RMBL Independent Research I and II – Syllabus
Summer 2026

Dr. Rosemary Smith, rsmith@rmbl.org

Independent Research I (3 or 5 credits, option for credits through Western Colorado University. June 9-July 10, 2026.
Independent Research II (5 credits, option for credits through Western Colorado University). July 11 Aug 14, 2026.

Course description Students will participate in an independent research project, mentored by a scientist at the Rocky Mountain Biological Laboratory. Independent Research I for 3 credits is similar to independent research I for 5 credits, with the difference being that during the first 5 weeks of the 10-week program the student will also enroll in a 2-credit field course and therefore participate in fewer research activities. Expectations and time commitments for Independent Research II (second 5 weeks of the program) are the same for all students. Independent Research I and II include an orientation to the RMBL scientific community, development of a research proposal, conducting the project, and a final scientific presentation and report. Students also attend weekly workshops and discussions on data analysis and presentation, metadata and archiving, GIS/GPS of study sites, responsible conduct of research, ethics of research, and pathways to STEM careers.

Course objectives

1. Plan and conduct an independent research project under the mentorship of a scientist.
2. Present a research proposal, orally and in writing, and provide a peer-review.
3. Collect and analyze data in an ethical manner, following approved protocols.
4. Strengthen skills and professional behaviors necessary for a successful career in STEM.
5. Present a final research paper, both orally and in writing.
6. Collect GPS data and create a GIS map of all study sites, archive spatial metadata.
7. Create non-spatial metadata for archiving of project.

Materials and Equipment. RMBL provides access to a scientific library, natural history collections, computing, and advanced scientific equipment. Students are responsible for appropriate personal items (for example- bedding for cabin-style housing and clothing for outdoor project work in mountain climate conditions).

Course grades: Grades will be based on
Independent Research I:
Participation in group activities- 10%
Research & workshop activities- 40%
Written and Oral Research Proposal, Proposal Peer-review- 50%

Independent Research II:
Participation in group activities- 10%
Research & workshop activities- 30%
Final research paper, including spatial data- 50%
Final oral presentation and metadata archiving- 10%

Assignments:

Research Proposal & CV
Experimental Design and Statistics workshops
Responsible Conduct of Research and Ethics discussions
Professional Development for a STEM career
GPS training on advanced equipment and GIS maps
Final oral presentation & research paper
Non-spatial and spatial metadata forms and archiving

Schedule:
The program runs in-person (on site at RMBL) for 10 weeks, from June 9-August 14, 2026. Two days of pre-session (virtual format, non-synchronous) activities are required. Students are expected to meet with their research mentor, conduct research, and participate in program activities for 40 hours/week for 10 weeks.

Week 1- Orientation	RMBL Science, facilities, resources	Experimental Design and Statistics
Week 2- Research Methods	Introduction to GPS	Responsible Conduct of Research/Ethics
Week 3-Research methods	Field research methods, Project proposals, design, statistics	Data management, metadata
Week 4-Research	Research proposal written and oral presentations	Introduction to GIS and metadata
Week 5-Research	Research proposal peer-review and revision	Responsible Conduct of Research/Ethics
Week 6- Research	Research project Data collection	GIS tools and metadata archiving
Week 7-Research	Field research Data Collection and Analysis	Analytical tools Responsible Conduct of Research/Ethics
Week 8-Research	Field research Data Collection and Analysis	Analytical tools, scientific communication
Week 9-Research	Final research presentations- oral Graphical and Statistical analyses	RCR/Ethics, Careers/Graduate programs in STEM
Week 10-Research	Final research project paper- written Complete analyses and graphics	Completion of field project- clean up Archiving metadata and final project data/paper Program completion, checkout forms