata: Argasidae and Mites

Assignments

- **Case Study Week 12**
- **Quiz 12**

**Week 13: Arthropoda: Insecta (April 15-19)**

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture IV.5: Introduction to Insecta
- Lecture IV.6: Insecta: Phthiraptera I
- Lecture IV.7: Insecta: Phthiraptera II
- Lecture IV.8: Insecta: Hemiptera
- Lecture IV.9: Insecta: Hemiptera & Lepidoptera
- Lecture IV.10: Insecta: Siphonaptera
- Lecture IV.11: Insecta: Siphonaptera

Assignments

- **Case Study Week 13**
- **Quiz 13**

**Week 14: Arthropoda: Diptera (April 22-26)**

MW in-person lectures, F in-person case study discussions

Optional Online lectures

- Lecture IV.12: Insecta: Diptera (mosquitoes)
- Lecture IV.13: Insecta: Diptera (blackflies, sandflies, biting midges)
- Lecture IV.14: Insecta: Diptera (blowflies)
- Lecture IV.15: Insecta: Diptera (horseflies, stable flies, tsetse)

Assignments

- Case Study Week 14
- Quiz 14

**Final Project (2 weeks)**

**Week 15: Final Project (April 29-May 3)**

MWF in-person lectures

- Examples of Outreach tools,
- Feedback on Project Proposals

No online lectures

Assignments

- **Outreach Tool submission**

**Week 16: Final Project Revision (May 6-10)**

No in-person lectures

Assignments

- **Revised Outreach Tool submission **Due Friday, May 10, 5 PM****