

Dr. Sean Maher

TEM 269

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Office Hours T 8:30am–10:00am; R 1:00pm–2:30pm or by appointment

### Grading

BIO 550

4 Tests (100pts each) + 8 Homeworks (25pts each) = 600pts

\*Students may use MiniTab or R to complete homework, when necessary\*

BIO 650 students

4 Tests (100pts each) + 9 Homeworks (25pts each) + Written Assignment (75) = 700pts

\*\*Students must use R to complete homework, when necessary\*\*

100–90% = A, 89–80% = B, 79–70% = C, 69–60% = D, 59% ≥ F

Text for lecture: The Analysis of Biological Data by Whitlock & Schluter 2nd Edition

### Policies

Attendance: Grades tend to be positively correlated with attendance, and participation in this type of course is taken into account when grades are determined. Lecture attendance will not be taken because of the size of the class. Students are responsible for content and announcements in all classes.

Homework: Homework will be assigned through Blackboard and will be due at the beginning of the lecture on the identified date. Homeworks should be attempted independently; make sure that you understand the problems and how to find the answers. If you can not make the lecture on the given day, you can have a friend turn it in, or you may turn it in early. In case of an emergency, it is your responsibility to contact me ASAP and be prepared to provide documentation of said emergency. Participation in University-sanction events that prevent attendance must be discussed with me prior to the due date. Late homework will be penalized, and I will not accept homework once I return assignments to the class.

Exams: You may bring a non-programmable calculator for problems. You may not use your phone or tablet or laptop. I will not provide calculators. If you arrive after someone has left the room, you may not take the exam. Late arrivals are not granted extra time.

Make-up exams: Make-up lecture exams will be given only if the instructor is notified prior to the test date and given a valid excuse. The validity of the excuse will be determined by the instructor (and be prepared to provide a doctor's note).

Software: Minitab, R, and R Studio are available in the CNAS computer lab in Kings Street Annex. If you would like to acquire a copy of Minitab to install on your own computer, go to <http://estore.onthehub.com>, then click on the link for Minitab 17. You can download a

**free** trial copy for 30 days, rent a copy for 6 months for \$30, or rent a copy for 12 months for \$50. The free download option is only available once per academic email address, so you and another student will need to share your downloads in order to cover the semester for free. R and R Studio are free.

Cell phones (including smart phones): As a member of the learning community, each student has a responsibility to other students who are members of the community. When cell phones or pagers ring and students respond in class or leave class to respond, it disrupts the class. Therefore, the Office of the Provost prohibits the use by students of cell phones, pagers, PDAs, or similar communication devices during scheduled classes. All such devices must be turned off or put in a silent (vibrate) mode and ordinarily should not be taken out during class. Given the fact that these same communication devices are an integral part of the University's emergency notification system, an exception to this policy would occur when numerous devices activate simultaneously. When this occurs, students may consult their devices to determine if a university emergency exists. If that is not the case, the devices should be immediately returned to silent mode and put away. Repeated use of a cell phone in lecture will result in the loss of points towards your grade.

Academic Misconduct: Missouri State University is a community of scholars committed to developing educated persons who accept the responsibility to practice personal and academic integrity. You are responsible for knowing and following the university's student honor code, [Student Academic Integrity Policies and Procedures](#) and also available at the Reserves Desk in Meyer Library. Any student participating in any form of academic dishonesty will be subject to sanctions as described in this policy. Cheating on tests or copying of homework will result in a 0 for that assignment.

Drop Policy: It is your responsibility to understand the University's procedure for dropping a class. If you stop attending this class but do not follow proper procedure for dropping the class, you will receive a failing grade and will also be financially obligated to pay for the class. For information about dropping a class or withdrawing from the university, contact the Office of the Registrar at 836-5520. Relevant drop deadlines can be found at [www.missouristate.edu/registrar/acad\\_cal.html](http://www.missouristate.edu/registrar/acad_cal.html).

Communications: Do not expect that emails will be answered immediately, particularly those sent between the hours of 6:00pm and 9:00am. Please use office hours.

Students who require assistance during an emergency evacuation must discuss their needs with their professors and the Disability Resource Center. If you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible. For additional information students should contact the Disability Resource Center, 836-4192 (PSU 405), or Larry Combs, Interim Assistant Director of Public Safety and Transportation at 836-6576. For further information on Missouri State University's Emergency Response Plan, please refer to the following web site: <http://www.missouristate.edu/safetran/erp.htm>.

To request academic accommodations for a disability, contact the Director of the Disability Resource Center, Meyer Library, Suite 111, 417-836-4192 or 417-836-6792 (TTY), [www.missouristate.edu/disability/contact.htm](http://www.missouristate.edu/disability/contact.htm). Students are required to provide documentation of disability to the Disability Resource Center prior to receiving accommodations. The Disability Resource Center refers some types of accommodation requests to the Learning Diagnostic Clinic, which also provides diagnostic testing for learning and psychological disabilities. For information about testing, contact the Director of the Learning Diagnostic Clinic, 417-836-4787, <http://psychology.missouristate.edu/ldc>.

Missouri State University is an equal opportunity/affirmative action institution, and maintains a grievance procedure available to any person who believes he or she has been discriminated against. At all times, it is your right to address inquiries or concerns about possible discrimination to the Office for Institutional Equity and Compliance, Park Central Office Building, 117 Park Central Square, Suite 111, 417-836-4252. Other types of concerns (i.e., concerns of an academic nature) should be discussed directly with your instructor and can also be brought to the attention of your instructor's Department Head. Please visit the OED website at [www.missouristate.edu/equity/](http://www.missouristate.edu/equity/).

At the first class meeting, students should become familiar with a basic emergency response plan through a dialogue with the instructor that includes a review and awareness of exits specific to the classroom and the location of evacuation centers for the building. All instructors are provided this information specific to their classroom and/or lab assignments in an e-mail prior to the beginning of the fall semester from the Office of the Provost and Safety and Transportation. Students with disabilities impacting mobility should discuss the approved accommodations for emergency situations and additional options when applicable with the instructor. For more information go to <http://www.missouristate.edu/safetran/51597.htm> and <http://www.missouristate.edu/safetran/erp.htm>.

*Shelter for lecture:* All occupants move to lower level using east and west stairs. Avoid using the south central stairwell. Shelter in movable shelving area on basement level

*Evacuation for lecture:* West to Glass Hall room 101; Alternate: South to Temple Hall Room 1

Statistical Methods for Biologists Fall, 2016  
 Lecture: 9:05-9:55 AM, 101 Library

Tentative Lecture Schedule

			Chapter
August			
22	M	Introduction.....	1
24	W	Displaying data .....	2
26	F	Describing data .....	3
29	M	Describing data .....	3
31	W	Estimating with uncertainty .....	4
September			
2	F	Estimating with uncertainty .....	4
5	M	LABOR DAY	
7	W	Probability.....	5
9	F	Probability.....	5
12	M	Hypothesis testing.....	6
14	W	Hypothesis testing.....	6
16	F	Analyzing proportions .....	7
19	M	Analyzing proportions .....	7
21	W	Analyzing proportions .....	7
<b>23</b>	<b>F</b>	<b>Exam 1 (Chapters 1–6)</b>	
26	M	Fitting probability models to frequency data .....	8
28	W	Fitting probability models to frequency data .....	8
30	F	Fitting probability models to frequency data .....	8
October			
3	M	Contingency analysis .....	9
5	W	Contingency analysis .....	9
7	F	Contingency analysis .....	9
10	M	The Normal Distribution.....	10
12	W	The Normal Distribution.....	10
14	F	Inference for a normal population.....	11
17	M	Inference for a normal population.....	11
<b>19</b>	<b>W</b>	<b>Exam 2 (Emphasis on Chapters 7–9)</b>	
21	F	Comparing two means .....	12
24	M	Comparing two means .....	12
26	W	Comparing two means .....	12
28	F	Comparing two means .....	12
31	M	Handling violations of assumptions.....	13
November			
2	W	Handling violations of assumptions.....	13
4	F	Designing experiments.....	14
7	M	Designing experiments.....	14
9	W	Comparing means of more than two groups .....	15
<b>11</b>	<b>F</b>	<b>Exam 3 (Emphasis on Chapters 10–13)</b>	
14	M	Comparing means of more than two groups .....	15
16	W	Comparing means of more than two groups .....	15

18	F	Correlation between numerical variables.....	16
21	M	THANKSGIVING HOLIDAY	
23	W	THANKSGIVING HOLIDAY	
25	F	THANKSGIVING HOLIDAY	
28	M	Correlation between numerical variables.....	16
30	W	Regression.....	17
December			
2	F	Regression.....	17
5	M	Regression.....	17
7	W	Regression.....	17
<b>14</b>	<b>W</b>	<b>Exam 4 (Emphasis on Chapters 14–17), 8:45am–10:45am</b>	

Homework

- 0) Introduction to R
- 1) Displaying and describing data
- 2) Uncertainty and probability
- 3) Analyzing proportions
- 4) Contingency analysis
- 5) Comparing two means
- 6) ANOVA
- 7) Correlation
- 8) Regression