Course Faculty:
Dr. Kazem Kashefi (Section 1)
Room 6191 BPS
(517) 884-5402
kashefi@msu.edu

Dr. Pallavi Singh (Section 2)
Room 4179 BPS
pallavis@msu.edu

Course Teaching Assistants:
*Morning Session (Section 2):*
Elizabeth Baird bairdel1@msu.edu
John Chodkowski (Head TA) chodkows@msu.edu

*Afternoon Session (Section 1):*
Y Hoang hoangy@msu.edu.edu
Daniel Parrel parrelld@msu.edu

Course Time and Location:
*Labs begin Thursday August 31st; lectures begin Wednesday September 6th.*

Laboratory 2160 BPS:
- Tuesdays & Thursdays:
  - Section (1) 1:50 - 4:40 PM
  - Section (2) 10:20 AM - 1:10 PM.
- Make-up labs are not possible.

Lecture 1281 Anthony Hall, Wednesday 3 - 3:50 PM.

Attendance: *Attendance and participation in all laboratory and recitation periods is mandatory.* Attendance will be monitored by a sign-in sheet.

Office Hours: *By appointment (arrange during lab, after class or by email)*

Course Overview:
Welcome to MMG 408, the advanced microbial genetics laboratory. This semester, we’ll focus on techniques and concepts of classical microbial genetics practice and theory, including bacterial gene regulation, genetic mapping by gene transfer, and transposon mutagenesis for novel gene discovery. Throughout the course, we will integrate on microbial evolution and mechanisms of natural genetic change in bacteria, most of which you’ll be using throughout the semester.
Grading:

We'll complete three in-lab experiments. For each experiment, you’ll write a laboratory report in the form of a scientific publication (i.e. ASM Journals). A completed assignment consists of the Lab Report, Experiment Discussion Questions and Worksheet Questions. Your grade will be based on these lab reports (a MUST), lecture attendance and a pre-lab write-up/flowchart that will be checked at the beginning of each lab.

- **Report 1:** Bacterial Growth and Induction of Bacterial Operons (30 points) | Due Sept. 19. *The 3rd edition of Synder and Champness, “The Molecular Genetics of Bacteria”, pages 500-512, provides a good background on the lac operon and will help your understanding of what we’re doing in this experiment.

- **Report 2:** Gene Mapping by Homologous Recombination (30 points) | Due Oct. 19. *In the 3rd Edition of Snyder and Champness: Pages,167-184 (Gene mapping using Hfr crosses, transduction), 243-263 (Conjugation background), 332-339 (Transduction/Phage background), 429-435 (Homologous recombination background). If you have a different edition, look in the table of contents of your book for titles similar to the ones listed.

- **Report 3:** Transposon Mutagenesis and Gene Mapping (30 points) | Due Dec. 5. A clear background is provided in the textbook.

Other: Lecture Attendance & Participation etc. (10 points). For more detailed distribution of grades please see below.

You will also be required to demonstrate your competence in using serial dilutions to titer cultures and in the streaking out of bacterial strains on Petri plates acquired in the MMG302 laboratory course.

*Late reports for report 1 lose 15 points (of 100 total), then additional 5 points per week if more than one week late. Late reports for report 2 and 3 lose 20 points and 5 points more per week if more than one week late. All three reports are required. INCOMPLETE LAB REPORTS WILL NOT BE ACCEPTED (OR GRADED), will be considered late and will be penalized as described under *Late reports policy (see above).

The distribution of grades is as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab report 1</td>
<td>30</td>
</tr>
<tr>
<td>Lab report 2</td>
<td>30</td>
</tr>
<tr>
<td>Lab report 3</td>
<td>30</td>
</tr>
<tr>
<td>Pre-lab notes &amp; flowcharts</td>
<td>5</td>
</tr>
<tr>
<td>Attendance, participation</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Material and Texts:

The background for each experiment is discussed at lectures and in the suggested readings from the textbook, Snyder and Champness, “The Molecular Genetics of Bacteria,” ASM Press, either the 1st, 2nd, or 3rd edition. *Please see above.
Proposed Grading Scale (MM408-FS2017):

<table>
<thead>
<tr>
<th>Points (%)</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>93-100</td>
<td>4.0</td>
</tr>
<tr>
<td>86-92</td>
<td>3.5</td>
</tr>
<tr>
<td>80-85</td>
<td>3.0</td>
</tr>
<tr>
<td>75-79</td>
<td>2.5</td>
</tr>
<tr>
<td>70-74</td>
<td>2.0</td>
</tr>
<tr>
<td>65-69</td>
<td>1.5</td>
</tr>
<tr>
<td>60-64</td>
<td>1.0</td>
</tr>
<tr>
<td>0-59</td>
<td>0.0</td>
</tr>
</tbody>
</table>

ATTENDANCE IS MANDATORY for both recitation and lab.

SAFETY PROCEDURES: Please refer to your MMG-302 manual (pages 5, 11&12).

- Lab safety highlights: disinfect benches and wash hands at beginning and end of lab. No food/drink/gum/consumables in lab (keep in locker), tie back hair, must have floor-length pantsskirts, no open-toed shoes, wear gloves, wear disposable lab coats (students store in drawers). Phones/electronics can be used for lab work only. Make sure that centrifuges are balanced before use. Students (not TA's) must dump small biohazard into large biohazard bins and clean up ALL materials at the end of every lab.

Academic Integrity:

The work you submit must be you own. Plagiarism will not be condoned and will be dealt with in accordance with the university policy on academic integrity, the Office of the Ombudsman (http://www.msu.edu/unit/ombud/plagiarism.html).

NOTE: Syllabus and Lab Protocols are subject to change.

LOCKER ASSIGNMENT– USE AND RESPONSIBILITIES

You will be assigned a specific lab seat number and a locker with the same number that you’ll use throughout the semester.

You will store ALL your personal belongings including food and drink in the locker before start of the lab so that they are secure and are not contaminated with cultures from the lab.

You are responsible for the key and the coin that will be used in that locker. If you cannot operate the locker for some reason, please talk to the instructor and/or TAs. Before use, if you find that your locker is tampered with and/or has a broken or lost key/coin, please bring to the notice of your instructor and/or TAs immediately.
Students with Disabilities:
The Resource Center for Persons with Disabilities (RCPD) at MSU will provide the necessary accommodations for students with disabilities. Please contact RCPD (https://www.rcpd.msu.edu/) for additional information.

Bessey Hall
434 Farm Lane, #120
Michigan State University
East Lansing, MI 48824-1033

Tel.: 884-RCPD (4-7273)
TTY: (517)335-1293

Fax: (517) 432-3191

Important Links
- Identifying and Registering a Disability
- Requesting Accommodations
- Awareness & Explorations in Ability
- Ideas & Suggestions
- Signature Programs
- Login to My Profile
- MSU Web Accessibility