



Bosque Internship
UNM Biology 408L/508L
Fall 2017
BEMP Office: Castetter Hall room 184
BEMP 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, 8/22 **First Class Session:** 4-6 pm Rm. 41 Castetter Hall
Objectives: program orientation, expectations for the semester, citations and plagiarism
Activity: Bosque Education Guide's (BEG) changing river model
- Tuesday, 8/29 **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 7:36 p.m.)
Dress appropriately and be prepared for inclement weather!
Objectives: BEMP site orientation, monthly collection parameters/data and field notebook activity
Assignment due today: read preface and executive summary from the *Bosque Biological Management Plan* - www.fws.gov/southwest/mrgbi/Resources/BBMP/Bbmp.pdf; write reflective analysis (RA) for **RA1: Consider the significant alterations humans have made to the Middle Rio Grande valley and its ecosystem.** a) Share your view of how the historical changes to the ecosystem have impacted the landscape and wildlife. b) What types of scientific monitoring can help our understanding of this system and future planning efforts? List all references (i.e., cite the reading). – e-mail Dr. Eichhorst by 4 pm (use Word doc and include your name in the file)
Also due today: site preferences and your schedule to Kim Fike
- Tuesday, 9/5 **Field Orientation II: Environmental Education** 4:00-6:00 pm Bosque School
Meet on the south side of the Pera Science Center (northernmost building); park in northern parking lot in front of Science building at Bosque School (see directions page)
Dress appropriately and be prepared for inclement weather!
Objectives: introduction to environmental education (EE) and citizen science (Audrey)
Activity: Field quiz! And hike to Montaña or Savannah site (sunset 7:27 pm)
Assignment due today: read the environmental education monthly monitoring curriculum activities (emailed to you). Familiarize yourself with the activities and be prepared to present a piece of the activity to your peers (assigned ahead of time by Audrey Kruse).

- Tuesday, 9/12 **Class Session: 4-6 pm Rm. 41 Castetter Hall**
Lecture: introduction to the Middle Rio Grande ecosystem and hydrology
Discussion: how to state hypotheses
Activity: leaf litter lab
Assignment due today: Complete assigned Data Nugget (answer questions & graph data); emailed to you
Assignment due this week: coordinate with your site representative for monthly monitoring
- 9/18 – 9/23 **Monthly Monitoring Collection** at assigned site – coordinate with site rep.
Objectives: work with volunteers to collect monthly data (NO CLASS SESSION!)
Assignment due today: state three testable, scientific hypotheses based on BEMP data and note the associated datasets needed to test each hypothesis using assigned format (hypothesis, predictions, scientific question) - email to Dr. Eichhorst.
- 9/25 - 9/30 **Set and Collect Pitfall Traps:** Coordinate with Kim Fike. Setting and/or collecting at sites for at least three hours is *required* for class credit; additional help counts towards special project hours
Objectives: work with volunteers to collect surface-active arthropod data (NO CLASS SESSION!)
- Tuesday, 10/3 **Class Session: 4-6 pm Rm. 41 Castetter Hall**
Lecture/Lab: surface active arthropods
Discussion: how to write scientific paper/Data Nugget
Assignment due today: choose one of your hypotheses and refine it; turn in using assigned format (hypothesis, predictions and scientific question)
- Tuesday, 10/10 **Field Orientation III: Tingley Beach** 4-6 pm BioPark site; meet in the south parking lot (see directions page, sunset 6:37 pm)
Dress appropriately and be prepared for inclement weather.
Activity: water quality monitoring, macroinvertebrate sampling
Quiz: BEMP field protocols for depth to groundwater, water level in ditch, precipitation, litterfall, and surface-active arthropods and lab methods for sorting litterfall
Assignment due today: **Background and References for Data Nugget**
- 10/16-10/21 **Monthly Monitoring Collection** at assigned site – coordinate with site rep.
Objectives: work with volunteers to collect monthly data (NO CLASS SESSION!)



5 Special Project Hours (of 10 total) must be done by 5pm Friday, October 20th if you want to be able to earn extra credit.

- Tuesday, 10/24 **Field Orientation IV: State Land Office** 4-6 pm; meet at the end of Salida Sandia, outside the Valle de Oro National Wildlife Refuge
Dress appropriately and be prepared for inclement weather; bring FIELD JOURNAL!
Activity: measuring cottonwood DBH, cottonwood counts, and phenology (sunset 6:20 pm)
- Tuesday, 10/31 **Class Session: 4-6 pm Rm. 41 Castetter Hall**
Lecture: fire, floods and land management: BEMP results and data
Activity: graphing and analyzing data for Data Nugget
Assignment due today: table of summarized BEMP data; BRING LAPTOP

- Tuesday 11/7 **Field Orientation V: State Land Office** (backup: Alameda Open Space) 4-6 pm **State Land Office/Valle de Oro** (or Alameda sites); meet in the parking lot (see directions page, sunset 5:06 pm/twilight 6:03 pm)
Dress appropriately and be prepared for inclement weather; bring FIELD JOURNAL!
Activities: soil classification and monitoring (or woody debris/fuel load)
- Tuesday, 11/14 **Class Session:** 4-6 pm Rm.41 Castetter Hall
Lecture/Activity: climate change
Assignment due today: email RA 3 (climate change) to Dr. Eichhorst by 4:00 pm
 write RA3 for *Regional Climatic Considerations for Borderlands Sustainability* (Gutzler)
RA 3: What are the impacts of climate change in terms of water availability for the Middle Rio Grande and bosque? What are the likely future conditions of the bosque? What are some of the challenges that land managers will face? List all references.
Also due today: FINAL PAPER/ Data Nugget (this is NOT a rough draft); contact your site rep for monthly monitoring
- 11/20-11/25 **Monthly Monitoring Collection** at assigned site – coordinate with site rep.
Objectives: work with volunteers to collect monthly data (NO CLASS SESSION!)
Assignment due Nov 20: peer review of final paper (e-mailed to you by Dr. E)
- Tuesday, 11/28 **Class Session:** 4-6 pm Rm.41 Castetter Hall
Activity: water panel discussion with three guest panelists
Assignment due today: e-mail your 3 water panel questions to Dr. Eichhorst by 4 pm; ask 2 questions in class
Returned to you: peer-edited 1st draft and corrected 1st draft by Dr. Eichhorst
- Tuesday, 12/5 **Final Class Session:** 4-6 pm Rm. 41 Castetter Hall
Activities: final exam and class evaluation
Activities: repeat and graduate student final presentations (10 minutes each)
Assignments due today: e-mail revised Data Nugget to Dr. Eichhorst and bulleted list of special project hours to Kim Fike; turn in field notebooks and return intern handbooks

Additional Notes

This is a three-hour credit course of which we meet for two hours during a class session, this is why we offer 'Special Project Hours (SPHs), which are a substitute to the additional credit hour. These SPH's consist of many other events and opportunities that develop during the semester and you will be notified by email when they arise. However, interns are **expected** to:

- Participate with their assigned school group during monthly collections and pitfall setting/collecting.
- Complete **10 required special project hours** that assist in forwarding BEMP. **Five of these hours** need to be completed in the lab, the remainder of the 5 hours can be completed in the field or other events (...more information below).
- Write a reflective analysis for the assigned readings.
- Write a Data Nugget (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).
- **Field cancellations DO occur if winds exceed 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

Course Instructors:

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 students at one of 31 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 and pitfall trapping)	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 (monthly monitoring and pitfall trapping) (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, October 20th. Special projects can vary widely based on student interest and program needs. 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 (Casterter 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
 - Two students per week can participate in this – sign up sheet will be emailed out shortly.
- Go with one of our BEMP Educators to a school and assist with classroom presentations
- Choose additional sites for Monthly Monitoring or Pitfall Trapping besides your required assigned site
- 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
- Time spent for monthly monitoring or pitfall trapping that takes more than 2 hrs in total will count towards your 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	1.5
Any site in Belen	1.00	Sevilleta and Lemitar	2.0
Bosque Farms	0.50	Santo Domingo	1.00
Sevilleta	1.25	Santa Ana	0.75

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.

In order to receive credit for your Special Project Hours you MUST email them to Kim Fike.

7. BEMP Field Notebook Guidelines (10%): You will be assigned a field journal and are expected to maintain the index, record data collected and take notes in the field. This notebook is the property of the BEMP program and will be passed on to other interns for use in succeeding semesters. Please maintain your notebook throughout the semester rather than waiting until the end to remember details of field trips.

a. **Maintain the index and page numbers (for extra credit include river flow from USGS river-flow website:**

<http://waterdata.usgs.gov/nm/nwis/uv?08330000> Central Bridge Gauge)

b. **RECORD** the data collected and any important notes and /or observations

c. **Record phenology** (*Field Notes* form provided and available at bemp.org) at your site = 0.25 Special Project Hours

d. **Additional** - Since other people have access to this notebook, please do not include private information. However, drawings, weather info, sketches, things taped in, etc. are welcome!

8. 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) three stated testable hypotheses, 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.

10. Extra Credit (up to 10%): Extra credit is earned through additional special project hours (if 5 hours have been met by **October 20th**), 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.