Barcelona World Race Ocean Campus: a pioneering project on education and research

Barcelona, 01 December 2014. The Barcelona World Race Ocean Campus (BWR Ocean Campus) is an initiative emerged from the collaboration among the University of Barcelona (UB), the Barcelona Foundation for Ocean Sailing (FNOB)—organizer of the Barcelona World Race (BWR)—, and El Far Consortium. Its main objective is to create a platform of open educational courses to disseminate the broad knowledge based on ocean sailing within the rigour and structure of university learning.

The BWR, the first only double-handed (two-crew) regatta around the world, is the central theme of the five massive open online courses (MOOC) that will be offered, by means of the platform Canvas Instructure.

The BWR Ocean Campus is a pioneering initiative in the world of oceanic sailing. Its academic coordinator is Jordi Renom, lecturer at the Faculty of Psychology of the UB, and Santi Serrat, member of FNOB, is the editorial director. For the University of Barcelona, this is a brand new initiative as the BWR Ocean Campus will be the first MOOCs launched by the institution. For FNOB, the campus means a natural evolution of its educational program for the race, a reference framework for the educational potential of ocean sailing in schools.

What is a MOOC?

In 2008, the universities of Utah and Stanford set up the first MOOC experiences. From that moment, this type of course has been developed in a really big way at North-American universities. Nowadays, MOOC courses have spread internationally by means of different online platforms, such as Coursera, EDX, MiriadaX and Canvas.

MOOC is a learning model currently being used by some of the world's leading educational institutions, disseminating knowledge in the form of online content with open and free access for all. Courses are based on participation, so students share their knowledge and experiences in order to enrich course contents.

The UB, together with Inlea—an organization specialized in designing e-learning programmes—, will provide certificates to those students who ask for them. Payment is only required if the student asks for an academic certificate.
Pioneering courses in oceanic sailing

Courses are between six and eight weeks long. Study materials are available in Catalan, Spanish and English.

The online platform includes the following five courses:

- **Strategies for winning. Meteorology in a round the world regatta.** Course led by Tomàs Molina, lecturer in the Department of Astronomy and Meteorology at the UB, and coordinated by Santi Serrat, editorial director of the BWR Ocean Campus.
  The course enables to learn about the mechanics of weather on the Earth and the knowledge of this needed by sailors. Moreover, students will learn about the foundations of ocean meteorology, how digital files are generated based on prediction models and how sailors receive these via satellite and then integrate them into high-performance navigation software. This knowledge is useful both in sailing and in other activities conditioned by meteorology across the planet.

- **The brain in a non-stop round the world regatta. Chronobiology and sleep management.** Course coordinated by Ana Adan, professor in the Department of Psychiatry and Clinical Psychobiology of the UB.
  In this course students will learn the foundations of the biological patterns governing sleep and performance, in general, and their application to solo and double-handed ocean sailing. Students look at how circadian rhythms are disrupted as one sails round the world, after months of environmental changes. Students examine the distribution of the activity-sleep rhythm and what strategies sailors employ to sleep and adapt to the gruelling course. In a round the world regatta, participants race around the globe from west to east for three months, sailing in watches of four hours. A situation like this takes its toll on their biological clocks and sleep patterns and their cognitive capacity and physical performance are affected.

- **Gastronomy and the high performance diet for a round the world regatta.** Course coordinated by Victòria Pons, from the High Performance Centre (CAR) in Sant Cugat, and Pere Castells, head of the Educational and Research Unit of Science and Cuisine at the Food and Nutrition Campus of the UB.
  In a world regatta, nutritional requirements are very high. Moreover, food cannot be too heavy and it has to resist wet and harsh environment conditions. In this course students will learn what types of food are taken on board, how freeze-dried products are designed and produced, and how to create menus with a high organoleptic value (good taste and feel), a key aspect in skippers’ psychological performance. The course also teaches how to calculate nutritional needs and how to plan a diet in order to get as good results as possible in trainings and during this three-month race.

- **Oceanography: a key to a better understanding of our world.** Course coordinated by Jordi Serra, professor in the Department of Stratigraphy, Palaeontology and Marine Geosciences at the UB.
World regatta boats sail across the Mediterranean Sea, the Atlantic Ocean, southern Indian Ocean and southern Pacific Ocean. During this voyage, skippers face diverse oceanographic situations: strong currents, floating ice sheets, every type of waves and biological diversity. In the course students will go deeper into the oceanographic characteristics of the BWR route, the current satellite analysis tools and the research projects associated with the regatta.

• **Injuries, illness and telemedicine in extreme sailing.** Course coordinated by Belén Gualis, attending physician of the Intensive Care Medicine and Coronary Unit at the Quirón Teknon Hospital and medical director of the Barcelona World Race.

Ocean sailing puts sailors through the toughest physical, mental and environmental conditions, and that can take its toll on their health. During this course, students will learn about the basic medical techniques for the prevention of medical problems on board a yacht, how to plan medical prevention and active techniques to deal with some of the main issues that may arise during a two-crew round the world regatta. You will also be introduced to telemedical assistance protocols and the technology associated with it.


**UB Research at the Barcelona World Race**

• **Chronobiology: Cognitive Changes Associated With Ocean Sailing in Extreme Conditions**

A team led by researchers Ana Adan and Josep M. Serra Grabulosa, members of the Department of Psychiatry and Clinical Psychobiology and the Consolidated Research Group on Neuropsychology of the UB, has designed a project to monitor two BWR sailors in order to study their biological patterns governing sleep and performance.

The UB team will carry out the research project Cognitive Changes Associated with Ocean Sailing in Extreme Conditions, together with sailors Aleix Gelabert and Dídac Costa, from the boat **One Planet One Ocean**. Measurements will be taken immediately before and after the regatta. They include a polisomnography, sleep-wake patterns, cognitive performance and functional brain imaging. The August Pi i Sunyer Biomedical Research Institute (IDIBAPS) collaborates in the project. Moreover, measurements of sleep patterns, cognitive performance and environmental factors will be taken daily during the regatta.

A group of developers from CATDOTNET, led by Pep Lluís Bano and under the umbrella organization SaveComm, have designed the apps and electronic devices that sailors need to make cognitive and memory activities, performance texts and personal assessments that will be then compared with the record of environmental factors.

It is a pioneering project as there are very few existing scientific studies and none with the measurement and recording techniques to be used, nor is there any study of a regatta as long as the Barcelona World Race.
For further information, please visit: [http://www.ub.edu/neuroscience/ITdB/BWR.html](http://www.ub.edu/neuroscience/ITdB/BWR.html)

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- **Michelin starred freeze-dried food**

The study is led by Pere Castells, coordinator of the Educational and Research Unit of Science and Cuisine at the Food and Nutrition Campus of the UB. Its main objective is to improve the organoleptic and nutritional properties of food products used by BWR sailors. The aim is to create freeze-dried food products (which represent 99% of products used during the regatta) adapted to sailing requirements and skippers’ nutritional needs which also have good taste and are based on the Mediterranean diet.

To achieve this goal, two elite restaurants were selected: **El Celler de Can Roca** (3 Michelin stars) and **Les Cols** (2 Michelin stars); they already used these products in their dishes.

Freeze-drying is a dehydration process by freezing the material and then reducing the surrounding pressure to allow the frozen water in the material to sublimate directly from the solid phase to the gas phase.

Results include the creation of six different dishes (three of them by El Celler and the other three by Les Cols). BWR skippers will take on board half kilo portions (when they are hydrated).

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Background to the Barcelona World Race Ocean Campus

Education from a boat

In 2005, El Far Consortium set up a project to recover Barcelona’s maritime heritage and tradition by means of educational programs addressed to children and adults.

In 2006, El Far Consortium set up the project **Grumet Èxit**, particularly addressed to those young students who quit school before obtaining the secondary school certificate. They work as crew members (in charge of tasks related to cleaning, route, measurements, etc.) and they get school credits. To date, more than 1,200 teenagers have participated in this six-month program.

The project received the award given by the Laureus Foundation. The Barcelona Education Consortium and Jordi Renom, professor of Methodology for Behavioural at the Faculty of Psychology of the UB, collaborate in it. Students of the Psychology Practicum participate as observers and mediators.

The El Far Consortium is the main agent in Spain of the **Sail Training International**, a global organization which aims at educating young people in transversal competences and values through the sail training experience. The organization was nominated for the Nobel Prize in Peace 2007 and it is one of the few international organizations that continued its activity during the Cold War.

Collaboration with schools

Some years ago, the FNOB set up the educational program of the BWR that is addressed to primary and secondary schools. Every year, the foundation distributes a suitcase full of educational resources and schools work on regatta-related contents during the three months of race.

In 2014, more than 27,000 primary and secondary students from Catalonia, Spain, France and Chile participate in these activities.

The BWR: a made in Barcelona regatta

The Barcelona World Race is the first and only double-handed (two crew per boat), non-stop, round the world regatta. External assistance is permitted, although there are strict penalty regulations. This is an extreme sporting challenge and ocean adventure that puts human limits to the test.

The boats cover 24,000 nautical miles in a circumnavigation from Barcelona to Barcelona, putting the capes of Good Hope (South Africa), Leeuwin (Australia) and Horn (Chile) to port (their left) and the Antarctic to starboard (their right). The start of the race is on the 31st of December 2014 at 1 p.m., with the starting line positioned opposite the W Barcelona hotel at the Barcelona’s port. The finishes are forecasted for the end of March 2015.
About the University of Barcelona

The UB is the top public university in Catalonia due to its size of student population, 64,000, and its course offerings. The UB is also the principal centre of university research at state level and has become a European benchmark for research activity, both in terms of the number of research programmes it conducts and the excellence these have achieved.

The UB has a prominent position in the most prestigious international rankings: it is the only university in the Spanish State that has managed to get in among the world’s top 200 according to the Academic Ranking of World Universities (ARWU) —a classification also known as the Shanghai Ranking. Moreover, the UB is the top Spanish university and one of the best 200 universities in the world according to QS World University Rankings 2014-2015. In addition, it is the only Spanish university which is among the 200 best worldwide universities in 25 out of 30 subject areas, according to the QS World University Rankings 2014 by Subject.

The University of Barcelona is member of the most important international excellence university networks, such as the League of European Research Universities (LERU). It has overseen the creation of two campuses of international excellence, the Barcelona Knowledge Campus (BKC) and the Health University of Barcelona Campus (HUBc). It has assimilated their goals as its own to increase competitiveness; these goals include the attraction of academic and research talent, full internationalisation, the enhancement of teaching quality and scientific quality, and an increase in the transfer of knowledge generated at the university to wider society.

http://www.ub.edu

About the FNOB

The Barcelona Foundation for Ocean Sailing (FNOB) was created with three strategic objectives in mind: sports, industry & technology and communication, and devised to undertake a series of projects geared towards promoting and boosting activities related to top-level ocean sailing.

To fulfil these objectives, the FNOB defined four key strategic areas: R&D, Education and Knowledge, Science & Technology and the Environment.

The creation of the FNOB in 2005 was the result of the work of a platform formed by the Barcelona City Council, the Fira de Barcelona (Barcelona Trade Fair), the Autoritat Portuària de Barcelona (Barcelona Port Authority) and the Barcelona Chamber of Commerce, with the El Far Consortium as its coordinator.

The FNOB is currently working on its four key strategic areas to obtain the commitment and contribution of university, institutional and corporate fabrics, and thus conduct high-value projects. The main and most important project undertaken by the FNOB to date is the Barcelona World Race.

http://www.fnob.org/en