

STONE LABORATORY

2015 OVERVIEW



STONELAB.OSU.EDU



OHIO STATE'S ISLAND CAMPUS ON LAKE ERIE





GET UP-CLOSE.
GET MESSY.

Get real.

Get out of the books and into the field at Stone Laboratory.

For more than 100 years, Stone Lab has been an invaluable asset in freshwater biological research and science education.

A freshwater fieldstation since 1895 and part of The Ohio State University since 1925, Stone Lab's programs introduce thousands – from elementary students to adults – to the basics of field-based biological science. Professional researchers from all over the Midwest work here helping to solve the most pressing issues facing the Great Lakes today, such as invasive species and toxic algal blooms.

Stone Lab on Gibraltar Island and the South Bass Island Lighthouse and Aquatic Visitors Center bring hands-on science and education to everyone who visits. In addition to field trips and guided tours, Stone Lab offers 25 college-credit science courses each summer, covering biology, geology and natural resources.

As Ohio State's island campus on Lake Erie, Stone Laboratory offers a powerful combination of science education and research.

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 **QUESTIONS?**
TWEET US
@STONELAB



Real Science

STONE LAB SUMMER COURSES

Expand your horizons and do real fieldwork and lab work at Stone Lab! College students, teachers and even high school juniors and seniors have the opportunity to dive into the 25 one-week and five-week courses offered each summer.

Our full-service campus has dormitories, a dining hall, a library, a computer lab, research laboratories and classrooms.

College students – both undergraduate and graduate students – do not have

to be Ohio State students to study at Stone Lab. Every year, students come from an average of 15 colleges and universities from across the country, and faculty from about 12 different colleges and universities teach Stone Lab courses.

Field studies will expand career choices for students with any major. Not only will you study fish, insects, amphibians, reptiles, birds, plants and freshwater environments, you will also learn skills that translate to other fields, such as problem-solving, scientific analysis, data collection and presentation delivery.



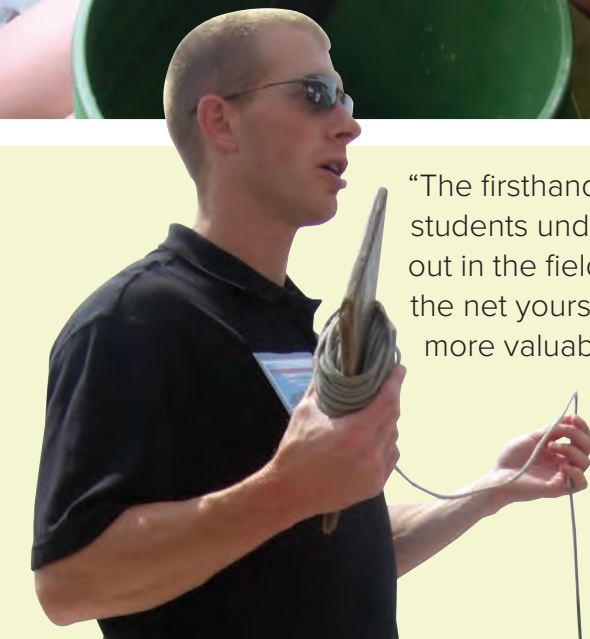
INTRODUCTORY COURSES



Our one-week introductory-level courses cover topics from the ecology and conservation of birds to sport fishing. Introductory courses run Sunday through Saturday and are open to high school juniors and seniors who have taken biology as well as current college students.

Earn two credit hours in a week as you study animals and insects in their natural habitats, examine local plant species or help preserve Lake Erie's ecosystem.

All field work is supervised and occurs primarily in and around Gibraltar Island.



“The firsthand experience really helps students understand the material. If you're out in the field and you pull in a live fish in the net yourself and identify it, that's much more valuable experience than, if you go to an aquarium, seeing a fish in a fish tank, or seeing a picture of a fish.”

Dr. Justin Chaffin
STONE LAB RESEARCH COORDINATOR
Introduction to Biological Studies





Upper-Level COURSES

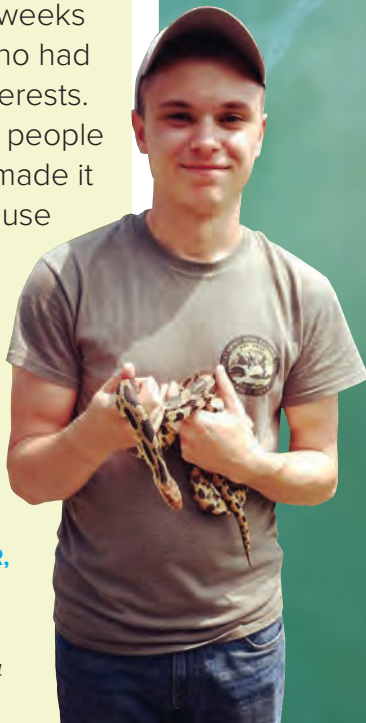


Want to do more than skim the surface of scientific research? Our upper level courses are designed for college students who are studying biological sciences, education and natural resources – and are open to science teachers as well.

Earn varying amounts of credit depending on the class – from .5 credits for a 1-day course to 4 credits for a five-week course – in a tight-knit group of students who share your interest in science, nature and the environment.

“For me, a big part of the experience was spending five weeks with people who had very similar interests. There were 10 people in my class. It made it more fun because everyone there was excited about what we were doing.”

Blair Perry
SENIOR
ZOOLOGY MAJOR,
OHIO STATE
UNIVERSITY
EEOB 5940
Field Zoology, 2014



SUMMER 2015 APPLICATION DEADLINE: FEBRUARY 20, 2015

For more details on the Research Experience for Undergraduates Scholarship Program, visit stonelab.osu.edu/reu

Real Research

This program is funded by the Friends of Stone Laboratory and the F.T. Stone, John L. Crites and Thomas H. Langlois research endowments.

Live the life of a professional researcher with Stone Lab's Research Experience for Undergraduates (REU) Scholarship Program. The REU program parallels any of the five-week courses (see back cover for a complete course listing). Students spend their three non-class days per week

working one-on-one with research supervisors, collecting data, analyzing discoveries and preparing a final presentation. Students carry out their own research projects from start to finish. The approximately ten students per year who are selected for the program receive full tuition, room and meals.



This year students will lead the following projects:

- Ecology of the round goby: analysis of the condition of this invader of the Western Basin of Lake Erie (Ichthyology)
- Survival success of birds inhabiting the Lake Erie Islands (Ornithology)
- Fish investigations to inform fisheries management (Fisheries Research/Management)
- Lake Erie Watersnake research to inform status of snake post-removal from endangered species list (Herpetology)
- Exploration of Lake Erie nutrient loading, hypoxic events (the "dead zone") and harmful algal blooms (Limnology)*

* Two of the four Limnology REUs will work with Dr. Justin Chaffin, Ohio Sea Grant's research coordinator, in the Stone Lab Water Quality Laboratory and will have the opportunity to extend their REU from 5 weeks to 8 weeks. These students will earn an additional credit hour, work full-time in the water quality lab, be paid an hourly salary for 20 hours/week and have their additional tuition and room and meals provided.

"I had never thought about going to grad school in my entire life, but just getting out there into the field and being able to participate in the science – coming up with the questions and the solutions to problems ... changed everything. I thought I wanted to go into the job field, but then I realized I could have a lot more fun and a lot more options if I continued on to graduate school. It was an amazing experience."

Hilary Thompson
GRADUATE STUDENT IN ENVIRONMENTAL SCIENCE, INDIANA UNIVERSITY BLOOMINGTON

REU in ichthyology, studying the diet of the round goby, 2011



STONE LAB FACILITIES



Scientists have been conducting research on Lake Erie and the Great Lakes region here since 1895. The Laboratory's unique location and its facilities, which are well-stocked with equipment, make it a popular destination for researchers from all over North America.

Available equipment includes two remotely operated vehicles, dive equipment, flow-through aquaria with lake water, many 10-gallon aquaria, chemistry equipment and bench space, two underwater cameras, a wire tagger, telemetry gear, benthic sampling equipment, water-quality sondes and a variety of nets.

The Water Quality Laboratory, which opened in 2013, allows researchers to identify plankton, measure chlorophyll content and cyanobacteria toxins, analyze organic and inorganic suspended solids, and test for nutrients such as phosphorus and nitrogen. These tests enable scientists to tackle the issue of nutrient loading and harmful algal blooms in Lake Erie better

than ever before. Lab equipment includes a high-speed centrifuge, spectrophotometer, sonicator, -80 C freezer, a temperature- and light-controlled incubator, 96 well plate reader and micropipettors ranging from 0.2 microliters to 10 milliliters.

In addition, the lab has four research boats:

- *R/V Gibraltar III*, a 42-foot research vessel for open-lake sampling and trawling
- *M/V BioLab*, a 37-foot trap-net style vessel for open-lake sampling and trawling
- *R/V Erie Monitor*, a 25-foot research vessel ideal for scuba, towing underwater equipment and small sampling equipment
- *R/V Buckeye I*, a 21-foot Boston whaler ideal for small sampling equipment and transport between islands

Stone Lab has two cottages near the research laboratory on South Bass Island for visiting researchers who are planning overnight stays. Housing is also available on Gibraltar Island.

For more information or to arrange use of the facility or equipment, contact Research Coordinator Justin Chaffin at chaffin.46@osu.edu.

Staff Housing

The lab manager and instructors stay in the Sycamore and Peach Point cottages.

PEACH POINT
South Bass Island

Peach Point Cottage



Stone Cottage

This cottage houses up to 10 instructors, visiting scientists, guests and seasonal staff members.

Sycamore Cottage

Aquatic Visitors Center

The Aquatic Visitors Center is operated by Ohio Sea Grant and ODNR Division of Wildlife from June through August. The center features educational displays, aquaria filled with fish, children's programs and a public fishing dock. For more information, visit ohioseagrant.osu.edu/AVC.

Bayview Office

Bayview is Stone Lab's office on South Bass Island.



Peach Point Research Laboratory

Originally a federal fish hatchery, Peach Point Research Laboratory now houses a chemistry laboratory, holding tanks for aquatic organisms and general field-support space.



Dining Hall

Stone Lab staff caters all meals for summer courses, field trips and special events from this facility.

Glacial Grooves

Along Gibraltar's western shore are deep striations running Northeast to Southwest. These grooves are remnants of the last great glacier in North America more than 10,000 years ago.

Solar Panels

Solar thermal water heaters were installed on the roof of the Dining Hall in 2012, providing nearly all the hot water for the Dining Hall, and 40 327-watt solar panels were added to the roof of the classroom building in 2013. The solar pavilion at the western end of the island has 44 240-watt solar panels, making the island's total solar energy output 26 kilowatts.

Stone Laboratory

This 21-room structure is the main instruction building on the island, containing laboratories, classrooms and office space, in addition to a meeting room for special lectures, a library a computer lab and the Stone Lab bookstore.



← **TO PEACH POINT**

Alligator Bar



Barney Cottage

This two-story residence provides housing for 22 people.

Cooke Castle

Built in 1865 by Jay Cooke, a Civil War financier, this 15-room Victorian home was visited by such notables as General Sherman and President Hayes.



Lakeview Pavilion

Perry's Cornerstone

Perry's Lookout

Swimming Beach

This is a popular place to cool off during breaks from classes.

Waldock Gazebo

Harborview House

Harborview is the main residence hall for students. Up to 60 guests can be accommodated in its 12 five-person units, which include private bathrooms. A laundry and vending area is also located in this building.



Gibraltar House

This building provides housing for seasonal laboratory staff and researchers.



Main Dock

Students pick up the water taxi to South Bass Island here.

Gibraltar Island

The Gem of Lake Erie. Gib. The Rock. Gibraltar Island has many names and a long history. Originally a territory of the state of Connecticut, ownership of the island changed hands several times in the 1800s before Julius Stone gave it to Ohio State University in 1925. Franz Theodore Stone Laboratory is named after Julius Stone's father, a naturalist.

Gibraltar Island itself got its name because of its resemblance to the famous British fortress at the western end of the Mediterranean Sea. Its location at the entrance to Put-in-Bay Harbor allows it to serve as a natural breakwater to South Bass Island.

TEACHERS

Hands-on Professional Development



Educators of all types can learn how to bring science to their own classrooms with Stone Lab's classes specifically for teachers and education students. Classes are open to classroom teachers, non-formal educators, and education majors with a rank of junior or above by the class date.

Teachers can meet professional development requirements and incorporate these hands-on lessons to expand their own students' horizons. In addition, you can earn graduate credit toward your own advanced degree. Each one-week course re-energizes teachers and provides educators with opportunities to share ideas with peers while they enhance their knowledge of science.

Educators are eligible for tuition assistance and are encouraged to submit a scholarship application with their course applications.



Alphyl Scholarships established by Dr. Vic Mayer are also available for educators taking courses with Dr. Krissek. For an application and more information, email Lawrence Krissek at krissek.1@osu.edu.

"The whole course was focused on teaching people about the importance of the Great Lakes. We saw a lot of cool activities for kids and how to make those concepts that are very professional and academic in nature tangible for people."

Mike Mathis
LEAD PROGRAM PRESENTER,
METROPARKS OF THE TOLEDO AREA
ENR 5614 Marine and Aquatic Education

TAKE YOUR CLASS TO STONE LAB!



Science comes to life for students in grades 5-12 and for groups of adults when you bring them on a Lake Erie Science Field Trip. Our traditional Stone Laboratory field trips are held in April, May, August, September and October.

During the school year, each group spends two hours aboard a Lake Erie research vessel, collecting environmental and biological data. The students return to the island where they don lab coats to dissect fish and examine the lake's microorganisms through microscopes.

Groups can choose from up to 10 additional specialized activities to create a one-day trip lasting up to eight hours or a two-day overnight trip which includes a stay at the island dormitory and meals at the Dining Hall. Field trips can accommodate up to 80 people.

Available supplemental activities for school-year field trips are Invertebrate Collection Walk, Exotic Species Slide Show, Insect Collecting, Island Geology Tour, Herpetology Overview, Ornithology Hike, Fish Seining, Climate Expedition and Aquatic Visitors Center.

AVC ADVENTURES

Can't bring your group for a visit during the school year? In the summer, Stone Lab offers AVC Adventures, four-hour field trips for up to 30 people at the Aquatic Visitors Center, just a short walk from downtown Put-in-Bay on South Bass Island. Choose up to four one-hour activities from the following: Erie Island Cruise, AVC Tour & Fishing Fun, Birds for Beginners, Water Quality Walk, Ins and Outs of Lake Erie, Reptiles & Amphibians. AVC Adventures are offered on Mondays and Tuesdays in June, July and August.

HOW TO PLAN A FIELD TRIP

- Determine if you want a half-day, full-day, or overnight field trip.
- Identify up to three possible dates.
- Review the options for supplemental activities. Detailed descriptions are available on the Stone Lab website. Science cruise and lab work are included in all field trips.
- Use the online cost estimator (stonelab.osu.edu/tripsandtours/estimator) to enter the number of students and select your supplemental activities. After making your selections, click "Estimate Cost."
- Submit your request by selecting "Register This Group." You will be prompted to complete a registration form.
- Complete the registration form and click "Register This Group."
- A Stone Lab coordinator will contact you about your reservation.

Public Tours and Events



AQUATIC VISITORS CENTER (AVC)

The Aquatic Visitors Center gives people of all ages the opportunity to examine Lake Erie's ecosystem up close. Use microscopes to view the lake's tiniest inhabitants and watch live fish swim in our six large aquaria. Children ages 16 and under can borrow our gear and fish for free off our dock.

AVC tours are free and open to the public from 10 a.m.-5 p.m. Wednesdays through Saturdays June 24 through September 12. Off-season tours are available for a fee.

SOUTH BASS ISLAND LIGHTHOUSE

Visit the lighthouse and learn about its history from 11 a.m.-5 p.m. on Mondays and Tuesdays June 22 through August 11. Scheduled tours are available from April through November. The lighthouse grounds are open to the public from dawn to dusk daily.

GIBRALTAR ISLAND TOURS

History tours of Gibraltar Island are available from 11 a.m.-1 p.m. Wednesdays June 24 through August 12. Tours are provided on a first-come, first-served basis and may have a maximum of 75 people. Groups tour the island, including Perry's Lookout, the glacial grooves and the outside of Cooke Castle before learning more about the research being conducted at Stone Lab.



2015 CALENDAR

June 22-August 11	South Bass Island Lighthouse tours
June 24-August 12	Gibraltar Island tours
June 24-September 12	Aquatic Visitors Center (AVC) open
September 12	Friends of Stone Laboratory Open House

To schedule tours, contact the Stone Lab office at 419-285-1800.



Meeting

AND EVENT SPACE

Hold your next event, retreat or meeting at Stone Laboratory.



An ideal location with:

- Picturesque Put-in-Bay nearby
- Secluded meeting space on Gibraltar Island and at the South Bass Island Lighthouse
- Spectacular views of Lake Erie
- Optional field trips aboard a research vessel
- Historical tours of Gibraltar Island
- Team-building activities
- Programs for spouses and children



Stone Lab can accommodate 50 people with a conference room that can be set in classroom, theater or U-shaped styles. We also offer indoor and outdoor reception facilities.

Dormitory-style double rooms accommodate up to 40 people for overnight stays.

A full-service dining hall provides meals and breaks for guests.

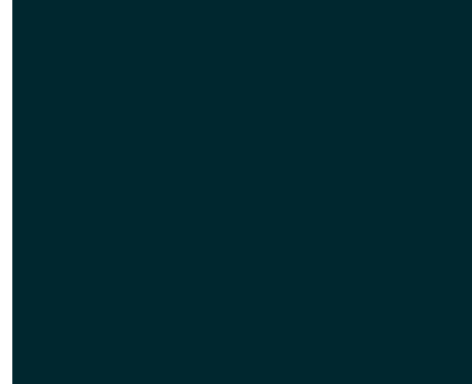
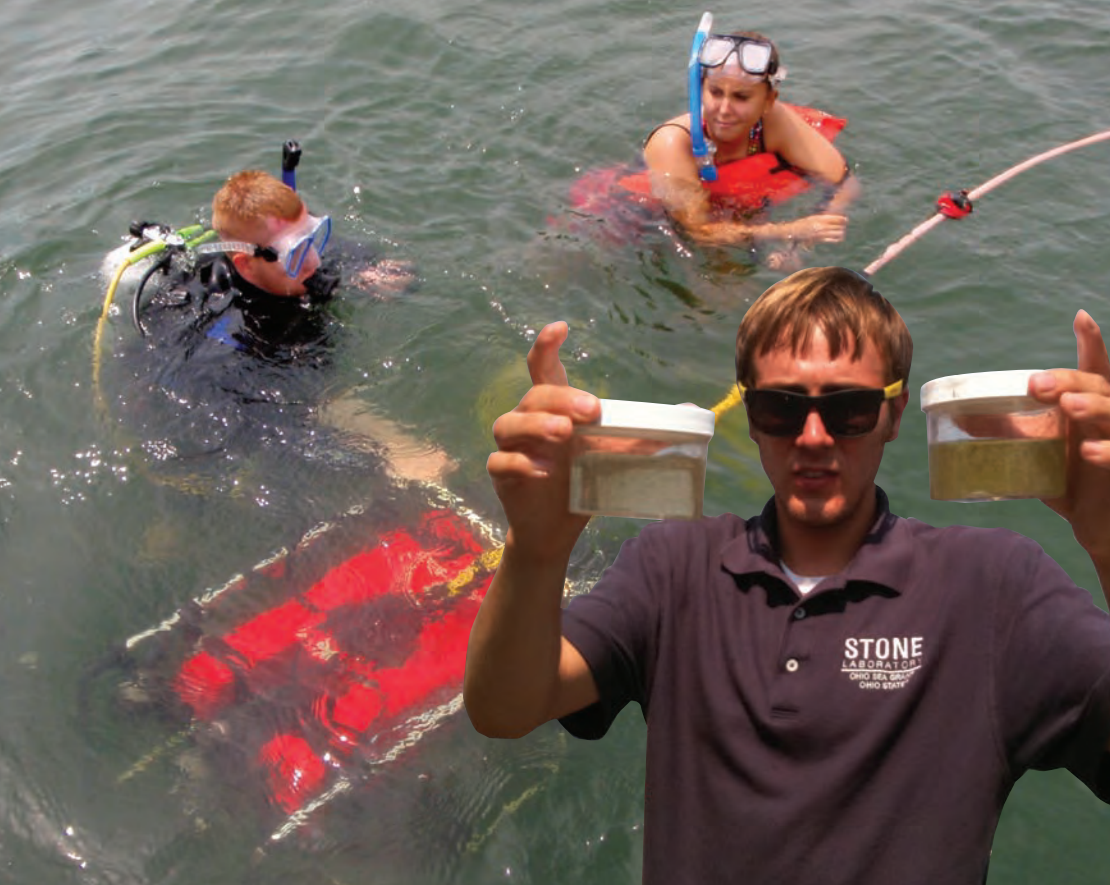
The South Bass Island Lighthouse offers meeting space and reception facilities for groups of up to 10 people. A kitchen, living room and two porches provide comfortable living space for guests.

Presentation support includes:

- Computer and projector
- High-speed internet
- Teleconferencing
- TV displays

Stone Lab has been the educational arm of the Ohio Sea Grant College Program for more than 30 years. Let us provide you with a unique experience for your retreat or meeting needs.

For more information, contact Kelly Dress, 419-285-1800, or by email at dress.3@osu.edu.



SUMMER Jobs

Part-time positions as laboratory assistants and/or library assistants are available to students enrolled in one of Stone Lab's five-week courses. Student employees receive room and meals as compensation.

For those not enrolled in Stone Lab courses, we offer a variety of internships and positions from April through October. These include hospitality internships as well as field station assistant positions. All internships and full-time positions are paid an hourly wage with housing and most meals provided.

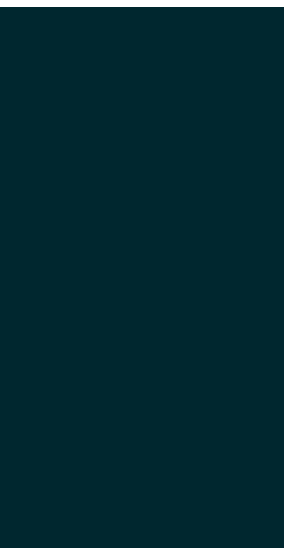
In addition, student employees and interns are strongly encouraged to seek internship credit through their home universities.

For more information and to apply, go to stonelab.osu.edu/applynow. Job applications must be received by March 6. Interviews will be held March 17-19, with final decisions made by the end of March 2015.



How to Apply

Fill out and submit your application at stonelab.osu.edu/applynow



2015 APPLICATION DEADLINES

February 20	REU Application
March 6	Employment application
March 6	College application with Scholarship Form
March 17	College application only
March 17	High school student application
March 17-19	Employment interviews

SUMMER 2015 TUITION

Undergraduate*

Credit Hours	Resident Total	Non-Res Total
0.0-0.5	198.75	542.50
1.0	397.50	1,085.00
2.0	795.00	2,170.00
3.0	1,192.50	3,255.00
4.0	1,590.00	4,340.00
5.0	1,987.50	5,425.00
6.0	2,385.00	6,510.00
7.0	2,782.50	7,595.00
8.0	3,180.00	8,680.00
9.0	3,577.50	9,765.00
10.0	3,975.00	10,850.00
11.0	4,372.50	11,935.50
12.0-18.0	4,770.00	13,020.00

Graduate

Credit Hours	Resident Total	Non-Res Total
0.0-0.5	372.75	952.25
1.0	745.50	1,904.50
2.0	1,491.00	3,809.00
3.0	2,236.50	5,713.50
4.0	2,982.00	7,618.00
5.0	3,727.50	9,522.50
6.0	4,473.00	11,427.00
7.0	5,218.50	13,331.50
8.0 +	5,964.00	15,236.00

*includes all high school students

Most courses charge an additional lab fee per course.
 Room and Meal costs: one week \$415, five weeks \$1,650
 Tuition numbers are estimates.
 All costs are subject to change.

TUITION ASSISTANCE

Each year, Stone Lab awards nearly 40 scholarships to students and educators with financial need and superior academic records. All those taking for-credit courses are eligible for this assistance, which ranges from \$100 to \$2,500 per application. To apply, submit a scholarship application with your Stone Lab application. Applications can be found at stonelab.osu.edu/aid.

Students accepted into the Research Experience for Undergraduates Program receive full tuition, room and meals.

Educators, college and high school students should submit completed applications by March 6, 2015. Initial scholarship recipients will be chosen by early April, though funds may still be available after the deadline. Interested students should contact the Stone Lab Columbus Office.

Applications will still be considered on a first-come, first-served basis until the end of April for non-Ohio State students and until the end of May for current Ohio State students.

Stone Lab Columbus Office

F.T. Stone Laboratory
 1314 Kinnear Road, Area 100
 Columbus OH 43212-1156

Course LISTINGS

Stone Lab offers one-day, two-day, one-week or five-week science courses as well as the five-week Research Experience for Undergraduates Scholarship Program. Detailed course descriptions can be found online at stonelab.osu.edu/courses.



INTRODUCTORY COURSES – 2 CREDITS

Run Sunday-Saturday and are open to advanced high school and current college students.

EEOB 1930	Introduction to Biological Studies – Aquatic Biology	June 14-20
KNSHP 1140.05	Lake Erie Sport Fishing	June 14-20
EARTHSC 1107	Field-Based Introduction to Oceanography	July 26-August 1
EEOB 1930	Introduction to Biological Studies – Aquatic Biology	July 26-August 1
ENR 2360	Ecology and Conservation of Birds	August 2-August 8
EEOB 1930	Introduction to Biological Studies – Aquatic Biology	August 2-August 8
EEOB 1910	Introduction to Biological Studies – Local Plants	August 2-August 8
ENTMLGY 1260	Introductory Insect Field Biology	August 2-August 8



UPPER-LEVEL COURSES

Open to college students who are studying biological sciences, education and natural resources as well as science teachers.

Five-Week Courses – 4 credits

EEOB 5420	Aquatic Ecosystems – Ecology of Inland Waters	June 21-July 25
EEOB 3410	Ecology	June 21-July 25
EEOB 3310	Evolution	June 21-July 25
EEOB 5940	Field Zoology	June 21-July 25
EEOB 5930	Ichthyology	June 21-July 25

One-Week Courses – 2 credits

EEOB 5910	Field Herpetology	June 14-June 20
EEOB 4950	Field Ecology	July 26-August 1
ENR 5194	Group Studies: Climate and Sustainability	July 26-August 1
EEOB 5210	Spider Biology	August 2-August 8

Other Courses

EEOB 3189	Field Course: Environmental Science on the Flagship <i>Brig Niagara</i>	June 10-July 3, 2 credits, 4 weeks
ENR 5699	Current Topics in Environment and Engineering (Guest/Research Lecture)	June 18-August 6, 1 credit, 5 weeks (Thursday evenings)
EEOB 5970	Larval Fish Identification Workshop*	June 28, .5 credit, 1 day
EEOB 5950	Algae Identification Workshop*	August 10-11 or August 13-14, .5 credit, 2 days

*Can also be taken as a non-credit workshop



COURSES FOR EDUCATORS – 2 CREDITS

Can be taken for credit or as non-credit workshops.

EARTHSC 5584	Principles of Oceanography for Educators	June 14-June 20
ENR 5194	Group Studies: Water and Wildlife Training for Educators	June 14-June 20
ENR 5690	Workshop in Environmental Education: Great Lakes Research for Educators	July 26-August 1
ENR 5194	Group Studies: Climate and Sustainability	July 26-August 1
EEOB 4950	Field Ecology	July 26-August 1



NON-CREDIT WORKSHOPS

One- to three-day courses open to the public. Participants must be at least 18 years of age and have completed high school.

Dealing with Cyanobacteria, Algal Toxins and Taste and Odor Compounds	August 10-11 or August 13-14
Fisheries Fundamentals Workshop	August 17-19
Fish Aging Workshop	August 20
Lake Erie Sport Fishing Workshop	September 25-27
Fish-Sampling Techniques Workshop	September 26 or September 27
Outdoor Photography Workshop	October 9-11