Bosque Internship

UNM Biology 408L/508L
Spring 2018
Office: Castetter Hall room 184
Lab: Castetter 1524

Course Syllabus

Questions, comments and concerns… Instructors

Dr. Kim Eichhorst, BEMP Co-Director, Lead Instructor: kimde@unm.edu -
Attendance/participation, reflective analyses (RA), Data Nuggets
Kim Fike, BEMP Science Coordinator, Assistant Instructor: kim.fike@bosqueschool.org –
Monitoring site assignments, special project hours (field and lab work)

Field sessions may be cancelled / switched with in-class sessions at the last minute due to dangerously high winds (**not** for rain or snow). Please check for email and/or texts or contact the instructors if the winds are higher than 20 mph.

Tuesday, 1/16 **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, 1/23 **Class Session:** 4-6 pm Rm. 53 Castetter Hall
Lecture: introduction to the Middle Rio Grande ecosystem and hydrology in the basin
Discussion: citation & plagiarism, scientific writing; environmental education
Activity: leaf litter lab
Assignment due today: RA1 – e-mail Dr. Eichhorst by 4 pm (use Word doc; use your name in the file document name)
RA1: write a reflective analysis (RA) for *the Bosque Education Guide's – The Middle Rio Grande Bosque*
What was the historic driver (disturbance) of the riparian ecosystem? How did it shape the ecological communities? What are some new drivers (disturbances) within this ecosystem? How have communities shifted in response to these new drivers? What types of scientific monitoring can help our understanding and inform future planning efforts? List all references.
Due 5 pm Wednesday, January 24th: site preferences and your schedule to Kim Fike

Tuesday, 1/30 **Field Orientation I: BEMP Research Design** 4-6 pm Rio Grande Nature Center
Meet at the Nature Center gate (see directions page). DO NOT PARK IN THE PARKING LOT. Gate is locked at 5 pm; park on the street a long block to the east (off Trellis Dr. NW). (Sunset 5:33 pm, twilight 6:00 pm)
Dress appropriately and be prepared for inclement weather!
Objectives: BEMP site orientation, monthly collection parameters/data, field notebook discussion, Nature's Notebook, and environmental education
Assignment due today: read Sobel's *Look, Don't Touch* article from Orion Magazine and be prepared to discuss

Tuesday, 2/6 **Class Session**: 4-6 pm Rm. 53 Castetter Hall
Discussion: how to state hypotheses
Lecture/Lab: surface active arthropods
Assignment due today: Complete assigned Wood Litterfall BEMP Data Nugget (answer questions & graph data) and email to Dr. Eichhorst by 4 pm (include your name in the file document name)

Tuesday, 2/13 **Field: SLO- soils mapping –** measurements 4-6 pm; all day opportunities from 10:00 a.m.-6:00 p.m. (Please sign up for a 2-hour increment.)
State Land Office (SLO) site (see directions page: drive through the Valle de Oro National Wildlife Refuge and meet at the southwest corner of the Refuge)
(Sunset 5:47 pm, twilight 6:13 pm)
Dress appropriately and be prepared for inclement weather!
Assignment due today: Soils readings – write reflective analysis: how can the soils monitoring data be used with current BEMP datasets to increase understanding of the bosque ecosystem? How do soils impact community structures? What are some new questions that can be addressed? Be prepared to discuss the reading.
Remember to: coordinate with your site representative for monthly monitoring for next week

2/19-2/24 **Monthly Monitoring Collection** at assigned site – coordinate with site rep
Objectives: work with volunteers to collect monthly data (NO CLASS SESSION!)
Assignment due Feb. 20: state three testable, scientific hypotheses based on BEMP data and note the associated datasets needed to test each hypothesis. **Use provided template** – email to Dr. Eichhorst

Tuesday, 2/27 **Class Session**: 4-6 pm Rm. 53 Castetter Hall
Lecture: Bosque disturbance ecology (fire, floods and land management): BEMP results and data
Discussion: how to write BEMP final paper/Data Nugget
Quiz: BEMP field protocols for monitoring depth to groundwater, water level in ditch, precipitation, and litterfall; lab methods for sorting litterfall
Assignment due today: read Muldavin et al. 2017; be prepared to discuss

Tuesday, 3/6 **Crawford Symposium**: 4-6 pm (7 pm if you can stay for dinner) UNM SUB Ballrooms B & C
Assignment during symposium: write down three potential final exam questions and answers, turn in before you leave
Assignment due today: **Background and References for Data Nugget (Introduction)** – email to Dr. Eichhorst

3/11 – 3/18 UNM Spring Break!

3/19 – 3/24 **Monthly Monitoring Collection** at assigned site – coordinate with site rep.
Objectives: work with volunteers to collect monthly data (NO CLASS SESSION!)
Assignment due March 20: Soil mapping write-up (where would you collect samples and why?)

5 Special Project Hours (of 10 total) must be done by 5pm Friday, March 23rd if you want to be able to earn extra credit.

Tuesday, 3/27 **Class Session**: 4-6 pm Rm. 53 Castetter Hall
Lecture/Activity: climate change
Activity: computer lab graphing work for final paper
Activity: soil mapping
Assignment due today: table of summarized BEMP data; BRING LAPTOP.
Also due today: write RA3 for *Regional Climatic Considerations for Borderlands Sustainability* (Gutzler) and *Global Warming: The good, the bad, the ugly and the efficient* (Moore)
RA 3: Who are the authors of the readings? What are their funding sources? 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 of the challenges that land managers will face? List all references.

Tuesday, 4/3 **Field: SLO – soils work and woody debris:** 4-6 pm
State Land Office (SLO) site (see directions page: drive through the Valle de Oro National Wildlife Refuge and meet at the southwest corner of the Refuge). (Sunset 7:29 pm)
Dress appropriately and be prepared for inclement weather; bring FIELD JOURNAL!
Objectives: use soil mapping to inform field sampling locations
Activities: soil texture sampling and description; woody debris/fuel load monitoring
Assignment due today: read *Water in the Middle Rio Grande: One Observer's View;* based on your reading, BEMP discussions, and personal curiosity - email three questions to ask the water panel

Tuesday, 4/10 **Class Session**: 4-6 pm Rm. 53 Castetter Hall
*Activity: w*ater panel discussion with three guest panelists; **ask two questions** for full credit
Assignment due today: email your FINAL PAPER/ Data Nugget (this is NOT a rough draft) to Dr. E.; turn in the student version and the teacher version. Use your name in the file document name.

4/16-4/21 **Monthly Monitoring Collection** at assigned site – coordinate with site rep.
Objectives: work with volunteers to collect monthly data (NO CLASS SESSION!)
Assignment due April 17: email your edits of the peer-review paper and the completed student version to Dr. Eichhorst

Tuesday, 4/24 **Final Class Session**: 4-6 pm Rm. 53 Castetter Hall
Activities: repeat and graduate student final presentations (approx. 10 minutes)
Activities: final exam
Returned to you: peer-edited 1st draft and corrected 1st draft by Dr. Eichhorst
Assignment due today: Soils Summary; e-mail a bulleted list of special project hours to Kim Fike, turn in field notebooks

4/30 - 5/5 **Set and Collect Pitfall Traps:** Coordinate with Kim Fike. Setting and/or collecting at sites for at least two hours is *required* for class credit; additional help counts towards special project hours and/or extra credit
Objectives: work with volunteers to collect surface-active arthropod data (NO CLASS SESSION!)
Assignments due 5/1: **e-mail corrected final paper to Dr. Eichhorst**

Additional Notes

This is a three-hour credit course of which we meet for two hours during a class session. Other events and opportunities will develop during the semester, many of which are optional but may be used for extra credit. However, interns are expected to:

- Assist with their assigned volunteer group at monthly collections and pitfall setting/collecting.
- Complete **10 special project hours** that assist in forwarding BEMP.
- Develop and present an environmental education activity to the class.
- Write a reflective analysis for the assigned readings.
- Write a final paper.
- Attend class.
- **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: field map and journal and a site map, bug spray, etc. (at your discretion).






Course Instructors:

Dr. Kim Eichhorst, *BEMP Co-Director*; kimde@unm.edu - attendance/participation, assignments, final paper
Kim Fike, *Science Coordinator*; kim.fike@bosqueschool.org - site assignments, special project hours (field and lab work
Kelly Steinberg, *Education Coordinator*; kelly.steinberg@bosqueschool.org - environmental education & outreach opportunities

1. Program Description: The Bosque Ecosystem Monitoring Program (BEMP) is both a research project and a community outreach program. Its primary objective is to involve citizen 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 Intern Class provides a critical link between the volunteers and the biologists concerned with the management of this greatly altered riparian forest. There is a dual nature to the intern's role. **The 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 possibly mentor to volunteers at one of **32** similar monitoring sites. Each site is set up in a very different part of the bosque. All sites are monitored simultaneously for certain key ecological variables according to a schedule drawn up several years ago.

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

LastName_FirstName_Assignment Name.doc

2. Grading: Grading will be based on: 1) site interactions, 2) reflective analyses (RA), 3) class participation and attendance, 4) special project hours, 5) field notebook, 6) final paper/Data Nugget, and 7) exam and quizzes. Your final grade will be a composite of the following percentages:

Site Interactions (monthly monitoring)	25%
Readings, working groups, & discussion	10%
Attendance	10%
Special Project Hours	10%
Field Notebook	10%
Final Paper/Data Nugget (Presentation for repeat and graduate students)	20%
Quizzes	5%
Final Exam	10%
Extra Credit	Instructor discretion
Final Score	100 + extra credit

3. Site Interactions/Scheduling (25%): Much of the work during this course occurs outside in the field and **requires communicating with other BEMP staff or teachers**. This part of your grade is influenced by: whether or not you communicate in a timely manner with others, if you are on time or late for field collections, and if you are prepared to be in the field with the proper attire. Your ability to properly collect field data according to protocols and coordinating your site visits are the most critical aspect of this part of your grade.

4. Readings for Reflective Analyses (RA) and Participation in Class Discussions (10%): Readings are located 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 10% 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. Special Project Hour (SPH) Information: (10%): Part of your grade entails 10 hours 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, March 23rd. Special projects can vary widely based on student interest and program needs and available opportunities will be emailed out to the class on a weekly basis by Kim Fike.
Possible special project hour opportunities include:

- **Required 5 hrs**: Process leaf litter or pitfall trap arthropods in the lab at UNM (Castetter 1524).
  For the remainder of the 5 hrs you can….
- Present an approved environmental education activity to your assigned Monthly Monitoring class
- Participate in Nature's Notebook monitoring at the BEMP BioPark site
- Enter data
- Assist with new site installation
- Go with one of our BEMP Educators to a school and assist with classroom presentations
- Choose additional sites for Monthly Monitoring or Pitfall Trapping
- Participate in BEMP wildlife and/or classroom education activities (porcupine trap setting / jackrabbit survey/ turtle trapping /small mammal trapping – these are offered on a seasonal basis)
- Participate in BEMP program promotion (take BEMP display to a conference or a special event)
- Participate in additional field work (i.e. site maintenance, water chemistry monitoring, fuel load monitoring)
- Fill out the 'Field Notes' form for your Field Notebook (form available at BEMP.org) = 0.25 SPH
- Choose a non-Albuquerque site in the list below as your Monthly Monitoring site as they include additional driving time. Half of the driving time counts towards your SPHs (see chart below).

Site	# SPH	Site	# SPH
Los Lunas	**0.75**	Lemitar	**1.75**
Any site in Belen	**1.00**	Sevilleta and Lemitar	**2.25**
Bosque Farms	**0.50**	Santo Domingo	**1.25**
Sevilleta	**1.25**	Santa Ana	**0.75**
Bosque del Apache	**2.75**	Bosque del Apache (2)	**3.15**

If you have completed all 10 SPH, you are welcome do to more! Each additional 2SPH counts as 1 extra credit point at the end of the semester. Extra credit is at the instructor's discretion and does not replace any of the grading categories (e.g., final paper, final exam).

7. BEMP Field Notebook Guidelines (10%): You will need to have a field journal. This can be a dedicated BEMP journal, or any journal that you have used/are using for other activities. You can request to use a BEMP journal, but those will need to be returned at the end of the semester. You are expected to maintain an index, record data collected, and take notes in the field. Please maintain your notebook throughout the semester rather than waiting until the end to remember details of field trips.

a. Maintain the index and number pages, include river flow from USGS river-flow website:
http://waterdata.usgs.gov/nm/nwis/uv?08330000 ***Central Bridge Gage***
b. RECORD the data collected, any important notes and observations
c. Record phenology (*Field Notes* form provided and available at bemp.org) at your site = 0.25 Special Project Hours
d. Additional - Since this will be graded at the end of the semester, please do not include private information. However, drawings, weather info, sketches, things taped in, etc. are welcome!

8. Final Paper /Data Nugget Guidelines (20%): Your Data Nugget is like a condensed final paper. Use the format given on the template. The grade will consist of: 1) stated testable hypothesis, 2) background paragraphs (information appropriate to lead to hypothesis), 3) table of summarized data, 4) appropriate graphs, 5) completed Data Nugget, 6) proper citations and references, 7) proper spelling and grammar, and 8) editing and completing a peer's Data Nugget activity. ***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 (15%: 10% for paper & 5% for 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. Graduate students are encouraged to use BEMP data as part of a larger project rather than doing a Data Nugget. This can include community outreach projects, incorporating BEMP data into another class project/paper, etc.

10. Extra Credit (up to 10%): Extra credit is earned through additional special project hours (if 5 hours have been met by **March 23rd**), monitoring additional field sites, etc. **For each additional 2 special project 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.

Special Project Hours Opportunities – Spring 2018

~ connect with Kim Fike & Kelly Steinberg to sign up and/or learn more ~

Community Outreach

Inquire about jackrabbit surveys at the Sevilleta NWR

Wednesday, April 25th – 7-12 grade BEMP Student Congress at Coronado

Friday, April 27th – 4-6th grade BEMP Student Congress at Bosque School

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.