Course Syllabus

BSCI222 Principles of Genetics

This is a 4 credit online course. That means we will not meet in person for the lecture or discussion, everything for this course is solely on-line.

Instructor:
Dr. O'Brien
Email: tammatha@umd.edu

Please post ALL questions about course material on the discussion board under the appropriate heading. Any questions you have about course material should be posted on the discussion board and not emailed to me. Only questions of a personal nature should be emailed to me.

Course Meeting Times: online, you may watch the Panopto videos anytime before an exam or quiz is assigned. Feel free to start watching now ;-)

Prerequisite:
BSCI105 (C or better) All students enrolled in this class need a working knowledge of basic cell functions, cell division, a background in mathematics and a molecular biology course that is the equivalent of BSCI105. You will need background to succeed in this course.

Course Description:
Principles of Genetics examines the principles and mechanisms of heredity and gene expression in plants, animals and microbes.

There is no substitute for effort in this class as BSCI222 is a 4-credit class for a reason. It is expected that you will spend at least 40 hours a week beyond of listening to the lectures working on problems and assignments. Please do not underestimate the amount of time necessary needed to earn an A in this class. Mathbench modules, homework, lecture quizzes, computer exercises and case studies along with problems from the text, all help you understand this very complex topic and prepare you for the upper level classes.

Course Objectives:

- To learn the basic principles, concepts, theories, and language that constitutes the discipline of genetics.
- To provide a framework for understanding how genetic information is organized, changes, and influences biological processes.
- To provide an understanding as to how genetics is used for addressing biological problems.

Required material:


You will also need to register for the genetics on-line labs [http://www.biologylab.awlonline.com](http://www.biologylab.awlonline.com) / There will be 6 on-line labs performed this semester. There is a one-time registration fee to sign up for use of these labs. Each student must register for these labs. Please buy this immediately, so you can start the labs now. You may work in groups of up to 4 students and hand in one write up per group for these lab assignments. If you work in a group you must include a statement that tell me what part of the assignment each person worked on. Do not add a person to your group unless you can guarantee the workload is evenly divided amongst the people in the group.

Web-based Information:

Use of the Enterprise Learning Management System is mandatory for students in BSCI222 as discussion material as well as lecture material will be found on the website. Everyone who has a University ID and password has a Canvas account. Other instructions can be found on the entry page. Please contact OIT with problems logging on to Canvas. You must be officially registered for class to use the site. This is an OIT and registrar regulation.

In addition, please review all the exercises on the Mathbench website [http://mathbench.umd.edu/homepage/statistical_tests.htm](http://mathbench.umd.edu/homepage/statistical_tests.htm)
**Discussion Boards and DB Etiquette**  
The discussion board is the "classroom" for this online course. This is where you and I will be able to engage with each other. Just as importantly, this is where you will work with your classmates to answer questions about the material presented. The discussion board is also where I can monitor and evaluate your participation in this class.

Please post all questions on the appropriate Canvas discussion board, you will see several discussion boards when you click the "Discussion" tab on the right site of the screen. **Only questions of a personal nature should be emailed to me,** everything else should be posted on the discussion board. The first week of class you will be asked to post a bio and pic on the appropriate Canvas discussion board. All assignments you hand in will be shared with your classmates and also posted on a discussion board.

When you post on the discussion board please do not change what you wrote on a thread once someone has commented on it. If there is a typo you may fix it, but do not change or add the content of your original post. You can create a new post if you want to add any information. It becomes very confusing when a person changes his/her post after people in the class have responded to it. Also, I am not alerted that there is a new post if you are just modifying an old post. I am only notified that there is a new post if you create a new post.

Please create a new thread for each unique question you have. Please respond to a question as a thread to the original post.

Please always treat everyone with respect on the posts. Remember that only course related material should appear on the course posts.

I will respond to any post on the discussion board within 24 hours. Please do not wait until right before a quiz, exam, or assignment is due to post a question as it can take me up to 24 hours for me to respond.

If you just took a quiz or exam, do not post questions about the quiz or exam material on any discussion board. Please wait until the day after the quiz or exam closes for everyone to email me. Please do not email me immediately after you take the quiz or exam. The day after the quiz/exam closes for the entire class, the answers will be available to you. If you still have questions after the answers have posted, then please email me. Please do not email me until the answers are available and you have reviewed them as I cannot respond to your questions until everyone in the class has completed the quiz or exam. Posting the questions from quizzes and exams on the discussion board (or sharing them with your classmates) is a violation of the code of academic integrity.

If you plan on asking for a letter of recommendation from me, you will need to be active on every discussion board every week, you should be asking insightful questions and more importantly you should be answering questions your classmates have posted.

**Lecture Information**

These lecture notes should NOT be used as a substitute for listening to the lecture recordings under the Panopto Recordings tab on the right of the screen. If you cannot view the lecture recording please call or email DIT (http://elms.umd.edu/page/help) 301-405-1500 for them to help you troubleshoot. Unfortunately I cannot help you with this. The pdf files of the lecture notes will reduce the amount of writing that takes place when listening to the lecture recordings, but do not eliminate it. Please take careful notes and post any questions about the material under the discussion tab.

**Exam information:**

- There will be three examinations during the semester. All exams are timed and will be open for a 48 hour window and will be posted in multiple parts.
- **The final will be cumulative,** with an emphasis on the last lectures. No make-up will be given for the final. Any student reporting late for an exam will NOT be given extra time.
- Exams will be mixed format. Multiple choice, essay, math-based problem solving, matching and true-false questions may appear on the exams.
- The exam questions will **ONLY** include the material covered in lecture, and thus the lectures are the best indicator of the depth and breadth of topics for which I develop exam questions.
- The textbook will be useful for further clarification of material, as well as providing a different perspective on some of the same issues.
- The WWW can be used for additional information on the cutting edge of genomic studies that postdate the textbook. Please use caution when reviewing information from the internet, it is not always correct or accurate.

**Exam Regrade Policy:**

- Carefully review the exam key before submitting an exam for regrade. Please note the following points:
- Requests for a regrade must be emailed the 24 hours after the exam is graded with a statement indicating which question(s) is/are to be reviewed and why. Either a non-specific plea to review the material, you don’t agree with how points assigned to specific question or to review the entire examination will not be considered. No exams will be considered after this deadline.
- Be advised that the entire exam may be subject to review if you submit it for a regrade (and so the grade may go up or down).
- Regrades given are final (no appeals).

**Accommodations for Students with Disabilities:**

Students with documented disabilities should see me sometime prior to the end of schedule adjustment so that appropriate accommodations may be arranged.

**Please note:** In accordance with school policy, it is the students' responsibility to inform the instructors of any intended absences for religious observances or school-sanctioned activities in advance. Notice should be provided as soon as possible but NO LATER than the end of the schedule adjustment period.

**Honor Code:**
The Code of Academic Integrity of the University of Maryland will be enforced in this course. Any student found breaking any aspect of this code will be reported to the Honor Council. The Honor Council will have the option of giving an XF grade for any breach of the code.

Acts of dishonesty include:

**Cheating:** Intentionally using or attempting to use unauthorized materials, information or study aids in any academic exercise.

**Fabrication:** Intentional and unauthorized falsification or invention of any information or citation in an academic exercise.

**Facilitating Academic Dishonesty:** Intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty.

**Plagiarism:** Intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise.

**Academic dishonesty will not be tolerated.** The University has a nationally recognized Code of Academic Integrity available on the web at [http://www.inform.umd.edu/CampusInfo/Departments/JPO/](http://www.inform.umd.edu/CampusInfo/Departments/JPO/). The code prohibits students from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents, and forging signatures. To further exhibit your commitment to academic integrity, remember to sign the Honor Pledge on all examinations and assignments “I pledge on my honor that I have not given or received any unauthorized assistance on this examination (or assignment)”.

Compliance with the code is administered by Student Honor Council, which strives to promote a “community of trust” on the Campus. Allegations of academic dishonesty can be reported directly to the Honors Council (314-9154) by any member of the campus community.

**Religious Observances:**

The University System of Maryland policy "Assignments and Attendance on Dates of Religious Observance" states that students should not be penalized in any way for participation in religious observances and that, whenever feasible, they be allowed to make up academic assignments that are missed due to such absences. However, the student must personally hand the instructor a written notification of the projected absence within two weeks of the start of the semester. The request should not include travel time.

**Determination of Grade:**

Final grades in BSCI222 are based out of total points. The total points you earn will determine the final grade you earn in this course. There is no curve.

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Exams (150 pts each) (1.5 hour each)</td>
<td>300 points</td>
</tr>
<tr>
<td>Final Exam (200 points/cumulative) (2 hours)</td>
<td>200 points</td>
</tr>
<tr>
<td>Worksheets: Blast, Gene annotation, Phylogeny</td>
<td>60 points</td>
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<tr>
<td>20 points each X 3 modules</td>
<td></td>
</tr>
<tr>
<td>Problem Solving Mathbench Quizzes on Canvas</td>
<td>50 points</td>
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<tr>
<td>5 quizzes total X 10 pts each</td>
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<tr>
<td>Lab Exercise Write ups</td>
<td>120 points</td>
</tr>
<tr>
<td>6 labs X 20 points each</td>
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</tr>
<tr>
<td>Lecture Quizzes (20 minutes each)</td>
<td>110 points</td>
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<tr>
<td>11 X 10 pts each</td>
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</tr>
<tr>
<td>Posting and Answering Questions on the discussion board</td>
<td>60 points</td>
</tr>
<tr>
<td>You will be given up to 3 pts for posting at least one insightful question and up to 3 pts for posting an answer (with a reference or url) on each of the 10 graded discussion</td>
<td></td>
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</tbody>
</table>
For credit you post before the discussion board closes. You will be given points for comments made on each discussion board marked with an *.

- Other discussion boards are not graded. Each board is open until the quiz is given for that material or the assignment is due. You must post your biography with picture no later than January 7 to receive any points for that post.

6 pts x 10 boards = 60 pts

900 points total available for this course

97% and above = A+
93-96.9% = A
90-92.9% = A-

87-89.9% = B+
83-86.9% = B
80-82.9% = B-

77-79.9% = C+
73-76.9% = C
70-72.9% = C-

69.9%-60% = D
60% and below = F

Since there is little demonstration of mastery of genetics for anyone earning less than a 70%, +/- will not be issued below a C-

Please note the following concerning the final grades, there will be no curve, you have the points or you don’t.

DUE DATES. You are welcome (and encouraged) to turn in any assignment in early.

Mathbench quizzes on Canvas

5 quizzes must be taken on-line no later than January 6, 2016 at 8:00pm

*If you are happy with your grade, then you do not need to take each Mathbench quiz twice

On-line Lab Exercise:

- #1 Translation Lab (ISBN 0-8053-6531-1) Write up from lab manual due January 8, 2016 at 6:00pm
- #2 Hemoglobin Lab (ISBN 0-8053-6530-3) Write up from lab manual due January 9, 2016 at 6:00pm
- #3 Fly Lab (ISBN 0-8053-6527-3) Write up from lab manual due January 10, 2016 at 6:00pm
- #4 Population Genetics Lab (ISBN 0-8053-6897-3) Write up from lab manual due January 16, 2016 at 6:00pm
- #5 Evolution Lab (ISBN 0-8053-6528-1) Write up from lab manual due January 17, 2016 at 6:00pm
- #6 Pedigree Lab (ISBN 0-8053-6532-X) Write up from lab manual due January 18, 2016 at 6:00pm

Blast, Gene annotation, Phylogeny Worksheets Write up from Canvas due January 21, 2016 at 6:00pm for all 3

All assignments are considered late if not handed in by 6:00pm on the date they are due, for this reason, I highly encourage you to hand in assignments early! 10% points will be deducted from the total point available starting form when the assignment is late and then every 24 hours an assignments is late. No assignments will be accepted after 11:00am on January 22, 2016

Lecture quizzes and exams cannot be taken or submitted late

Professionalism

There is an expectation that students demonstrate professionalism at all times. This will be assessed both during formal and informal interactions within the discussion forums. Should issues of concern arise, they will be addressed by the instructor to enhance your professional development. Significant issues may be referred to the student’s advisor and/or the academic standing committee. Please do not use course email to send out anything not directly related to this course.

Hints for academic success:

To be successful in BSCI 222 you need to think about the material, integrate it, and put it all together. That is why we advocate doing part of your studying with
small groups of students. Try to take the time to try and explain the concepts to yourself and to try and put ideas together. For example, we will discuss several different topics under the general heading of genomics. It is going to be your responsibility to see how these come together. Ask yourself how the parts are interrelated and how they interact. If you cannot explain every topic to yourself, then you do not understand the material.

Study groups work the same way, but they challenge you even more since you have to explain ideas and concepts, not just facts, to others. In effect, you are teaching the material. If you don't understand the material yourself, you cannot teach it to others. Keep in mind that study groups don't have to include the "brains" of the class. Each of you knows and understands different material, and you can share this no matter how good the students in the group are, as long as you have students of different knowledge levels.

Remember that the crux of BSCI 222 is its concepts. Facts are the foundation upon which concepts are built and you need to understand and memorize the facts. But, much of the exams will require that you put the facts together in a way that shows you understand the concepts and not just memorize them. The only way to prepare is to THINK about the material, not just memorize, and not just recite facts.

- Start early! Begin the lab exercises and readings now.
- Review ALL lectures sessions online.
- Copy your lecture notes into a second notebook within 24 hours of the lecture.
- Read over the assigned material in your textbook. Read quickly before the lecture and a second time after hearing the lecture material. If you 'highlight' the text, do so the second time.
- Create note cards with key terms on one side and definitions on the other side.
- Also create note cards with questions on one side and answers on the other. Use these note cards to quiz yourself and your study partners.
- Practice writing and answering questions about the material.
- Answer recommended study questions listed on Canvas.
- Before an examination, concentrate your study efforts on the lecture notes.
- There is no substitute for effort. You should be spending an average 40 hours per week outside of listening to lecture working on BSCI 222 material and assignments. Yes, a winter class is a full-time commitment!
- Remember you are taking an intense 4 credit course in only 3 weeks. This means you will have to work VERY hard and dedicate a lot of time in these 3 weeks to earn an A+ in this course.

### Lecture Schedule BSCI222

<table>
<thead>
<tr>
<th>Date/lecture #</th>
<th>Lecture Topics</th>
<th>Text Readings</th>
<th>Quiz must be taken on or before 10:00pm of the date listed below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 4 lecture #1</td>
<td>Class Policies, Introduction, Cell Division (mitosis and meiosis), Molecular Structure of DNA, Chromosome Structure</td>
<td>Ch 1-2, Ch 10-11</td>
<td>Jan 9</td>
</tr>
<tr>
<td>Jan. 5 lecture #2</td>
<td>Mendelian Genetics – Segregation, Independent Assortment, Probability, Pedigrees, Extensions of Mendel</td>
<td>Ch 3-6</td>
<td>Jan 10</td>
</tr>
<tr>
<td>Jan. 6 lecture #3</td>
<td>Extensions and Modifications of Mendel, Hypotheses testing, Sex linkage, Sex determination, Extensions and Modifications of Mendel</td>
<td>Ch 4-7, 24</td>
<td>Jan 11</td>
</tr>
<tr>
<td>Jan. 7 lecture #4</td>
<td>Population Genetics, Evolutionary Genetics, Recombination, Linkage, Gene mapping, Physical Maps</td>
<td>Ch 22, 24-26</td>
<td>Jan 12</td>
</tr>
<tr>
<td>Jan. 8 lecture #5</td>
<td>DNA Replication, DNA Repair, Transcription</td>
<td>Ch 11-15</td>
<td>Jan 13</td>
</tr>
<tr>
<td>Jan. 11 lecture #6</td>
<td>Transcription, RNA and Processing, Translation</td>
<td>Ch 12-15</td>
<td>Jan 15</td>
</tr>
</tbody>
</table>
Exam dates:

There will be a 2 part practice exam posted that you are required to take before the first exam. It is not worth points, but you will not be able to take the exam with out taking this 2 part practice exam. The purpose of the practice exam is to acquaint you with how to take an online exam.

Be sure you have a secure connection that will not time out and you have a reliable computer. Once you open an exam and begin it, you will not be given any extra time or another attempt if your internet fails, so it is imperative that you take these exams in a place with a reliable internet connection.

Exams will be posted in 2 parts with essays and problem solving in on one part and the multiple choice questions, matching, fill-in the blank in a second part. Please be sure to take both parts of the exam before the due date and time. If your exam has not been submitted before the deadline, a grade of 0 will be entered. Start exams early, please do not wait until the last minute to take an exam.

Exam 1: You may take this exam anytime beginning Jan 9, 2016 until 10:00pm Jan 10, 2016 (covers material from lectures 1-5)

Exam 2: You may take this exam anytime beginning Jan 16, 2016 until 10:00pm Jan 17, 2016

(covers material from lectures 6-10)

Final Exam: You may take this exam anytime beginning Jan 21, 2016 until 10:00pm Jan 22, 2016-the final is cumulative
<table>
<thead>
<tr>
<th>Date</th>
<th>Assignment</th>
<th>Due Time</th>
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<tbody>
<tr>
<td>Sat Jan 17, 2015</td>
<td>Lecture Quiz 8 (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957755">https://myelms.umd.edu/courses/1175168/assignments/3957755</a>)</td>
<td>10pm</td>
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<tr>
<td>Sun Jan 18, 2015</td>
<td>Exam 2 Essays (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957758">https://myelms.umd.edu/courses/1175168/assignments/3957758</a>)</td>
<td>10pm</td>
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<tr>
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<td>Exam 2 Multiple choice (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957745">https://myelms.umd.edu/courses/1175168/assignments/3957745</a>)</td>
<td>10pm</td>
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<tr>
<td></td>
<td>Lecture Quiz 9 (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957761">https://myelms.umd.edu/courses/1175168/assignments/3957761</a>)</td>
<td>10pm</td>
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<tr>
<td>Mon Jan 19, 2015</td>
<td>Lecture Quiz 10 (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957742">https://myelms.umd.edu/courses/1175168/assignments/3957742</a>)</td>
<td>10pm</td>
</tr>
<tr>
<td>Wed Jan 21, 2015</td>
<td>Blast (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957764">https://myelms.umd.edu/courses/1175168/assignments/3957764</a>)</td>
<td>6pm</td>
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<td></td>
<td>Gene annotation (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957765">https://myelms.umd.edu/courses/1175168/assignments/3957765</a>)</td>
<td>6pm</td>
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<td></td>
<td>Phylogeny (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957782">https://myelms.umd.edu/courses/1175168/assignments/3957782</a>)</td>
<td>6pm</td>
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<tr>
<td></td>
<td>Lecture Quiz 11 (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957746">https://myelms.umd.edu/courses/1175168/assignments/3957746</a>)</td>
<td>10pm</td>
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<td>Thu Jan 22, 2015</td>
<td>Online Lab: hemoglobin (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957778">https://myelms.umd.edu/courses/1175168/assignments/3957778</a>)</td>
<td>11:59am</td>
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<tr>
<td></td>
<td>Online Lab: fly (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957777">https://myelms.umd.edu/courses/1175168/assignments/3957777</a>)</td>
<td>11:59pm</td>
</tr>
<tr>
<td>Fri Jan 23, 2015</td>
<td>Final Exam Essay Questions (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957747">https://myelms.umd.edu/courses/1175168/assignments/3957747</a>)</td>
<td>10pm</td>
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<tr>
<td></td>
<td>Final Exam Multiple Choice Questions (<a href="https://myelms.umd.edu/courses/1175168/assignments/3957749">https://myelms.umd.edu/courses/1175168/assignments/3957749</a>)</td>
<td>10pm</td>
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</tbody>
</table>

TENTATIVE

lecture 1 end of chapter questions ([https://myelms.umd.edu/courses/1175168/assignments/3957767](https://myelms.umd.edu/courses/1175168/assignments/3957767))

lecture 10 end of chapter questions ([https://myelms.umd.edu/courses/1175168/assignments/3957766](https://myelms.umd.edu/courses/1175168/assignments/3957766))

lecture 2 end of chapter questions ([https://myelms.umd.edu/courses/1175168/assignments/3957766](https://myelms.umd.edu/courses/1175168/assignments/3957766))

lecture 3 end of chapter questions ([https://myelms.umd.edu/courses/1175168/assignments/3957769](https://myelms.umd.edu/courses/1175168/assignments/3957769))

lecture 4 end of chapter questions ([https://myelms.umd.edu/courses/1175168/assignments/3957770](https://myelms.umd.edu/courses/1175168/assignments/3957770))

lecture 5 end of chapter questions ([https://myelms.umd.edu/courses/1175168/assignments/3957771](https://myelms.umd.edu/courses/1175168/assignments/3957771))

lecture 6 end of chapter questions ([https://myelms.umd.edu/courses/1175168/assignments/3957772](https://myelms.umd.edu/courses/1175168/assignments/3957772))

lecture 7 end of chapter questions ([https://myelms.umd.edu/courses/1175168/assignments/3957773](https://myelms.umd.edu/courses/1175168/assignments/3957773))

lecture 8 end of chapter questions ([https://myelms.umd.edu/courses/1175168/assignments/3957774](https://myelms.umd.edu/courses/1175168/assignments/3957774))

lecture 9 end of chapter questions ([https://myelms.umd.edu/courses/1175168/assignments/3957775](https://myelms.umd.edu/courses/1175168/assignments/3957775))

Online Lab: evolution ([https://myelms.umd.edu/courses/1175168/assignments/3957776](https://myelms.umd.edu/courses/1175168/assignments/3957776))

Online Lab: pedigree ([https://myelms.umd.edu/courses/1175168/assignments/3957779](https://myelms.umd.edu/courses/1175168/assignments/3957779))

Online Lab: pop gen ([https://myelms.umd.edu/courses/1175168/assignments/3957780](https://myelms.umd.edu/courses/1175168/assignments/3957780))

Online Lab: translation ([https://myelms.umd.edu/courses/1175168/assignments/3957781](https://myelms.umd.edu/courses/1175168/assignments/3957781))