Bosque Internship

UNM Biology 408L/508L
Spring 2020
BEMP Office: Castetter Hall room 184
BEMP Lab: Castetter 1524
Course Syllabus

Dr. Kim Eichhorst, *BEMP Co-Director, Lead Instructor*: kimde@unm.edu
Attendance/participation, assignments, Data Nuggets, exam
Kim Fike, *BEMP Science Coordinator, Assistant Instructor*: kim.fike@bosqueschool.org
Monitoring site assignments, special project hours (field and lab work)
Dr. Ara Winter, *BEMP Data Manager, Assistant Instructor*: akooser@unm.edu
Notebooks and data analysis
Keara Bixby, *BEMP Lab Manager*: keara.bixby@bosqueschool.org
lab hours

Field sessions may be cancelled / switched with in-class sessions at the last minute due to dangerously high winds (approaching 20 mph) or lightning (not for rain or snow). Please check for emails and/or texts or contact the instructors if you think there may be a cancellation.

Tuesday, 1/21 First Class Session: 4-6 pm Rm. 53 Castetter Hall
Objectives: program orientation, expectations for the semester, citations and plagiarism
Activity: Bosque Education Guide's (BEG) changing river model

Tuesday, 1/28 **Field Orientation I: BEMP Research Design** 4-6 pm BioPark BEMP site (Tingley Beach)

Driving/Parking Directions: From I-40, take the Rio Grande Blvd exit south. Turn right onto Central, then left on Tingley Dr. (at a light). Drive past the train station and main parking area for the BioPark and Tingley Ponds. Turn into the southernmost parking lot (a gravel lot) and park as far south as you can in this lot (overflow parking available north of the pond).
Dress appropriate for the field and be prepared for inclement weather!

Objectives: BEMP site orientation, monthly monitoring data collection protocols, Nature's Notebook, field journals
Assignment due today: read preface, physical setting and environmental history, and habitat types from *A Field Guide to the Plants and Animals of the Middle Rio Grande Bosque* (pgs. ix, 4-10, 12-21 - write a 2-page reflective analysis (RA) addressing the following:
RA1: Consider the significant alterations humans have made to the Middle Rio Grande valley and its ecosystem. a) List three alterations humans have made to the system. For each, what was the historical condition and what was the resulting shift following the alteration?
b) Based on the ecosystem response to alterations, what are three possible future conditions of the bosque? What changes (or lack of change) would result in these conditions?
List all references (i.e., cite the reading). – email RA to Dr. Eichhorst by 2:00 pm (use Word doc and include your name in the file)
Also due today: turn in MOU; bring a field journal; turn in site preferences and your schedule to Kim Fike

Tuesday, 2/4 **Field Orientation II: Environmental Education** 4:00-6:00 pm Bosque School
See directions sheet; meet in Pera Science Building (Townsend Lobby) – northernmost building on campus
Dress appropriate for the field and be prepared for inclement weather!

Objectives: introduction to environmental education (EE) and citizen/community science
Activity: Field data collection protocol quiz!
Assignment due today: read Sobel's "Look, Don't Touch" and be prepared to discuss in class

Tuesday, 2/11 Class Session: 4-6 pm Rm. 53 Castetter Hall
Lecture: introduction to the Middle Rio Grande ecosystem and hydrology
Activity: how to state hypotheses, introduction to CODAP
Assignment due today: Complete assignment *Hot on the Trail* Data Nugget (answer all questions & graph data); email to Dr. Eichhorst by 2:00 pm; bring laptop to class
Assignment due this week: coordinate with your site representative for monthly monitoring

2/17 – 2/22 **Monthly Monitoring Collection** at your assigned site – coordinate with your site representative.
Objectives: work with students and/or BEMP staff to collect monthly data (**NO CLASS SESSION**!)
Assignment due Feb. 18: EE write up
Assignment due Feb. 21: Use BEMP data (provided) for graphing exercise on CODAP; email 3 screen shots (with question addressed) to Dr. Eichhorst by 2:00 pm

Tuesday, 2/25 Class Session: 4-6 pm Rm. 53 Castetter Hall
Activity: EE presentations
Assignment due today: enter monthly monitoring data from your site in the Google Sheets BEMP Data Entry Form (will be emailed to you) by 10 pm

Tuesday, 3/3 Class Session: 4-6 pm Rm. 53 Castetter Hall
Discussion: how to write a scientific paper/Data Nugget; citations and plagiarism
Activity: data analysis and graph choice
Assignment due today: 3 hypotheses due (use assigned template); read Graph Choice paper

Tuesday, 3/10 **Field Orientation III: field site TBD** 4-6 pm
Dress appropriately and be prepared for inclement weather.
Objective: fuel load assessment
(Make-up EE presentations)
Assignment due March 13: choose one of your hypotheses and refine it; turn in using assigned format (hypothesis, predictions, scientific question, and relevance); email to Dr. Eichhorst by 2:00 pm.

3/16-3/21 **Spring Break** (Monthly Monitoring Collection for Service Learning Hour/Extra Credit)

5 Service Learning Hours (of 10 total) must be done by 5pm Friday, March 20th if you want to be eligible for earning extra credit.

Tuesday, 3/24 Class Session: 4-6 pm Rm. 53 Castetter Hall
Lecture: Bosque Disturbance Ecology, data analysis
Activity: Data visualization & graphing
Assignment due today: email Background (Introduction & methods) and References for Data Nugget to Dr. Eichhorst by 2:00 pm (use template provided)
BRING LAPTOP and datasets for your chosen hypothesis to class today

Tuesday, 3/31 **Field Orientation IV: Badger** 4-6 pm (see site directions sheet)
Dress appropriately and be prepared for inclement weather; bring field journal
Activity: water quality monitoring, macroinvertebrate sampling
Assignment due: email to Dr. Eichhorst the 3 slides for your lightning round presentations (title, background, & graph) (use PowerPoint-preferred- or PDF and include your name in the file document name) by 2 pm

Tuesday, 4/7 **Class Session**: 4-6 pm Rm. 53 Castetter Hall
Activity: Lightning Round presentations (2 min each)
Follow-up activity: refinement and interpretation
Activity: leaf litter lab
Assignment due today: FINAL PAPER/ Data Nugget (this is NOT a rough draft) email to Dr. Eichhorst by 10 pm

Tuesday, 4/14 **Class Session**: 4-6 pm Rm.53 Castetter Hall
Lecture/Activity: climate change
Lecture/Lab: surface active arthropods
Assignment due today: email to Dr. Eichhorst by 2:00 pm: read *Regional Climatic Considerations for Borderlands Sustainability* (Gutzler) and second paper TBA
RA 3: What are the impacts of climate change in terms of water availability for the Middle Rio Grande and bosque? How will this impact the economy? What are the likely future conditions of the bosque? What are some mitigating efforts that can be made?
Who are the authors of the readings? What are their funding sources?
Which of these articles was more credible? Why? What do you need to communicate science effectively?

List all references.
Also due today: coordinate with your site representative for monthly monitoring

4/20-4/25 **Monthly Monitoring Collection** at assigned site – coordinate with site representative.
Objectives: work with students and/or BEMP staff to collect monthly data (**NO CLASS SESSION**!)
Assignment due April 21: peer review of final paper (e-mailed to you by Dr. E) – email the edited and completed data nugget for your peer to Dr. Eichhorst

Tuesday, 4/28 **Class Session**: 4-6 pm Rm.53 Castetter Hall
*Activity: w*ater panel discussion with three guest panelists
Assignment due today: read assigned papers; email your 3 water panel questions to Dr. Eichhorst by 2 pm; ask 2 questions in class; turn in field notebooks
Returned to you: peer-edited 1st draft and corrected 1st draft by Dr. Eichhorst
Also due today: enter monthly monitoring data from your site in the Google Sheets BEMP Data Entry Form

5/3-5/9 **Final Class Session**: **Set and Collect Pitfall Traps:** at your assigned site(s). Setting and/or collecting at sites for at least two hours is *required* for class credit; additional help counts towards service learning hours
Objectives: work with students and/or BEMP staff to set and or collect surface-active arthropod data (**NO CLASS SESSION**!)
Assignments due May 5: email revised Data Nugget to Dr. Eichhorst; make sure all Service Learning Hours have been entered on the SLH tracking sheet (all sheets will by locked at midnight on Friday, May 8)

Final exam: take home exam emailed Thursday May 8, due Friday, May 9 at 5 p.m.

Additional Notes

This is a three-hour credit course of which we meet for two hours during a class session; as a substitute for the additional credit hour, we offer Service Learning Hours (SLHs) (or special project hours). These SLH's consist of many other events and opportunities that develop during the semester and you will be notified by email when they arise. (see SLH handout for more detailed information on this)
Students are **required** to:

- Participate in monthly monitoring and pitfall trap setting or collecting (these do NOT count towards your SLH – these count as class).
- Complete **6 lab hours**.
- Complete **4 service learning hours**.
- Write a reflective analysis for the assigned readings.
- Write a Data Nugget (final paper).
- Attend class and participate in discussions.
- **DRESS PROPERLY and PROFESSIONALLY WHEN IN THE FIELD:** long pants, closed-toed shoes, hat or visor, sun block and WATER. Please make sure you also bring: your field journal, bug spray, etc. (at your discretion).
- **Field cancellations DO occur if winds are near or exceeding 20 mph.** If you are uncertain about whether or not we will be in the field, check your email for notice from the instructors or contact them and ask for clarification.

Our classroom and our university should always be spaces of mutual respect, kindness, and support, without fear of discrimination, harassment, or violence. Should you ever need assistance or have concerns about incidents that violate this principle, please access the resources available to you on campus, especially the LoboRESPECT Advocacy Center and the support services listed on its website (http://loborespect.unm.edu/). Please note that, because UNM faculty, TAs, and GAs are considered "responsible employees" by the Department of Education, any disclosure of gender discrimination (including sexual harassment, sexual misconduct, and sexual violence) made to a faculty member, TA, or GA must be reported by that faculty member, TA, or GA to the university's Title IX coordinator. For more information on the campus policy regarding sexual misconduct, please see: https://policy.unm.edu/university-policies/2000/2740.html. LoboRESPECT Advocacy Center, Women's Resource Center and the LGBTQ Resource Center have specially trained advocates and they do NOT share information with anyone else without a student's signed permission.

Course Information

1. <u>Program Description</u>: The Bosque Ecosystem Monitoring Program (BEMP) is both a research project and a community outreach program. Its primary objective is to involve community volunteers (mainly school students and their teachers) in long-term, hands-on monitoring of key indicators of ecological change in the middle Rio Grande bosque. We want all participants in BEMP to learn about the structure, functioning, and biological diversity of this vital New Mexico ecosystem. There is a dual nature to this effort in that the collection of accurate and useful information is as important as the environmental education outreach aspects of the program.

BEMP's UNM Bosque Internship Class provides a critical link between the student data collection volunteers and the biologists concerned with the management of this greatly altered riparian forest. The UNM intern is responsible for the transmission of accurate information from the field to the UNM Biology Department. At the same time, the intern has the opportunity to learn about both the biological and the educational aspects of the program. **As an intern, you will soon become an organizer, interpreter, and mentor to students at one of 33 similar monitoring sites**. All sites are monitored during the week of the 3rd Tuesday of each month.

ALL ASSIGNMENTS YOU TURN IN DIGITALLY SHOULD BE SAVED IN THIS FORMAT:

LastName_FirstName_Assignment Name.doc

2. <u>Grading</u>: Grading will be based on: 1) field collections, 2) written assignments (Reflective Analyses, hypotheses, quiz, etc.), 3) class participation and attendance, 4) service learning hours (special project hours: lab and field work), 5) environmental education activity, 6) field notebook, 7) final paper/Data Nugget, and 8) final exam. Your final grade will be a composite of the following percentages:

Field collections (monthly monitoring & pitfall trapping)	20%
Readings, working groups, discussion, & quiz	15%
Attendance	10%
Service Learning Hours	
Lab hours (6 hours)	5%
Other hours (4 hours)	5%
Environmental Education Activity	10%
Field Notebook	10%
Final Paper/Data Nugget (Presentation for repeat and graduate students)	15%
Final Exam	10%
Extra Credit	Instructor discretion
Final Score	100 + extra credit

3. Field Collections (monthly monitoring and pitfall trapping) (20%): Much of the work during this course occurs outside in the field and requires communicating ahead of time with other BEMP staff or teachers. This portion of your grade is influenced by whether or not you communicate in a timely manner with your site representative(s), and whether you are on time or late for field collections. You are also required to enter the data you gathered in the field into the proper document on time. Your ability to properly collect field data according to protocols, communicate previous to your site visits and enter the data are the most critical aspect of this part of your grade.

4. Readings for Reflective Analyses (RA) and Participation in Class Discussions (15%): Readings are located on the reading list on Blackboard or online at: http://bemp.org/unm. Reflective analyses (RA) should be 2 pages (*1" margins, 12 font, double-spaced; please use your name in the name of the document file*). The point of the analyses and associated questions is to demonstrate that you have read and thought about the paper in preparation for class discussion. Paper discussion questions/comments are listed in the class syllabus and citations are necessary for each reading. Participation in discussions, debates and panels will also be reflected in this part of your grade. **Late:** *each day late 0.25 will be taken off your grade, until you reach 1 full point (4 days). After that it is one full point off for each week it is late.*

5. Attendance (10%): It is the responsibility of the intern to attend all class and field sessions for a full grade. Absences and appropriate make-up work should be discussed with Dr. Kim Eichhorst.

6. Service Learning Hours (Special Project Hours) Information: (10%): Part of your grade entails 10 hours (6 lab & 4 field or other) assisting BEMP in some way outside of the classroom. In order to be eligible for extra credit at the end of the semester, 5 of the hours must be completed before Friday, October 18th. Service Learning Hours can vary widely based on student interest and program needs. Available opportunities will be emailed out to the class by Kim Fike. See SLH handout for additional information.

7. Environmental Education Activity (10%): you will be expected to write up and deliver an environmental education activity. See EE rubric handout for expectations and grading.

8. BEMP Field Notebook Guidelines (10%): You will be expected to bring a field journal (we have some you can borrow if you would like) and are expected to maintain the index, record data collected and take notes in the field. See Field Notebook Rubric handout.

9. Final Paper /Data Nugget Guidelines (15%): Your Data Nugget is like a condensed final paper. Use the format given on the template. The grade will consist of: 1) background paragraphs (information appropriate to lead to hypothesis) and references, 2) lightning round (slides and presentation), 3) completed Data Nugget, 4) editing and completing a peer's Data Nugget activity, and 5) revised final Data Nugget. *See the Data Nugget Template for more details about this assignment.*

Save as: **LastName_FirstName_Assignment Name.doc**

BIOL 408/508 Plagiarism Policy: **PLAGIARISM earns a ZERO!** All assignments with plagiarism receive a zero. Acts of plagiarism can affect your overall grade (ability to receive extra credit, etc.) and reflects instructor discretion.

Repeat & Graduate Students ONLY - Final Presentation Guidelines (5% of the grade is for your presentation): The student will be responsible for presenting their paper to the class. Presentation time is approximately 10 minutes and must include each of the sections mentioned in final paper guidelines (including hypothesis and graphs). Speak with instructors regarding subject matter.

10. <u>Extra Credit</u> (up to 10%): Extra credit is earned through additional Special Project Hours (if 5 hours have been met by **March 20th**), monitoring additional field sites, etc. **For each additional 2 service learning hours worked, one point of extra credit can be earned.** Extra credit cannot be used to replace an assignment (e.g., the final paper). Extra credit is at the instructor's discretion. Please speak with instructors if you have additional ideas for extra credit.