



CUA



# UNDERWATER ARCHAEOLOGY AT NESSEBAR, ANCIENT MESAMBRIA (BLACK SEA), BULGARIA

**Course ID: ARCH 365AL**

**May 25-June 21, 2018**

## FIELD SCHOOL DIRECTOR:

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**This program requires students to have Open Water Diver Certification & complete Medical Approval Form prior to the beginning of the field school.**

**Tuition covers accommodations, health insurance, instruction, 8 semester credit units & breakfast on work days. Students are responsible for all other meals.**

## INTRODUCTION

This field school provides experience and training in underwater archaeology through participation in an ongoing research project – investigating the submerged heritage of ancient Mesambria – present day Nessebar – on the Bulgarian Black Sea Coast. Training will include various underwater archaeology and interdisciplinary practices such as underwater reconnaissance surveys and archaeological excavations, marine geophysical survey, underwater photography, photogrammetry and 3D modeling, mapping and recording of submerged archaeological structures and monuments and developing a GIS database. Our research aims to fill the gaps in scientific knowledge of coastal landscape changes and the Black Sea level fluctuation in Antiquity and the Medieval Age, as well as the human reaction and adaptation to such changes. This field school is suitable for beginners in the field and aims to broaden knowledge, refine skills and thus propel students to further their career in Maritime and Underwater Archaeology.

A key component of the project is raising public awareness of the local archaeological heritage in order to facilitate and gain support for its protection, study and presentation. This component will be achieved through developing a project for the establishment of an underwater museum of archaeology (diving sightseeing tour) and showcasing the submerged heritage and landscapes. Students will help with the development of such program think-tank actions, individual idea proposals (student assignments), communication with local people, diving centers, tourists and local archaeologists.

## Nessebar and its Cultural Heritage

Founded at the end of the Bronze Age by a Thracian tribe, Nessebar is one of the oldest towns on the western Black Sea Coast. Its name, which was originally Mesambria, originates from the Thracian words “Melsas”, the name of the legendary founder of the settlement and “bria”- the Thracian word for town. It is situated on a small peninsula (about 0.5<sup>2</sup> km) that was connected to the mainland by a

narrow isthmus. According to ancient sources, Nessebar had two harbors – one on its north and another to its south. Mesambria's first Greek colonizers were of Dorian origin who settled there at the end of the 6<sup>th</sup> century BCE. The town grew quickly and became one of the most powerful Greek colonies along the western Black Sea Coast. It had several temples, a gymnasium, a theatre, massive administrative buildings and corresponding infrastructure. Mesambria was also gradually surrounded by massive fortification walls. It reached the peak of its prosperity in the 3<sup>rd</sup> – 2<sup>nd</sup> centuries BCE, at which point it even minted its own gold coins. Commercial links connected it to towns from the Black Sea, Aegean, and Mediterranean coasts. Numerous imported precious artifacts now displayed in the Archaeological Museum of Nessebar provide material expression of the site's rich economic, cultural, and spiritual life in this period.

In 72 BCE, the town was conquered by Roman armies without resistance. After a temporary occupation in the beginning of the 1<sup>st</sup> century CE, it was included permanently within the limits of the Roman Empire. After the capital was moved to Constantinople in 324 and Christianity was accepted as the official religion of the Empire in 313, favorable conditions arose for the renaissance of the town. New Christian basilicas, fortification walls, and water supply lines were built in the following centuries.

The city was besieged and taken for the first time by the Bulgarians in 812 CE. It was in a border region between the Byzantine Empire and the Bulgarian Kingdom and periodically changed hands between the two powers. During the 12<sup>th</sup> and 13<sup>th</sup> centuries, active trade links were developed between Nessebar and some Mediterranean and Adriatic towns, such as Constantinople, Venice, Genoa, Pisa, Ancona, and Dubrovnik, as well as with the kingdoms north of the Danube region. During almost its entire Christian history, Nessebar was the seat of a bishop. Many churches and monasteries were built in the city and its surroundings reflecting its prosperity and richness.

Nessebar fell under Ottoman rule together with the Byzantine capital Constantinople in 1453 CE. During the following centuries, the economic and spiritual life did not stop and Nessebar's harbor continued to be an important import and export center. The shipyard's production, one of the main subsistence of the town, served the Ottoman fleet and the local merchants. In 1878 Nessebar was liberated from the Ottomans and included into the borders of Bulgaria.

Due to its unique natural position, rich cultural heritage, and the large number of well-preserved monuments (esp. churches from the 13<sup>th</sup> – 14<sup>th</sup> centuries), modern-day Nessebar is an archaeological and architectural reserve. In 1983 the Old Quarter of Nessebar was included in UNESCO's list of World Heritage Sites.

### **Underwater heritage of the town**

Underwater studies in the region of Nessebar began in 1960 as a continuation of studies on land. Fifteen underwater archaeological campaigns were conducted in total (until 1983). During these studies, it was found that significant parts of the ancient town today are below the sea level. Ruins of fortification walls, towers (including a hexagonal one), staircases, gates and other structures from the pre-Roman era, Late Antiquity and the Middle Ages, were traced in various sectors around the peninsula – northwest, north, northeast, and east. The tracked layout of the fortification walls of Mesambria leads us to conclude that due to sea transgression, landslide activity, sea abrasion and a series of earthquakes, Nessebar has lost a significant intramural part of its territory. Today it lays underwater at a depth between 1.5 and 6 meters.

### **REQUIREMENTS AND PREREQUISITES**

- Open Water Diving Certificate (any worldwide recognized training organization);
- Complete Medical Approval & Physician Approval Form
- At least four dives within the year before the field school (log book). Students may choose, at their own expense, to participate in four dives in Bulgaria before the field school begins with our diving partner.

- This field school will host students and professionals from across the world. With such an international team, it is vital that all students respect the IFR Student Code of conduct, each other's cultures, local cultures, and local rules and laws.

### ACADEMIC CREDIT UNITS & TRANSCRIPTS

**Credit Units:** Attending students will be awarded 8 semester credit units (equivalent to 12 quarter credit units) through our academic partner, Connecticut College. Connecticut College is a private, highly ranked liberal arts institution with a deep commitment to undergraduate education. Students will receive a letter grade for attending this field school (see grading assessment and matrix). This field school provides a minimum of 160 direct instructional hours. Students are encouraged to discuss the transferability of credit units with faculty and registrars at their home institutions prior to attending this field school.

**Transcripts:** An official copy of transcripts will be mailed to the permanent address listed by students on their online application. One additional transcript may be sent to the student's home institution at no additional cost. Additional transcripts may be ordered at any time through the National Student Clearinghouse: <http://bit.ly/2hvurkl>.

### RESEARCH AND HERITAGE PRESERVATION OBJECTIVES

- To reconstruct the evolution of the coastline of the peninsula.
- To search for, localize, identify, map and record the submerged structures around Nessebar and to clarify the defense systems of the town in Antiquity and Middle Ages.
- To date the different structures and to document the stages of relative sea level fluctuations, coastal changes and human adaptation through building new fortification system.
- To search and identify the ancient harbors of the town.

### DISCLAIMER – PLEASE READ CAREFULLY

This field school includes physical work underwater at archaeological sites. To avoid health problems and injuries, a strict discipline will be maintained, especially on diving days. Students will have to adhere to a regime of structured diving schedule, diet restrictions and rest periods. Although depth of diving will be fairly shallow – 3-8 meters– dive masters and program staff will monitor diving times and intervals and students will not be able to dive without strict supervision and report to directors.

Students are required to immediately report any health problems, physical discomfort or any other issues that may impact diving schedule. Project directors hold the full discretion to prevent students from diving if they deem that a student's health and/or safety may be threaten by (continued) diving.

Be aware that in June days are hot (25-35°C) and nights are chilly (15-25°C). Although rare in this region and season, rainy days are a possibility. The Black Sea is usually calm at this time of the year, but diving will be halted during windy days, when waves are high, currents too strong or water too muddy. Diving decisions will be made and are at the sole discretion of the project directors.

Proper protection from the elements, both during dives and on terrestrial setting, will be required and enforced by project staff members.

Many Bulgarians speak English but cultural differences should be expected. Although many signs include Latin characters, expect street signs and most public signs to primarily use Cyrillic alphabet.

If you have any medical concerns, please consult your doctor. For all other concerns, please consult the project director, as appropriate.

## **ATTENDANCE POLICY**

The required minimum attendance for the successful completion of the field school is 85% of the course hours. Any significant delay or early departure from an activity will be calculated as an absence from the activity. An acceptable number of absences for medical or other personal reasons will not be taken into account if the student catches up on the field school study plan through additional readings, homework or tutorials with program staff members.

## **COURSE OBJECTIVES**

1. Introduce students to basic underwater excavation methods and practices, including preparation and work with ejectors, trowels, identify artifacts, features and structures.
2. Develop capabilities to perform underwater documentation tasks using measuring and documentation devices, creating written, graphic, photographic, photogrammetric records.
3. Teach students how to recognize and evaluate stratigraphic relationships and contextual information, generate and test site formation hypothesis.
4. Introduce students to basic finds processing methods – initial desalination, cleaning, sorting, labeling, drawing, photographing and description.
5. Introduce students to advanced underwater documentation techniques – photogrammetry and 3D modeling of underwater structures.
6. Introduce students to the basic principles of artifact conservation from salty water environment.
7. Introduce students to geophysical prospection techniques – scanning with multibeam echosounder, side scan sonar, sub-bottom profiler as well as data processing and results interpretation.
8. Introduce students to remote sensing prospection and documentation techniques using ROV, bathymetric aerial LIDAR and aerial photography (theoretical), etc.
9. Train students in developing diving skills in manner that allows scientific research – establish and maintain neutral buoyancy, work upside down, avoid contaminating the water and use of proper communication signs.
10. Present Bulgarian underwater archaeology to students, in the context of world maritime archaeology (history, sites, main research topics, concerned institutions, legislation, etc.).

## **COURSE SCHEDULE**

This Field School has four modules:

**MODULE I** – Methods and theory. Consists of following components (25 hours):

1. Lectures and instructions concerning underwater archaeological methods and practices for excavation and documentation, marine geophysics, artifact processing and documentation
2. Lectures about sea level fluctuations, evolution of coastal landscapes, coastal geomorphology in the context of the Black Sea Coast and archaeology.
3. Lectures about the history and archaeology of Nessebar, the Western Black Sea Coast, Bulgaria and the Balkans.

**MODULE II** – Practicum. Consists of two components:

1. Fieldwork: Basic practices of underwater excavation and documentation and marine geophysical survey (110 hours; min. 15 dives).
11. Workshops: Processing of data and information: creating 3D photogrammetry models, photomosaics; Processing geophysical data and interpretation; Artifact processing and documentation (drawing, photographing, desalination (35 hours).

**MODULE III** - Excursions accompanied by lectures, presentations and behind-the-scenes visits to sites of historical/archaeological significance (app. 20 hours):

1. Sozopol – ancient Apollonia Pontica
2. Nessebar – ancient Mesambria

3. Museum of the Anchor in Ahtopol
4. Exposition “Secrets from Underwater” in Kiten
5. Varna, ancient Odessos

**MODULE IV** – Student assignments (app. 10 hours) will include work on:

1. Field journal
2. Context sheets
3. Artifact & feature drawings
4. Photogrammetry data processing
5. RTI data processing. Writing a proposal for establishment of Underwater Museum of Archaeology / Diving sightseeing tour in the aquatory of Nessebar

Date	Morning	Afternoon
Day 1 May 25, Fri		- Pick-up at Burgas airport at 5.00 pm.- Arrival and check-in in Nessebar. - Traditional Bulgarian welcome dinner.
Day 2 May 26, Sat	-Orientation panel -Visit to the diving center and preparing of personal diving equipment	- Nessebar sightseeing tour
Day 3 May 27, Sun	Safety instructions. Practicing basic underwater diving techniques. Underwater field survey	- Lecture: History and archaeology of Nessebar
Day 4 May 28, Mon	Practicing basic underwater diving techniques; Underwater field survey	- Lecture: Fortification Specifics of Nessebar
Day 5 May 29, Tues	Preparing ejectors and excavation tools. Fieldwork.	- Lecture: Overview of the Bulgarian Underwater Archaeology
Day 6 May 30, Wed	Fieldwork.	
Day 7 May 31 Thurs	Fieldwork.	- Lecture: Underwater Heritage of the Western Black Sea Coast
Day 8 June 1, Fri	Fieldwork.	Lecture: Conservation of Finds from Marine Environment; Conservation of Underwater Structures in Situ
Day 9 June 2, Sat	Excursion to Sozopol	
Day 10 June 3, Sun	Day off	
Day 11 June 4, Mon	Fieldwork.	Lecture: Underwater photography and photogrammetry
Day 12 June 5, Tue	Fieldwork.	Workshop: Underwater photography and photogrammetry
Day 13 June 6, Wed	Fieldwork.	Workshop: Underwater photography and photogrammetry
Day 14 June 7, Thurs	Fieldwork.	Workshop: Underwater photography and photogrammetry
Day 15 June 8, Fri	Fieldwork.	-Workshop: Underwater photography and photogrammetry
Day 16 June 9, Sat	Visit to Museum of Underwater Archaeology in Kiten and Museum of the Anchor in Ahtopol	

Day 17 June 10 Sun	Day off	
Day 18 June 11, Mon	Fieldwork.	Workshop and lecture: Underwater geophysics and remote sensing
Day 19 June 12, Tue	Fieldwork.	Workshop and lecture: Underwater geophysics and remote sensing
Day 20 June 13, Wed	Fieldwork.	Workshop and lecture: Underwater geophysics and remote sensing
Day 21 June 14, Thur	Fieldwork.	Workshop and lecture: Underwater geophysics and remote sensing
Day 22 June 15, Fri	Fieldwork.	Workshop and lecture: Underwater geophysics and remote sensing
Day 23 June 16, Sat	Visit to Varna, ancient Odessos.	
Day 24 June 17, Sun	Day off	
Day 25 June 18, Mon	Fieldwork.	Processing of field documentation
Day 26 June 19, Tue	Fieldwork.	- Workshop processing of field documentation
Day 27 June 20, Wed	Fieldwork.	- Free afternoon - Dinner and farewell party
Day 28 June 21, Thur	Departure – return home or further travel	

Course structure may be subject of change upon directors' discretion and weather conditions.

#### **Typical work day**

7.00 - 7.30 am	- Breakfast
8:00 am - 1.30 pm	- Fieldwork
1.30 - 4.30/5:30 pm	- Lunch and siesta
4.30/5.30 - 7.00/7:30 pm	- Lectures and workshops
7.30 - 8.30 pm	- Dinner

#### **GRADING MATRIX**

Students will be graded based on their work as follows.

<b>% of Grade</b>	<b>Activity</b>
20 %	Exam (test)
10 %	Excavation work
10 %	Keeping a field journal and filling in documentation sheet
10 %	Scale drawing; Measuring and leveling
10 %	Photography& Photogrammetry
10 %	Participation in Underwater Geophysics workshop
10 %	Underwater field survey
10 %	Diving skills
10 %	Participation in RTI modeling workshop

#### **EQUIPMENT LIST (What to bring)**

- Diving gear – Diving weights and tanks will be provided by the field school. Students are responsible for equipment listed below. If you do not wish to bring your own diving gear, you

may rent such gear from a local Diving Center at a price of up to 20 Euros per day (depending on items rented). You will need:

- Wet/dry suite 5mm thickness or more.
- Fins
- Mask
- Snorkel
- Regulator
- Buoyancy Controlling Device (BCD)
- Diving knife
- Belt without the weights (weights will be provided by the program)
- A set of walking or hiking shoes for the excursions.
- Clothing suitable for outdoor activities (weather conditions from hot & sunny to rainy & chilly).
- Wide brim hat.
- A light raincoat for possible rainy and windy days.
- Medication - It is not necessary to bring over-the-counter medicine since you can buy all common types in Bulgaria (e.g. aspirin, anti-insecticides, sunscreen, etc.) It is recommended, however, that you bring any individual prescription medicines at sufficient quantities for the duration of this program.
- A converter for an EU type electricity wall-plug.
- A good attitude for work, fun, study, and discoveries.

### **ACCOMMODATION**

Students will stay at a local hotel in rooms with two to three beds (bathrooms with shower and WC, TV, air-conditioning). Cheap laundry service and free Wi-Fi is available. Participants are not expected to bring any additional equipment, bedclothes or towels. Single rooms are available upon request for the supplement of 120 EUR per week. Staying an extra day at the hotel costs 25 EUR (per night per person). The distance from the hotel to the site is app. 1.5 km/1 mi, and it takes app. 10 min to walk. Diving gear will be transported by a car.

### **MEALS**

Breakfasts on work days as well as the welcome and the farewell dinners are covered by the tuition fee. Students are responsible for their daily lunch and dinners and all meals on days off.

Nessebar offers variety of restaurants that can meet everyone's preferences and dietary requirements – from fast food options to cozy gourmet restaurants. The average meal price (soup/salad, main dish and dessert) can cost between 6 to 15 \$USD. The project team will recommend restaurants for different preferences (cuisine, cost, dietary needs) and will arrange discounts for the students.

### **TRAVEL**

Students will be met by project staff at the Burgas Airport (BOJ) on May 25 at 5:00 pm. The meeting point is at the arrival area. Look for a person carrying the "Balkan Heritage Program" sign. Students will be transferred from the meeting point to the guest house via taxi service. If you arrive by bus from Sofia (or from elsewhere in the Balkans), contact project staff for meeting arrangements.

If you missed your connection or your flight was delayed/canceled, call, text or email the project staff (email: [bhfs.admissions@gmail.com](mailto:bhfs.admissions@gmail.com)). Local contact information will be provided to enrolled students.

### **VISA REQUIREMENTS**

Citizens of EU, EEA, USA, Canada, Japan, Republic of Korea, Australia and New Zealand do not need a visa to visit Bulgaria for up to 90 days or any of the Bulgaria's neighboring countries, except Turkey. However, the Turkish government facilitates tourism by providing the option for obtaining e-visa at [www.evisa.gov.tr/en/](http://www.evisa.gov.tr/en/).

Citizens of all other countries may need a visa. The Balkan Heritage Foundation can send an official invitation letter that should be used at the relevant embassy to secure a visa to the program. For more information visit the Balkan Heritage Foundation web site at [www.bhfieldschool.org/information/visa-help](http://www.bhfieldschool.org/information/visa-help) and the links provided there.

### HEALTH AND SAFETY

- Safety and health orientation will take place at the beginning of the program.
- Underwater Fieldwork will be supervised by dive masters.
- Students will always be supervised and accompanied by field school instructors and/or dive masters underwater.
- Nessebar is a major Bulgarian summer resort location and offers medical facilities, first aid, and numerous pharmacies. The nearest decompression chamber is in the city of Burgas (35 km).
- Underwater Fieldwork will be performed at 3 – 8 meters depth. The diving time underwater as well as the diving requirements will be strictly kept to avoid any risk of decompression sickness.

### PRACTICAL INFORMATION

**Bulgarian dialing code:** +359

**Time Difference** (Summer time): UTC/GMT +2 hours (April through September).

**Measure units:** degree Celsius (°C), meter (m.), gram (gr.), liter (l)

**Money/Banks/Credit Cards:** The Bulgarian currency is the Bulgarian LEV (BGN). You cannot pay in Euros or other foreign currency, except in casinos and big hotels (where the exchange rate is really unfair)! Since 1997, the Bulgarian LEV has been pegged to the EURO at the exchange rate of 1 euro = 1.958 lev (usually sold for 1.94 lev). Bulgarian banks accept all credit cards and sometimes travelers' checks. Usually banks open at 8.00-8.30 am and close at 17.00-18.00 pm. They work from Monday to Friday. Shopping malls, supermarkets, and many shops in Sofia and/or bigger towns and resorts will also accept credit cards. This is not valid for smaller "domestic" shops throughout the country where the only way of payment is cash! You can see Bulgarian notes and coins in circulation at: <http://www.bnb.bg/NotesAndCoins/NACNotesCurrency/index.htm?toLang= EN>

Exchange of foreign currencies is possible not only at banks but also at numerous exchange offices. Note that most of these don't collect a commission fee and have acceptable exchange rates (+/- 0.5-1,5% of the official rate). However, those located in shopping areas of big cities, resorts, railway stations, airports, etc., can overcharge you varying amounts. Ask in advance how much money you will get!

ATMs are available all over the country and POS-terminals are in every bank office.

If you plan to use your credit/debit card in Bulgaria, please inform your bank of your travel before departure. Otherwise it is very possible that your bank will block your account/ card for security reasons when you try to use it abroad. Unblocking your card, when abroad, if possible, may cost you several phone calls and a lot of money.

### Electricity

The electricity power in the country is stable at 220 - Volts A.C. (50 Hertz). Don't forget to bring a voltage converter, if necessary!

Outlets in Bulgaria generally accept 1 type of plug:



two round pins. If your appliance's plug

has a different shape, you will need a plug adapter.

### Emergency

National emergency number is 112.



## REQUIRED READINGS

PDF files of the mandatory reading will be posted on a shared Dropbox folder. Enrolled students will get access to this folder.

**Bowens, A.** Underwater Archaeology: The NAS Guide to Principles and Practice, Second edition, 2009, Portsmouth, Blackwell Publishing, 15-169.

**McCarthy, J., J. Benjamin.** Multi-image Photogrammetry for Underwater Archaeological Site Recording: An Accessible, Diver-Based Approach. – Journal of Maritime Archaeology, 2014, 1, 95-114

**Yamafune, K., R. Torres, F. Castro.** Multi-image Photogrammetry to Record and Reconstruct Underwater Shipwreck Sites- Journal of Archaeological Method and Theory, 2016, 1-23

**Plets, R., J. Dix, R. Bates.** Marine Geophysics Data Acquisition, Processing and Interpretation. Guidance Notes, English Heritage, 2013, 12-40.

**Ognenova-Marinova, L., H. Preshlenov.** Past and Future of the Underwater Archaeological Research in Nessebar, Bulgaria. – In: F. Maniscalco (ed.). *Mediterraneum. Tutela e valorizzazione dei beni culturali ed ambientali. Tutela, Conservazione e Valorizzazione del Patrimonio Culturale Subacqueo*, 4. Napoli, 2004, 263-269. ISBN 88-87835-50-0

**Preshlenov, H.** Withdrawing Coasts. Geomorphology, Bathymetry and Archeological Cartography in Nessebar. – In: Iv. Karayotov (ed.). *Bulgaria Pontica Medii Aevi, VI-VII. Mesambria Pontica. International seminar Nessebar, May 28-31, 2006. Studia in honorem Professoris Vasil Guzelev.* Byprac, 2008, 51- 67. ISSN 1313-3535

**Preshlenov, Chr.** Morphodynamics of the coastal zone of the Nessebar Peninsula (Bulgaria): archaeological and geological benchmarks. – In: R. Kostov, B. Gaydarska, M. Gurova (ed.). *Geoarchaeology and Archaeomineralogy. Proceedings of the International Conference, Sofia, 29-30 October 2008.* Sofia, 2008, 305-307. ISSN 978-954-353-085-4

**Preshlenov, H.** Coastal Instability and Urban Changes – the Case of the Nessebar Peninsula – *Geologica Balcanica*, 39, 2010, 1-2, 325. ISSN 0324-0894