PhD Funded Scholarship

Position Title	Hyperspectral Analysis of Blooms in Irish Waters
Project	We are accepting applications for a new PhD Scholarship jointly hosted by the University of Limerick (UL) and the Marine Institute (MI). The project — titled HABS: Hyperspectral Analysis of Blooms in Irish Waters — aims to revolutionise how we detect and monitor harmful algal blooms (HABs) in coastal and offshore environments. These events pose growing risks to marine ecosystems, aquaculture operations, and biodiversity, and improved monitoring is essential to support early warning systems and sustainable marine management. The project will explore the use of drone-mounted hyperspectral imaging sensors to detect, classify, and quantify phytoplankton blooms in Irish waters. Using advanced data processing and spectral analysis techniques, the research will: 1. Develop field methodologies for drone-based hyperspectral data collection on HAB events; 2. Build an optical spectral library of bloom-forming phytoplankton species; 3. Develop automated processing pipelines and classification models to detect and map HAB intensity and extent; 4. Integrate drone-derived data with satellite and in situ datasets to enhance Ireland's HAB early warning system. The PhD will be jointly supervised by University of Limerick and Marine Institute with collaboration from the Institute of Marine Sciences of Andalusia (ICMAN–CSIC, Spain). The scholar will receive training in: • Drone operation and flight planning for hyperspectral data acquisition; • Multispectral / hyperspectral data calibration and processing workflows; • HAB identification and spectral classification; • Integration of multispectral / hyperspectral, satellite, and *in-situ* data streams. The PhD candidate will be jointly based at the University of Limerick and the Marine Institute (Galway). Periods of fieldwork and short-term training visits at ICMAN (Spain) will also be supported.
Faculty	Science and Engineering
Entry Requirements	• Applicants should hold a minimum 2.1 honours degree or Master's qualification in Marine Science, Environmental Science, Physics, Oceanography, Remote Sensing, Engineering, Computer Science, or a related STEM discipline. • Demonstrated interest in environmental monitoring, marine ecosystems, and emerging drone or sensor technologies. • Experience in data analysis, programming (e.g. Python, MATLAB, or R), or image/spectral processing would be an advantage. • Evidence of excellent communication skills and the ability to work effectively in multidisciplinary research environments.

	• A high level of motivation and independent problem-solving ability, with a commitment to developing innovative solutions to complex environmental challenges. • Applicants must meet the University of Limerick's English language requirements for postgraduate study.
Fees, Stipend	The scholarship is valued at €136,000. The rates for 2025/26 studentships are registration fees (4 years) and a stipend **€25,000** per annum.
Closing Date	Open until position is filled.
Contact Details	Dr Gerard Dooly (Gerard.dooly@ul.ie), Dr. Caroline Cusack (Caroline.Cusack@Marine.ie)
Additional Information	Shortlisted applicants may be invited to interview. On receiving an offer, the successful applicant will be required to submit supporting documentation (e.g., Copies of degree certificates and English language competency where required).