



# Marine Science A-Level

Course  
Prospectus **2025**

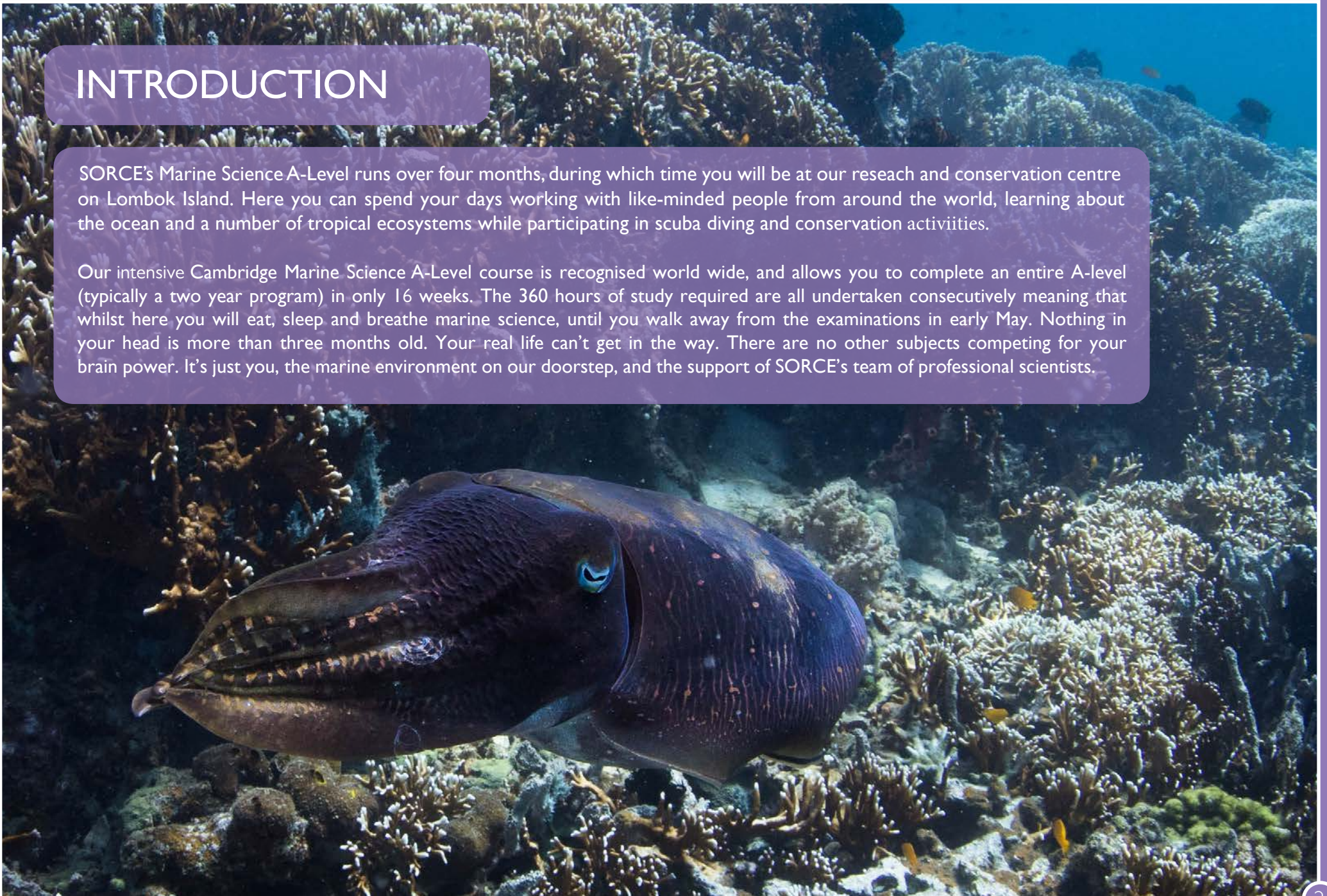


[www.sorce.org](http://www.sorce.org)

## INTRODUCTION

SORCE's Marine Science A-Level runs over four months, during which time you will be at our research and conservation centre on Lombok Island. Here you can spend your days working with like-minded people from around the world, learning about the ocean and a number of tropical ecosystems while participating in scuba diving and conservation activities.

Our intensive Cambridge Marine Science A-Level course is recognised world wide, and allows you to complete an entire A-level (typically a two year program) in only 16 weeks. The 360 hours of study required are all undertaken consecutively meaning that whilst here you will eat, sleep and breathe marine science, until you walk away from the examinations in early May. Nothing in your head is more than three months old. Your real life can't get in the way. There are no other subjects competing for your brain power. It's just you, the marine environment on our doorstep, and the support of SORCE's team of professional scientists.



# INTRODUCTION

SORCE was founded by two highly qualified, likeminded individuals whose vision is to develop sustainable community-backed methods for the protection and restoration of marine ecosystems. SORCE is an initiative providing a climate for ecological awareness within both local and international communities and was registered as a non-profit British Community Interest Company in May of 2018. Our ultimate goal is to restore and protect the marine environment, creating healthy, productive and valuable ecosystems for the benefit of all stakeholders and future generations.

## Vision

To achieve sustainable community backed methods of ensuring the ongoing restoration of marine ecosystems to a state of good health, well-being and productivity that can be maintained and improved upon for generations to come.

## Mission

SORCE is dedicated to the protection and restoration of the marine environment through scientific action, field research and global education. We strive to promote an understanding of the need for change and a drive to achieve a sustainable future for our world's natural ecosystems.

## LOCATION: INDONESIA

Indonesia is the world's largest island country with more than seventeen thousand islands, many of which are volcanic. It is home to hundreds of ethnic groups speaking many different languages. The archipelago extends 5,120 kilometres (3,181 mi) from east to west and 1,760 kilometres (1,094 mi) from north to south. Indonesia boasts 8 UNESCO World Heritage Sites, the Komodo National Park and Raja Ampat Islands.

Despite its large population (over 260 million) and densely populated regions, Indonesia has vast areas of wilderness that support a high level of biodiversity. Indonesia is second only to Australia in terms of total endemic species, with tropical seas surrounding Indonesia's 80,000 kilometres (50,000 miles) of coastline. The country has a range of sea and coastal ecosystems, including beaches, dunes, estuaries, mangroves, coral reefs, seagrass beds, coastal mudflats, tidal flats, algal beds, and small island ecosystems. Indonesia is in the heart of the Coral Triangle making its marine environments amongst the most diverse on the planet. The coral triangle supports over 100 million people directly, most deriving a large proportion of their animal protein from the reefs and reef fishes. The coral triangle has the greatest biodiversity of coral reef fish in the world with more than 1,650 species in eastern Indonesia alone.



## LOCATION: LOMBOK

Lombok is an island in the West Nusa Tenggara province. It forms part of the chain of the Lesser Sunda Islands, with the Lombok Strait separating it from Bali to the West and the Alas Strait between it and Sumbawa to the East. Lombok is similar in size and density, and shares some cultural heritage with the neighboring island of Bali. Sekotong Peninsula lies to the southwest and extends roughly 70 kilometres (43 miles) across.

The island is home to some 3.35 million Indonesians. Lombok's indigenous Sasak people are predominantly Muslim however, a minority of Balinese-Hindu culture still remains in Lombok. Lombok is surrounded by a number of smaller islands locally called Gilis. In Sekotong where we are based there are 13 Gilis, a number of which are protected by restricted fishing zones.



## LOCATION: SEKOTONG

SORCE has a research and conservation facility based within the Gita Nada Marine park in the Sekotong region of Lombok. The Gita Nada Marine park is teeming with life and has a rich biodiversity, which ranges from very small like the pygmy sea horses, infamous residents of sea fans, to the very large species such as passing whale sharks and a very elusive yet magnificent family of dugongs. Whilst the marine park is protected on paper, enforcement is lacking and the area is under threat from unsustainable fishing techniques, climate change and irresponsible tourism.



There is also a great deal of restoration work that needs to be done resulting from historic dynamite fishing and bleaching events. Empirical data on the biodiversity of the area is also lacking and this is just one of the issues that SORCE is working to remedy.

## IMPACT

We develop sustainable community-backed methods for the protection and restoration of marine ecosystems and aim to provide a climate for ecological awareness within both local and international communities, achieved through scientific action and public engagement.

Whilst this is an enormous task it is one SORCE believes it has the potential to contribute greatly to, by working hand in hand with the Indonesian Government and the local communities, associations, organisations and universities of the region. Our ties with local grassroots organisations and departments of local government means that we can ensure our projects are having a genuine and lasting impact. By advising our contacts in the government we are able to assist with MPA designation to ensure they are as effective as possible, and can help steer the increasing tourism hitting Lombok towards a sustainable future.

Fortunately there is great support and understanding for the importance of effective long-term environmental management within the government and communities of Lombok. This is incredibly encouraging and it makes it significantly easier for SORCE to help support and advise the government and people of Lombok with the development of a sustainable eco-tourism industry that will benefit both the environment and the people, leaving a better future economically and ecologically, for generations to come.

Our planet is in serious trouble and we are trying desperately to save it. With the help of our students we work endlessly towards our ultimate goal - to restore and protect the marine environment, creating healthy, productive and valuable ecosystems for the benefit of all stakeholders and future generations.

## SORCE FACILITY

The SORCE facility is based on the South West tip of Lombok in a region called Sekotong. Due to the fact that tourism has not properly discovered this region the islands are known as the Secret Gilis and are relatively unspoilt.



## SORCE FACILITY

Whilst at our facility you will spend the majority of your time in a large communal space known as “The Den”. This is the main hub for socialising, eating and conversing. Here is one of the places where lectures, workshops and activity-briefings may take place during the day, and where we show movies and documentaries, play games and socialise in the evening.

Adjacent to our Den we have the Kitchen where all meals are prepared, and for use on Sunday Funday we have our very own Pizza oven and BBQ area (and YES the Pizza oven is in the shape of a turtle mounting a reef - why wouldn't it be).



## SORCE FACILITY

Across from the Den we have our newly constructed open plan classroom, built from sustainable, locally sourced bamboo, along with thatching and wood. This is where the majority of your theory lessons will take place and can also be used as a quiet study area when you need to revise or review course material.



## SORCE FACILITY

Our Dive equipment store is located close to the beach and is made from locally sourced sustainable materials including Bamboo. During your induction you will receive an Introduction to the Dive Store during which you will be assigned your scuba gear. Here at SORCE we have a selection of Cressi Equipment which we take exceptionally good care of.

We also have Dive Computers for hire if you do not own your own so make sure to ask us if you require one!

## SORCE FACILITY

Our Student accommodations take the form of traditional Lombok style huts made from sustainably sourced local Bamboo and Alang Alang. Each room is equipped with its own fan, clothes rail, shelves, large single bed, mosquito net and bedside table (topped with a pottery Nudibranch). Rooms are private, lockable and each have a balcony. Double rooms, either for couples or dorm-style for friends can be arranged on request.





## SORCE FACILITY

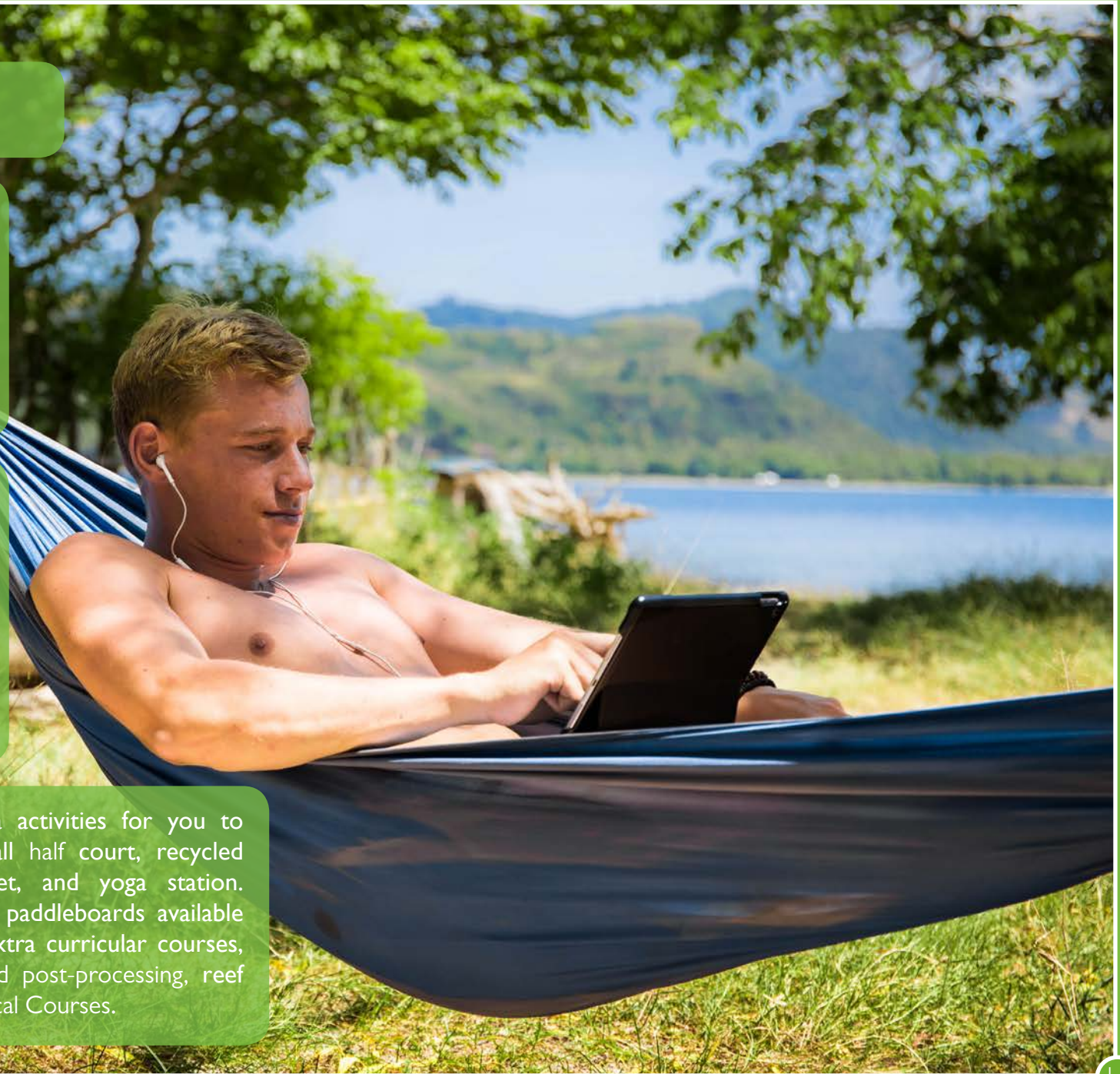
Despite being located in a region that is off the beaten track, we have fully functional toilets and showers supplied by our very own groundwater well. The waste is all thoroughly treated through our septic tank system so no extra organic matter will be filtering down into the oceans. The toilets and showers are clean and bright so that you can feel relaxed and fully refreshed despite being super active during your time here. There are even mirrors so that you can get dressed up on Sunday Funday!

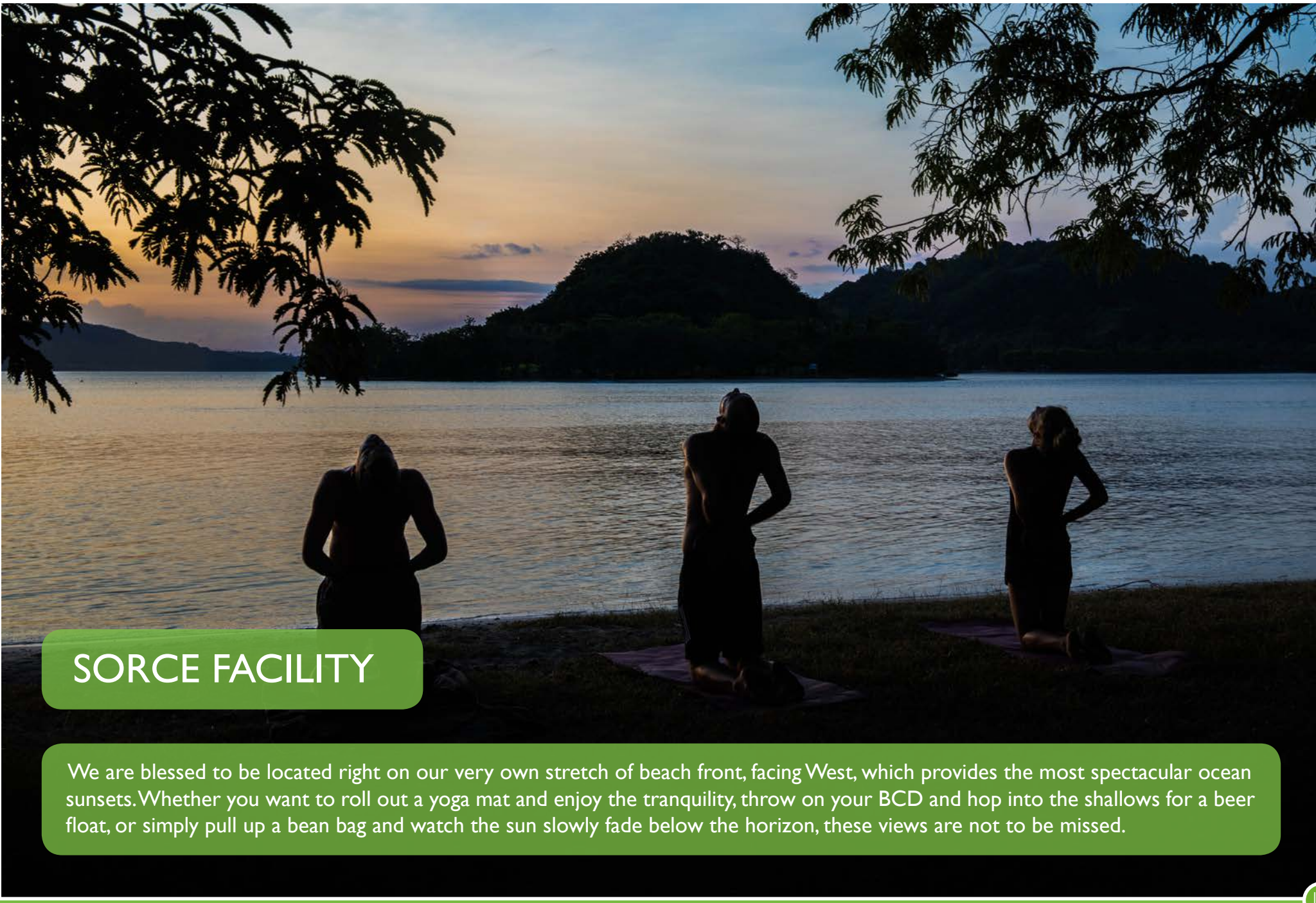
## SORCE FACILITY

We have a Hammock and beanbag chill out area next to our beach for relaxing during your downtime, or star-gazing during the clear nights, as well as a fire pit for evening hangouts and toasting marshmallows.



We also have a number of extra activities for you to enjoy, including our own basketball half court, recycled gym, archery range, volleyball net, and yoga station. There are a number of kayaks and paddleboards available to rent and we offer an array of extra curricular courses, including archery, photography and post-processing, reef check Ecodiver and Reef Guru Practical Courses.



A photograph of three people practicing yoga on a beach at sunset. They are silhouetted against the bright orange and yellow sky. The person on the left is in a standing pose, the middle person is in a kneeling pose, and the person on the right is in a kneeling pose. They are all facing the ocean. The water is calm, and a large, dark island is visible in the distance. The sky is a mix of orange, yellow, and blue. The foreground is dark, with some grass and a few leaves visible on the left and right sides.

## SORCE FACILITY

We are blessed to be located right on our very own stretch of beach front, facing West, which provides the most spectacular ocean sunsets. Whether you want to roll out a yoga mat and enjoy the tranquility, throw on your BCD and hop into the shallows for a beer float, or simply pull up a bean bag and watch the sun slowly fade below the horizon, these views are not to be missed.

## OCEANWAY DIVE

Oceanway Dive Resort is our partner in all things PADI. They are located on the beautiful white sand beach island of Gili Asahan and will be ready to welcome those of you who are not yet Advanced divers for your Dive Orientation during your first week at SORCE.

Their international team are highly experienced professional divers who have been working in this region since 2014. They therefore know these reefs inside out and will be able to show you many of the regions most secret wonders (did we mention the pygmy seahorses yet?).

Jake is the lead instructor at Oceanway and is fantastic with new divers. He will be there taking you through every step of your PADI Open Water and PADI Advanced Open Water courses and will work with you to ensure that you are ready for the intensive A-Level course to follow.



# WILD SCUBA INDONESIA

Wild Scuba Indonesia are the resident experts in Belongas Bay diving. Sharing our site you will often see Jay and Galina bustling about preparing for another trip to the wild waters of Belongas on the beautiful Southern coastline of Lombok.

Through their tours we are able to monitor the hammerhead shark, mobula ray, manta ray and other elasmobranch populations of The Magnet, Gili Sarang and Maanta Pot. This data is essential for securing future protection for the currently unconserved region.

Jay is the lead guide at Wild Scuba and now knows the dive sites there and can read those thrilling waters better than anyone alive. For those of you who are already experienced divers a trip to Belongas Bay is a must! The reefs are unparalleled and with Wild Scuba leading you it will be a day you'll never forget!



## COURSE OVERVIEW

The Cambridge International Marine Science A-level provides a reasoned and stimulating introduction to the marine environment. The A-level has two distinct parts, the AS-level and the A2 level. The AS element of the course concentrates on the scientific study of the sea, its ecosystems and the abiotic factors which influence it. The A2 element concentrates on how humans interact with the oceans including the benefits we gain and the impacts we have upon it. Our emphasis throughout the course is to nurture the understanding of new concepts through the acquisition of knowledge and the application of new ideas. We encourage problem-solving and creative thinking, skills which are transferable to any future career path. Our unique location provides the opportunity to conduct a range of interesting and enjoyable field activities which support all aspects of the course.

Cambridge International A Level Marine Science provides a suitable foundation for the study of Marine Biology or Environmental Science or related courses in higher education. Equally it is suitable for candidates intending to pursue careers or further study in marine science, conservation, shipping, fisheries, tourism or aquaculture, or as part of a course of general education. Practical activities will underpin the teaching of the whole course and candidates may be asked about practical activities in examination questions, but there is no practical paper and no coursework.

*PADI  
Diving*

*AS  
Level*

*A2  
Level*

*Exams*

## TIMETABLE

The course will commence on Monday the 16th of January\* with the first week dedicated to teaching people how to dive for the benefit of taking part in all sub-marine based practical sessions. If you are already a diver, don't worry, this time will be spent diving one of the many local islands with research staff.

20th – 26th Jan: Induction + Diving Orientation  
 27th Jan – 2nd Mar: AS-Level Modules  
 3rd – 9th Mar: Mid-Term Week  
 10th Mar – 6th Apr: A2-Level Modules  
 7th Apr – 11th May Revision & Exams \*

During your time at SORCE there will be a number of field trips throughout West Nusa Tenggara relating to course modules, including;

- Mangrove Forest Sites
- Elak Elak Village
- Outer Reefs
- Tanjung Luar Fish Market
- Aquaculture Visits
- Others Subject to Confirmation

\* Dates Subject to confirmation by Cambridge International Exam Board

## TEACHING METHOD

Theory classes are held in the morning from 8.30am – 12.00pm, or the afternoon from 14.00pm - 17.00pm depending on the tides. The other half of the day will then focus on practical activities relating to the course material and the marine research and conservation projects in operation at SORCE. Students will be actively taught their modules by teaching professionals with classes and teaching techniques varying depending on the topic. Most modules are taught using computer presentations to explain the theory, followed by hands on experience and practical experiments to reinforce lessons learnt. Students will participate in a vast range of scientific practical dives and snorkels, field trip adventures with one of the A-level teachers and terrestrial research and restoration practicals. Each day students will be left with blocks of time to allow them to review the course material. Depending on the module this may require them to give a presentation, write an essay, take a quiz, have a discussion or simply re-read and supplement their notes. A Mid-term week dedicated to AS recap and revision happens half way through the course, followed by revision weeks at the end of the course prior to the exams. During this time a combination of recap discussions, past paper exams, and worksheets are provided to help you fully grasp each subject. Don't forget to watch the beautiful sunsets from our beach to unwind after each day.



## PADI DIVING

### PADI OPEN WATER

If you've always wanted to take scuba diving lessons, experience unparalleled adventure and see the world beneath the waves, this is where it starts. Get your scuba diving certification with the PADI® Open Water Diver course – the world's most popular and widely recognized scuba course. Millions of people have learned to scuba dive and gone on to discover the wonders of the aquatic world through this course.

### PADI ADVANCED OPEN WATER

You don't have to be "advanced" to take it – it's designed to advance your diving, so you can start right after earning your PADI Open Water Diver certification. The course helps build confidence and expand your scuba skills through different Adventure Dives. You try out different specialties while gaining experience under the supervision of your PADI Instructor. You log dives and develop capabilities as you find new ways to have fun scuba diving.



## TECHNIQUES

During your course you will have plenty of opportunity to take part in some of the marine research, conservation and outreach initiatives that are taking place on site alongside your program. These will involve a number of research and conservation techniques, methodologies and skills and you will be given instruction on how to carry each of these out by our on site professional marine conservation biologists.

These techniques will include but are not limited to:

- Species & Impact Identification
- Transect & Quadrat Surveys
- Video & Drone Surveys
- BRUV Deployment
- Photo Analysis (ID & Growth)
- Coral Nursery Setup
- Artificial Reef Construction
- Micro-fragmentation
- Coral Transplanting
- Mangrove Planting



## SYLLABUS STRUCTURE

### AS Level Modules

PS. The Scientific Method

1. Water
2. Earth Processes
3. Interactions in Marine Ecosystems
4. Biodiversity and Classification
5. Examples of Marine Ecosystems

### A2 Level Modules

6. Physiology of Marine Organisms
7. Energy
8. Fisheries for the Future
9. Human Impact on Marine Ecosystems

### Bonus Module

10. Marine biotechnology



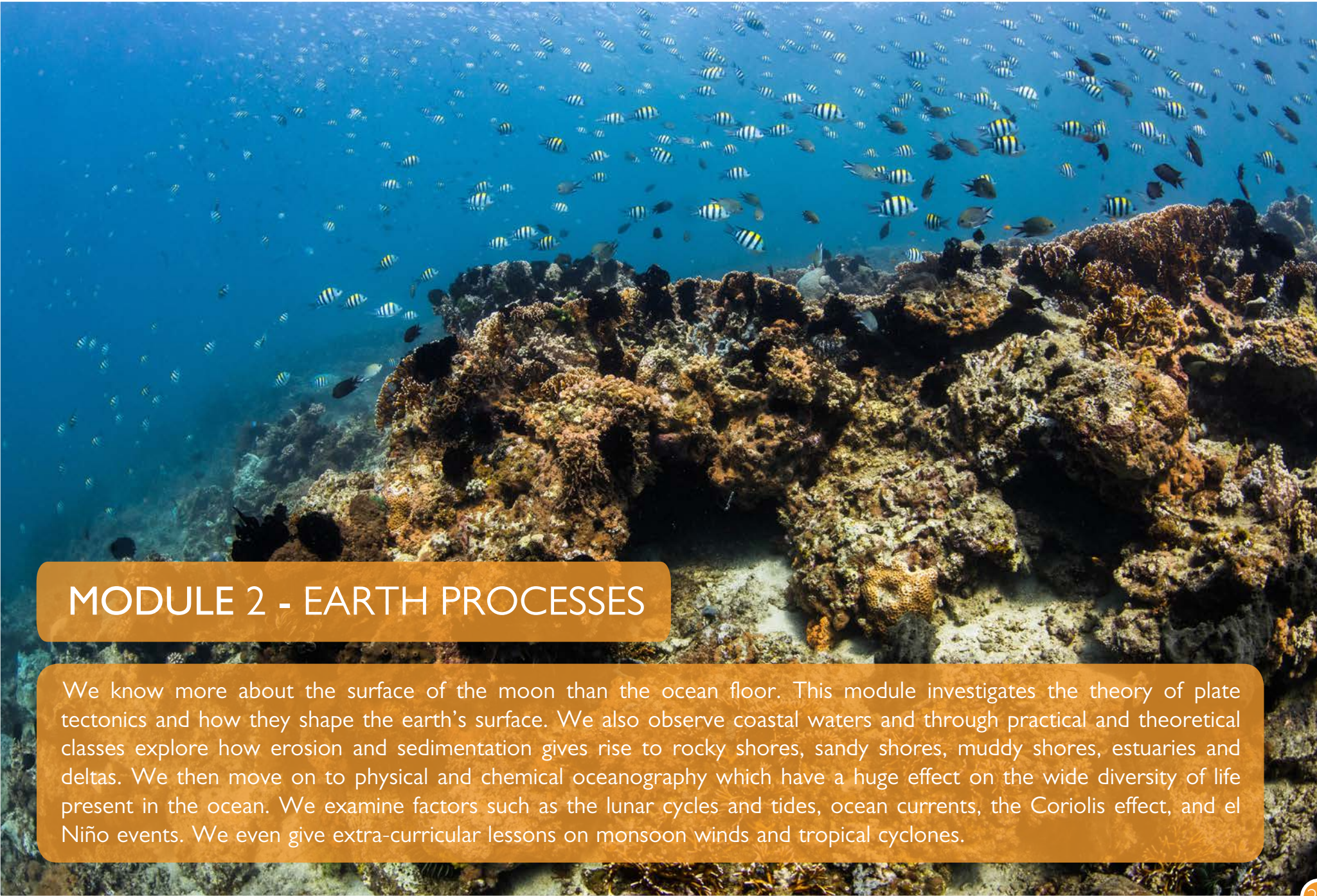
## PRACTICAL SKILLS - THE SCIENTIFIC METHOD

Scientific theory drives forward mankind, in this module you will be introduced to the concepts behind science which allow researchers to use observations to create hypotheses, design experiments to test hypotheses and create theories based on the results. These are the foundations of all science and so understanding this will improve scientific acumen considerably. You will explore the relationship between hypothesis, experiment and theory in science before delving into the detailed steps required to design a scientific experiment or investigation and the following analysis of the results obtained. We even take a look at health and safety and the ethics of science.

## MODULE I - WATER

Biology is underpinned by chemistry so we begin this module by giving you a foundational overview of some basic principles of chemistry and how they relate to water and its properties. Using this knowledge we next explore fundamental principles of oceanography such as the chemical composition of seawaters, temperature and salinity driven layering in the ocean and the essential mixing of ocean waters,





## MODULE 2 - EARTH PROCESSES

We know more about the surface of the moon than the ocean floor. This module investigates the theory of plate tectonics and how they shape the earth's surface. We also observe coastal waters and through practical and theoretical classes explore how erosion and sedimentation gives rise to rocky shores, sandy shores, muddy shores, estuaries and deltas. We then move on to physical and chemical oceanography which have a huge effect on the wide diversity of life present in the ocean. We examine factors such as the lunar cycles and tides, ocean currents, the Coriolis effect, and el Niño events. We even give extra-curricular lessons on monsoon winds and tropical cyclones.

## MODULE 3 - INTERACTIONS IN MARINE ECOSYSTEMS

Ecosystems are complex and the relationships between the living and non-living components are essential for them to remain healthy and functional. We explore the relationships between different organisms, how energy enters the environment through photosynthesis and chemosynthesis and concepts such as productivity and energy flow along food chains. Then we put on our SCUBA gear to see examples of predator-prey relationships, mutualism, parasitism and map food webs, all just meters away from our beach. Marine organisms, like all life, need certain nutrients to prosper. A nutrient is a substance required by an organism to survive, grow, and reproduce. In this chapter we identify these nutrients and the availability of them in the surface layer of the ocean. We consider how nutrients such as nitrogen, carbon, magnesium, calcium and phosphorus are cycled through the environment.

## MODULE 4 - CLASSIFICATION AND BIODIVERSITY

Oceans cover 71% of our planet, so realistically 'planet ocean' would be a more suitable name! This module explores what a marine ecosystem is both academically and physically. It identifies the differences between habitats, populations, communities, ecological niches and looks at what makes up a species before examining methods of quantifying biodiversity. Next we examine groups of marine organisms, from marine algae and plants, to invertebrate groups such as crustaceans and echinoderms, and finally onto bony and cartilaginous fish. We then dive into the water to look at each group's features and characteristics in the flesh.

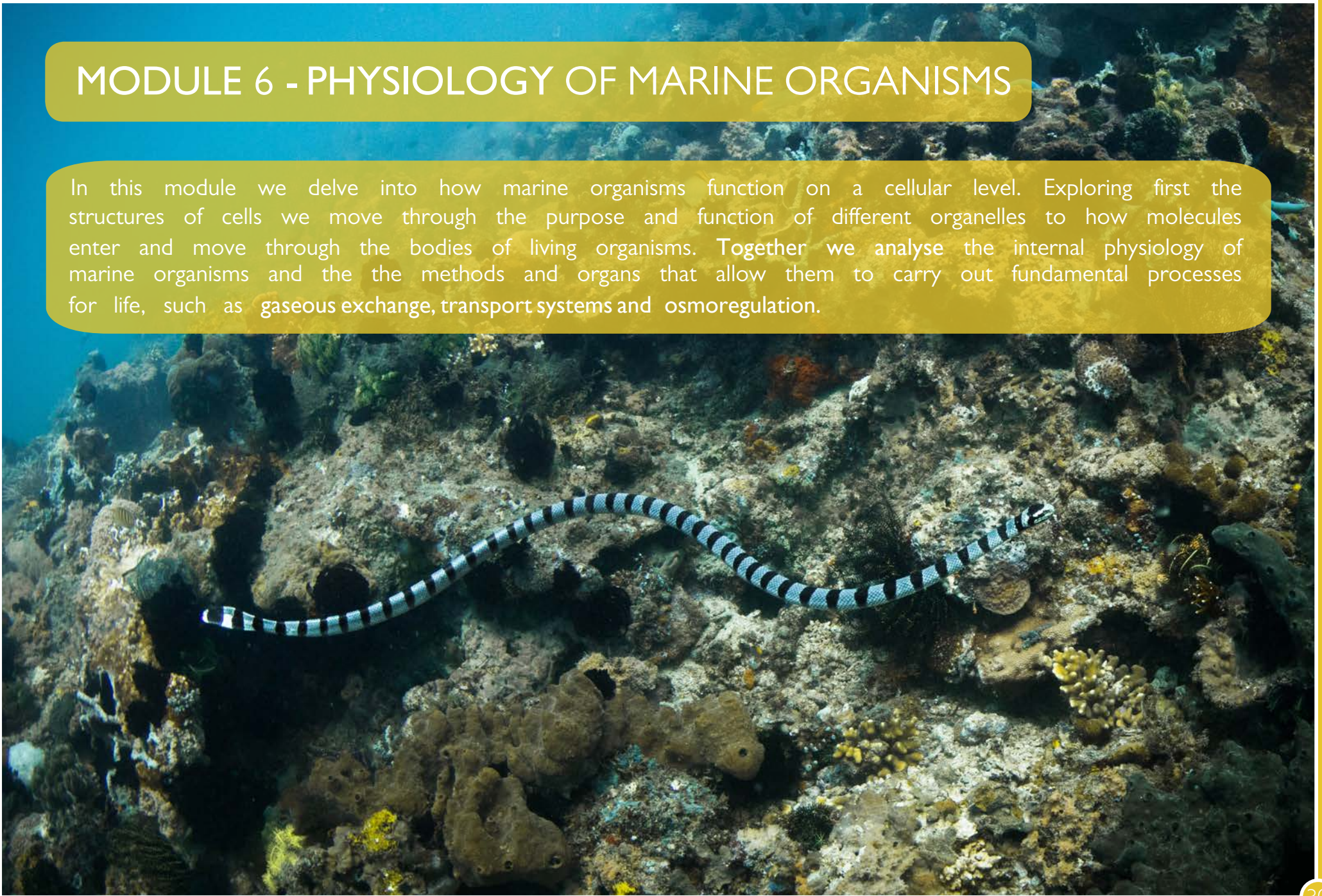
## MODULE 5 - EXAMPLES OF MARINE ECOSYSTEMS

With a range of different marine ecosystems on our doorstep we provide the perfect environment to discover life within the sea, from the theory of deep ocean zones to practical excursions and dives in shallow water habitats. You will first learn about the rainforests of the ocean as we delve into the physiology of corals and their symbiotic friends, the ecosystem services reefs provide, the Darwin-Dana-Daly theory of atoll formation, and what changes a reef from growing to eroding. Practical sessions will look at how to survey reefs long term, how to grow corals and how to determine a reef ecosystems health. We then move into the intertidal zone exploring how changing conditions can allow vastly different ecosystems to emerge. From rocky shores, and sandy beaches to mangrove forest and mud flats - you'll get to visit and investigate them all!



## MODULE 6 - PHYSIOLOGY OF MARINE ORGANISMS

In this module we delve into how marine organisms function on a cellular level. Exploring first the structures of cells we move through the purpose and function of different organelles to how molecules enter and move through the bodies of living organisms. Together we analyse the internal physiology of marine organisms and the methods and organs that allow them to carry out fundamental processes for life, such as gaseous exchange, transport systems and osmoregulation.



An underwater photograph showing a sandy seabed with several green seagrass blades. A dark, porous sponge is visible in the lower right foreground. The water is clear, and sunlight filters through from above.

## MODULE 7 - ENERGY

Energy is fundamental for all of life on Earth. Through photosynthesis marine primary producers form the basis of the majority of life in the ocean and provide over 85% of the world's oxygen. This module inspects the detailed steps involved in photosynthesis on a chemical level. Together we discern the ways in which the rate of photosynthesis can be increased, how different wavelengths of light can impact which species can live in different ocean habitats, and even how this can curb global warming. Next we move onto Chemosynthesis and take a look at the alien like Chemotrophs found in the depths of the ocean. Finally we take a more detailed look at the process of cellular respiration and how it is essential for all life on Earth.

## MODULE 8.1 - FISHERIES FOR THE FUTURE: REPRODUCTION

This module is extensive so we split it into three parts to make it easier to tackle! Here we will take a closer look at the life history cycles of some of the most commercially important species including Salmon, Tuna, Oyster, Shrimp, Giant clams and groupers. If we're lucky we may even witness some of the dynamic courtship and mating displays that some of our reef residents engage in.



## MODULE 8.2 - FISHERIES FOR THE FUTURE: FISHERIES

Wild capture fisheries amounted to 47% of fish production for human consumption globally in 2018, at an estimated 80 million tonnes captured it is an extremely important food source, particularly for impoverished coastal communities. This module will focus on why fisheries need to be sustainable and how fish stocks are monitored and managed, and management enforced. In addition, we will look at some case studies of failed fisheries management, the economic loss and ways in which to rebuild depleted fish stocks.



## MODULE 8.3 - FISHERIES FOR THE FUTURE: AQUACULTURE

In 2018 Aquaculture was responsible for 53% of the fish production used for human consumption. Aquaculture is playing an increasingly important role to feeding Earth's growing human population. Together we will look at the types of aquaculture farming as well as the species that are commonly cultured. Through field trips we will explore the requirements of some of these species, the impacts upon the environment and discuss ways in which this could be reduced.



## MODULE 9 - HUMAN IMPACTS ON MARINE ECOSYSTEMS

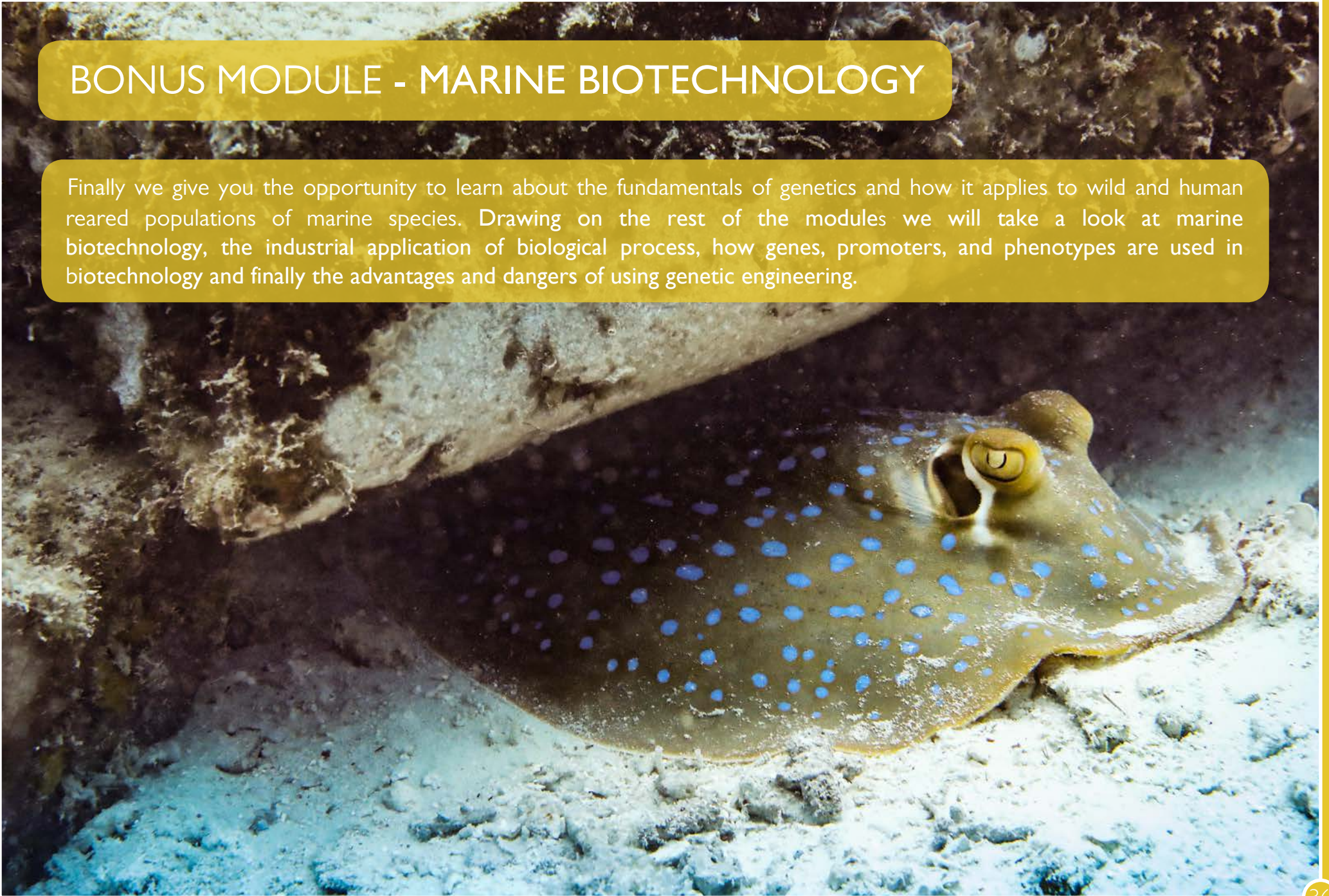
Humans are causing changes on a global scale and as such we are in a new geological age named the Anthropocene. Students will be exposed to some of the impacts of industrial activities on the environment. We will also take a look at the accumulation of toxins in the food chain, the effects of global warming and the process of ocean acidification.

After the relatively harrowing lessons learnt in the previous lessons we then look at conservation and how it can be achieved in the marine environment. As a marine research and conservation facility you will get hands on practical experience in this on a regular basis, we also will discuss the option of ecotourism as a sustainable solution.



## BONUS MODULE - MARINE BIOTECHNOLOGY

Finally we give you the opportunity to learn about the fundamentals of genetics and how it applies to wild and human reared populations of marine species. Drawing on the rest of the modules we will take a look at marine biotechnology, the industrial application of biological process, how genes, promoters, and phenotypes are used in biotechnology and finally the advantages and dangers of using genetic engineering.



## ASSESSMENT

All AS-Level and A2-Level components will be sat in one exam series, leading to the full A Level qualification. The exam series shall take place at our partner school in Mataram, within a one to two week period (subject to exam date confirmation) and will consist of four separate exam papers.

| Paper | Duration      | Marks | Weighting % |         |
|-------|---------------|-------|-------------|---------|
|       |               |       | AS Level    | A Level |
| 1     | 1 h<br>45 min | 75    | 50          | 25      |
| 2     | 1 h<br>45 min | 75    | 50          | 25      |
| 3     | 1 h<br>45 min | 75    | -           | 25      |
| 4     | 1 h<br>45 min | 75    | -           | 25      |

## PRICING

The complete cost for the A-Level is £5750 for our all-inclusive package. For reference, a comparable qualification at a British college is approximately double this cost and would not cover living expenses, scuba diving, PADI courses or fieldtrips, let alone any of the incredible practical experience you will gain by being immersed in the tropical marine environment and surrounded by professional marine conservation biologists. What a fantastic deal!

A 20% deposit is required at the time of booking to secure your place on the course. The remaining balance is due in full no later than 10 weeks prior to the course start date.

A full breakdown of what this covers is included on the following page. Please pay close attention to the costs that are not covered as you will need to ensure that you can cover these costs yourself.

## PRICING

### INCLUDED:

- 16 weeks accommodation in a beautiful private sustainably built traditional bamboo bungalow
- 16 weeks full board (breakfast, lunch and dinner)
- 16 weeks unlimited scuba diving including Scuba equipment rental (dive computer excluded)
- PADI Open Water and PADI Advanced Open Water courses and certification \*
- Assistance with visa arrangements
- All equipment required for practical lessons and field trips
- All accommodation and transport required for field trips
- Comprehensive teaching and exam technique tuition
- Boat transfer from collection point on Lombok to our site
- Examination fee and transport to and from examinations

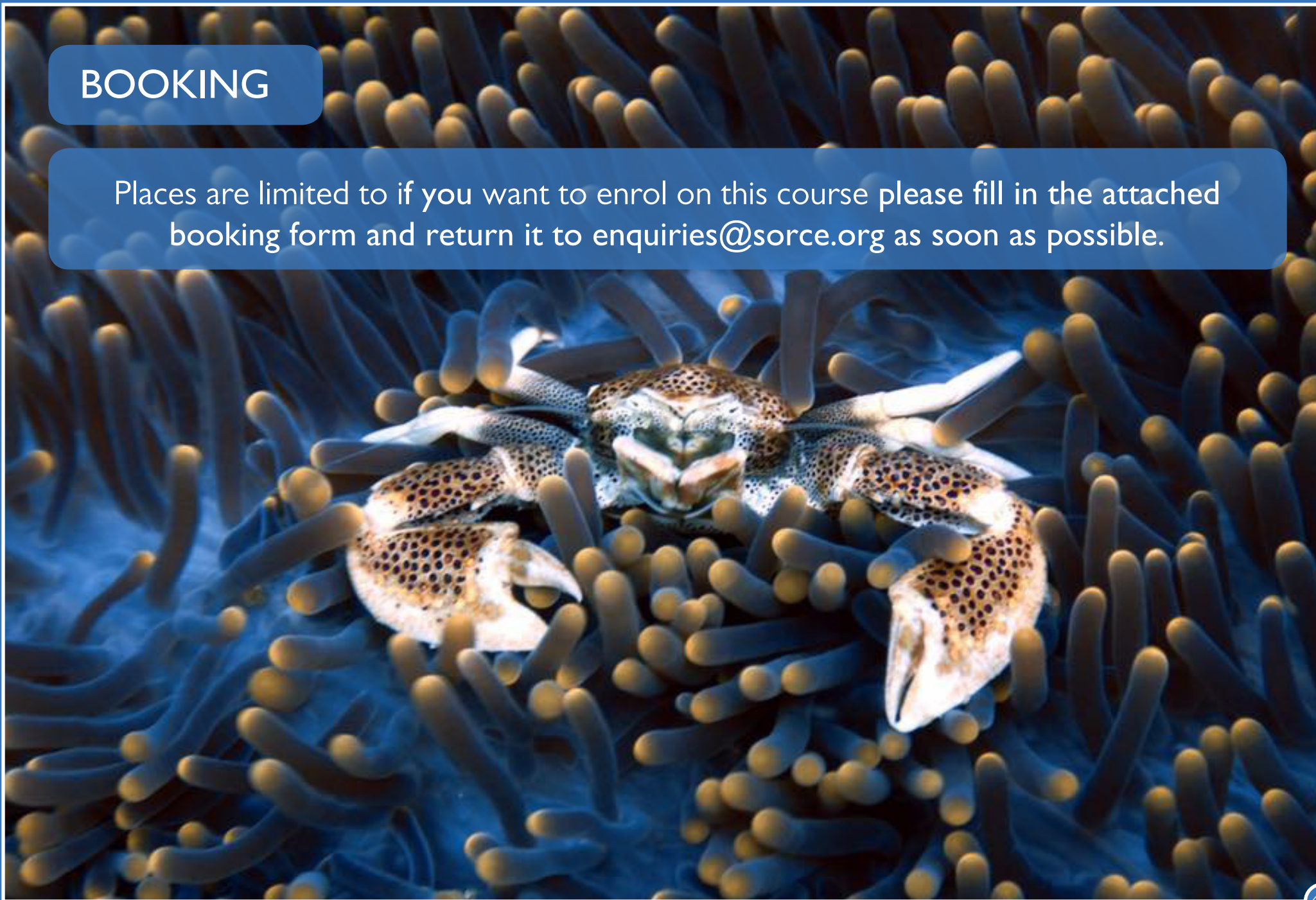
\* Discounts to the full price are applicable if you already hold a valid Open Water or Advanced Open Water Dive Certification or equivalent.

### NOT INCLUDED:

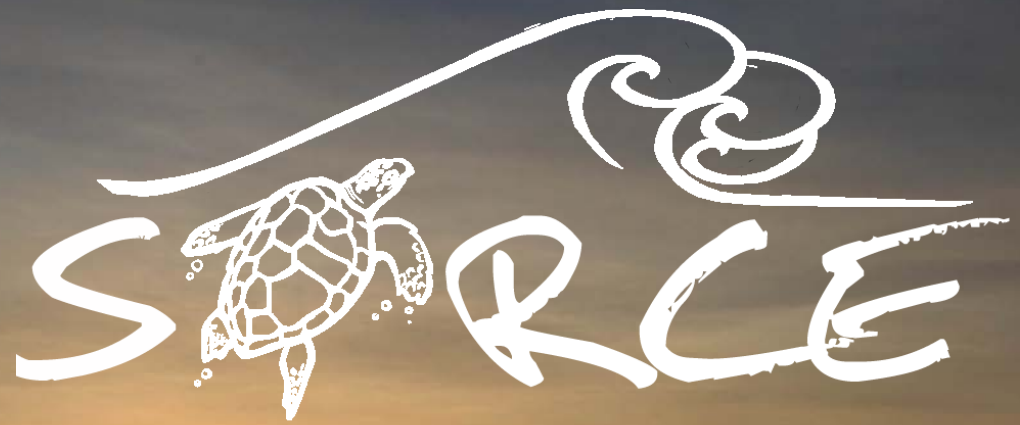
- Flights from home country to Lombok international airport, (LOP)
- Transport to collection point on Lombok - in Sekotong.
- Visa application and renewal fees.
- Dive computer, this is **MANDATORY** and can be rented for 300,000 IDR per week or we can help you buy your own for approximately 200GBP - subject to price fluctuations.
- Alcoholic beverages, soft drinks, and snacks
- Insurance. You'll need to buy appropriate travel insurance covering your participation in the Marine Science A-level. This will require additional coverage for scuba diving up to 30 meters daily for the duration, including hyperbaric therapy treatment.
- Laundry Service supplied by the local village (approximately IDR 10,000 per kg)
- Optional trip to Belongas Bay (experienced divers only) facilitated by Wild Scuba

## BOOKING

Places are limited to if you want to enrol on this course please fill in the attached booking form and return it to [enquiries@sorce.org](mailto:enquiries@sorce.org) as soon as possible.



*We look forward to meeting you in 2025*



Sustainable Oceanic Research Conservation and Education CIC



[www.sorce.org](http://www.sorce.org)