Aprobado por Comisión de Doctorado. UCA

MEMORIA JUSTIFICATIVA

INFORMACIÓN ACREDITATIVA DE LA ADECUACIÓN DEL PLAN DE ESTUDIOS A LA PROGRAMACIÓN UNIVERSITARIA DE LA JUNTA DE ANDALUCÍA Y SOBRE LA NECESIDAD Y VIABILIDAD ACADÉMICA Y SOCIAL DEL TÍTULO DE *DOCTORADO CONJUNTO EN CIENCIAS Y TECNOLOGÍA MARINAS Y* MARÍTIMAS /JOINT DOCTORAL STUDY PROGRAMME IN MARINE AND MARITIME SCIENCES AND TECHNOLOGIES PREVIO A LA VERIFICACIÓN

(Anexo II del Decreto 154/2023, de 27 de junio, de ordenación de las enseñanzas universitarias oficiales en el ámbito de la Comunidad Autónoma de Andalucía).

A) INFORMACIÓN BÁSICA.

1. UNIVERSIDAD			
1.1.Universidad proponente		University of Cadiz (UCA)	
1.1.Universidad responsable /coordinadora		Alianza SEA-EU, Universidad Europea de los Mares. **Universidad de Split (UNIST), Croacia**	
1.2. Participantes		● University of Cadiz (UCA) ● University of Split (UNIST) ● University of Bretagne Occidentale (UBO) ● University of Malta (UM) ● NORD University (NORD) ● University of Algarve (UAlg)	
2. TÍTULO			
2.1. Denominación del Título		Doctorado conjunto en Ciencias y Tecnologías Marinas y Marítimas /*Joint Doctoral Study Programme in Marine and Maritime Sciences and Technologies.*	
2.2. Ámbito del conocimiento [1]		Interdisciplinar (véase el apartado "áreas de investigación")	
2.3. Nuevo título	SÍ. Regulado por RD822/2021, Disposición adicional séptima.	2.4. Modificación sustancial de otro anterior	No
2.5. Título al que sustituye (en su caso)		N/A	
2.6. Título conjunto	SÍ	2.7. Habilitante	No
2.8. Modalidad docente		Presencial	

<table>
<tr><td colspan="2">2.9. Denominación del centro de impartición</td><td colspan="4">● University of Cadiz (UCA)
● University of Split (UNIST)
● University of Bretagne Occidentale (UBO)
● University of Malta (UM)
● NORD University (NORD)
● University of Algarve (UAlg)</td></tr>
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<tr><td colspan="2" rowspan="2">2.11.4. ECTS máximo para el primer año de matriculación</td><td colspan="2">A tiempo completo</td><td colspan="2">N/A</td></tr>
<tr><td colspan="2">A tiempo parcial</td><td colspan="2">N/A</td></tr>
<tr><td colspan="2" rowspan="2">2.11.5. ECTS mínimo para el primer año de matriculación</td><td colspan="2">A tiempo completo</td><td colspan="2">N/A</td></tr>
<tr><td colspan="2">A tiempo parcial</td><td colspan="2">N/A</td></tr>
<tr><td colspan="2">2.12. Idioma en que se imparte [2]</td><td colspan="4">Lengua Inglesa</td></tr>
<tr><td colspan="6">Observaciones:
* Se adjunta la memoria descriptiva de la estructura académica del programa de Doctorado Conjunto.</td></tr>
</table>

[1] *Anexo I del Real Decreto 822/2021, de 28 de septiembre, por el que se establece la organización de las enseñanzas universitarias y del procedimiento de aseguramiento de su calidad.*

[2] *En el supuesto de que sean varios, establecer la distribución del número de créditos para los distintos idiomas.*

Main Research Areas	180 ECTS	ORGANIZACIÓN TEMPORAL (3 años)
I. MARITIME TECHNOLOGIES		
a) Naval Architecture and Ship Design		
b) Ocean Engineering		
c) Maritime Safety and Navigation		
d) Marine Environmental Sustainability		
e) Regulatory Compliance and Policy		
f) Maritime Logistics		
II. OCEAN & EARTH SCIENCES		
a) Physical Oceanography		
b) Marine Geology and Geophysics		
c) Paleoceanography		
d) Climate Science		
e) Coastal Processes and Geomorphology		
f) Ocean Remote Sensing and Technology		
g) Marine Biogeochemistry		
h) Natural Hazards		
III. MARINE NATURAL SCIENCE AND TECHNOLOGY		
a) Marine Biology and Ecology		
b) Marine Conservation and Management		
c) Aquaculture and Fisheries Science		
d) Marine Biotechnology		
e) Marine Chemistry and Chemical Oceanography		
f) Marine Environmental Monitoring and Assessment		
IV. COASTAL & MARINE SOCIAL SCIENCE AND HUMANITIES		
a) Maritime Anthropology and Sociology		
b) Coastal and Marine Governance		
c) Fisheries and Coastal Livelihoods		
d) Tourism and Recreation in Coastal Areas		
e) Maritime History and Archaeology		
f) Environmental Justice and Coastal Vulnerability		
g) Coastal Cultural Heritage Preservation		
h) Maritime Policy and Law		
i) Marine Geospatial Analysis/Planning		

Training Activities:		
Generic Academic Skills		
Research Ethics and Scientific Integrity		
Advanced Scientific Writing and English Language		
Research Design and Research Project Management		
Career Building		
Other elective activities (specific area of research)		
Integrated Mobility	Minimum 6 months	
Internships	Elective	
Doctoral Thesis		

4. DECLARACIONES RESPONSABLES.	
SE DECLARA, a efectos de la información acreditativa de la adecuación del plan de estudios a la programación universitaria de la Junta de Andalucía y sobre la necesidad y viabilidad académica y social del título previo a la verificación (Anexo II del Decreto 154/2023, de 27 de junio), que esta Universidad:	
*	Garantiza el cumplimiento de los principios rectores en el diseño de los planes de estudio de los títulos universitarios oficiales, así como de los principios y valores democráticos establecidos en el artículo 4 del Real Decreto 822/2021, de 28 de septiembre.
*	Manifiesta el compromiso de respeto a los Objetivos de Desarrollo Sostenible (ODS), de conformidad con lo previsto en el artículo 35.2 de la Ley 7/2021, de 20 de mayo, de cambio climático y transición energética.

B) CRITERIOS A VALORAR.

1) Estructura socioeconómica, unidades de inserción y títulos con formación dual.
En la estructura socioeconómica se contemplan varios sectores clave: **a) la Industria Marítima y Pesquera**. Explorar la economía detrás de la industria marítima y pesquera, incluyendo la pesca comercial, la acuicultura, el transporte marítimo, la industria del petróleo y el gas en alta mar, la energía renovable marina, el turismo costero, entre otros sectores. **b) la Conservación Marina.** Analizar las políticas y prácticas de conservación marina, incluyendo la gestión sostenible de recursos, la protección de ecosistemas marinos y la biodiversidad marina, así como los enfoques para mitigar los impactos del cambio climático en los océanos. **c) la Investigación y el Desarrollo Tecnológico.** Estudiar

las tecnologías emergentes en ciencias marinas y marítimas, como la robótica submarina, la monitorización oceanográfica, la ingeniería naval y estructural, los materiales marinos innovadores, y los sistemas de energía renovable offshore. **d) La Política Marítima y Derecho del Mar.** Analizar los marcos legales nacionales e internacionales relacionados con los océanos, incluyendo la legislación sobre pesca, navegación, protección del medio ambiente marino y explotación de recursos.

En cuanto a las unidades de inserción, entre otras, se incluyen:
.- Centros de Investigación Marino-Marítima: Donde los doctorandos podrían realizar investigaciones en colaboración con científicos y expertos en ciencias marinas y marítimas.
.- Empresas Marino-Marítimas: Para adquirir experiencia práctica en la industria marítima, como empresas de transporte, astilleros, compañías de energía offshore, y empresas de tecnología marina.
.- Agencias Gubernamentales: Para comprender el desarrollo de políticas marítimas y la implementación de regulaciones relacionadas con los océanos y la costa.
.- Organizaciones Internacionales: Donde se podrían explorar cuestiones globales relacionadas con los océanos, como la conservación marina, la gobernanza del océano y la cooperación internacional en la gestión de recursos marinos.

2) Justificación sobre la viabilidad de nuevas titulaciones.

Es difícil aportar datos de demanda y evolución de titulaciones afines a la que se propone en esta ficha ya que se trata de un doctorado internacional integrado en la Alianza SEA EU.
La propuesta de estructura del Programa de Doctorado se basa en los principios para una formación doctoral innovadora y en la experiencia de los equipos académicos de las universidades asociadas. Las principales especificidades de este Programa de Doctorado, **la interdisciplinariedad y su distribución en distintos países, entornos, costas y mares**, exigen una estructura flexible que dé cuenta adecuadamente de su naturaleza polifacética. Garantizar la excelencia dentro de un marco flexible requiere un esfuerzo extraordinario de responsabilidad. Por lo tanto, **la garantía de calidad y la dirección académica y científica de los estudiantes** se consideran pilares fundamentales del Programa. La estructura del Programa de estudios de doctorado y la hoja de ruta de los estudiantes se han optimizado en función de las exigencias establecidas por su naturaleza interdisciplinaria y generalizada, y se ha construido sobre la base de un análisis cuidadoso de los pros y los contras de las diferentes estructuras existentes del Programa de estudios de doctorado. El gran número de miembros del consorcio es una ventaja en este sentido. La estructura de este Programa de doctorado se basa en la investigación con una lista adicional de cursos opcionales de formación doctoral.

3) Equilibrio territorial en la oferta de enseñanzas.

Las estrategias contempladas dentro de la Alianza SEA-EU para la propuesta del *Doctorado conjunto en Ciencias y Tecnologías Marinas y Marítimas* que logran establecer este equilibrio son:

Colaboración interuniversitaria: El principal objetivo del Doctorado Conjunto en Ciencias y Tecnologías Marinas y Marítimas es revelar y colmar las lagunas clave que aún existen en materia de conocimientos y creación de capacidades, a fin de ofrecer una formación excelente a los doctorandos, facilitándoles los conocimientos, habilidades y competencias más avanzados en estos campos, en el marco de la sostenibilidad del Océano, sus recursos y servicios. Como Programa de Doctorado Conjunto, ofreceremos una experiencia internacional, promoviendo la integración de la información, potenciando la movilidad y facilitando el aprendizaje mutuo y la cooperación entre países europeos, de acuerdo con la misión central de SEA-EU: promover una comunidad académica conectada e inclusiva, que aborde los retos globales y locales, avanzando en la excelencia, la inclusión, el impacto y la innovación.

Diversificación de ubicaciones: SEA-EU es una de las pocas alianzas temáticas de Universidades europeas, siendo el elemento aglutinador en este caso la vinculación de nuestra comunidad al mar. Aunque el compromiso es vincular a las Universidades participantes en SEA-EU desde una perspectiva global teniendo en cuenta su diversidad interna, lo cierto es que todas son Universidades costeras, con los estudios marinos y marítimos como seña de identidad tanto desde el punto de vista de la investigación como de la docencia. La misión marino-marítima es una seña de identidad de las universidades SEA-EU y ha sido también el principal elemento unificador en muchas de las actividades que hemos iniciado dentro de esta alianza.

Las Universidades socias se localizan de forma que están representados prácticamente todas las costas y mares/océanos europeos, aportando una enorme diversidad a los desafíos y demandas que es necesario afrontar en el ámbito marino-marítimo a consecuencia de las diferentes condiciones climáticas, geográficas, marinas y socio-económicas.

Programa en áreas de interés. El Estudio de Doctorado Conjunto en Ciencias y Tecnologías Marinas y Marítimas aspira a convertirse en un activo académico y de investigación de referencia que contribuya al desarrollo de capital humano para lograr la conservación y el uso sostenible de los océanos, los mares y los recursos marinos y para aplicar las políticas marinas y marítimas necesarias que sustenten unos ecosistemas oceánicos sanos y una sociedad más amable y justa.

4) Títulos conjuntos.

El *Doctorado conjunto en Ciencias y Tecnologías Marinas y Marítimas /Joint Doctoral Study Programme in Marine and Maritime Sciences and Technologies* se presenta como una propuesta de título de doctorado conjunto liderado por la Universidad de Split (UNIST) en el que participan seis universidades europeas de seis países distintos:

- University of Cadiz (UCA)
- University of Bretagne Occidentale (UBO)
- University of Split (UNIST)
- University of Malta (UM)
- NORD University (NORD)
- University of Algarve (UAlg)

Este Programa de Doctorado Conjunto está diseñado para ofrecer una experiencia internacional, permitiendo la integración de la información, potenciando la movilidad, facilitando el aprendizaje mutuo y la cooperación entre países, el intercambio de experiencias y la puesta en común de infraestructuras académicas y de investigación. El enfoque de consorcio del Programa de Estudios de Doctorado capitalizará la experiencia científica y académica de los miembros, fomentando la investigación doctoral en múltiples problemas locales, sometidos a diferentes condiciones geográficas, climáticas, medioambientales y socioeconómicas, y construyendo así un enfoque más completo frente a problemas localmente diversos y globalmente únicos. Esta iniciativa tiene como objetivo final proyectarse más allá de los miembros del consorcio SEA-UE, reclutar a candidatos destacados de todo el mundo y difundir ampliamente los resultados científicos, las innovaciones académicas y las experiencias de éxito.

5) Internacionalización.

La Universidad de Cádiz contempla dentro de su plan estratégico, la internacionalización como "una dimensión transversal en la política y en la estrategia de la Universidad de Cádiz, y se configura como un principio y método de trabajo en todos los ámbitos estratégicos de nuestra institución; entre otros el de enseñanza-aprendizaje".
En este sentido, la propuesta del *Doctorado conjunto en Ciencias y Tecnologías Marinas y Marítimas /Joint Doctoral Study Programme in Marine and Maritime Sciences and Technologies* se alinea con esta estrategia, planteándose como una titulación de carácter internacional. Para ello, las áreas de conocimientos vinculadas a este título, tanto las de la UCA como las de las otras cinco universidades participantes, cuentan con los recursos humanos y con el nivel y las acreditaciones pertinentes para plantear que el doctorado conjunto se imparta completamente en inglés. El Programa de Doctorado Conjunto pretende ofrecer una experiencia internacional, permitiendo la integración de información, potenciando la movilidad, facilitando el aprendizaje mutuo y la

cooperación entre países, intercambiando experiencias y compartiendo infraestructuras académicas y de investigación. El enfoque de consorcio para el Programa de estudios de doctorado capitalizará la experiencia de los miembros, fomentando la investigación doctoral en múltiples problemas locales, con diferentes condiciones geográficas, climáticas, medioambientales y socioeconómicas amplias, y construyendo así un enfoque más completo frente a problemas localmente diversos a globalmente únicos. Esta iniciativa debe proyectarse más allá de los miembros del consorcio SEA-UE: hay que atraer a candidatos destacados de todo el mundo y difundir ampliamente los resultados científicos, las innovaciones académicas y las experiencias de éxito.

6) Principio de especialización de la Universidad y complementariedad de la programación universitaria.

Esta propuesta de doctorado supone la evolución natural de los muy exitosos Programas de Doctorado ofrecidos por la Escuela de Doctorado EIDEMAR, impulsando su proyección internacional Europea con la vocación fortalecer la excelencia aplicando de manera efectiva los principios del Espacio Europeo en Educación Superior (Proceso de Bolonia) y el Espacio Europeo de Investigación. Existe un obvio solapamiento temático con los programas de doctorado de EIDEMAR, sin embargo las exigencias de internacionalización e interdisciplinariedad aplicadas al nuevo título propuesto garantizan la coexistencia de todos los programas a medio plazo. Un ejemplo obvio es que el nuevo título solo admite doctorandos con codirección efectiva de al menos dos diferentes universidades del consorcio.

A partir de la experiencia acumulada por las diferentes universidades participantes, el título que se propone supone una apuesta innovadora en el mapa de titulaciones universitarias, no solo en el ámbito de las universidades andaluzas, sino también en la oferta universitaria española y de la comunidad europea, lo que se plasma, fundamentalmente, en la capitalización de la experiencia académica y científica de un conjunto de Universidades Europeas con vocación marino-marítima, el amplio conjunto de condiciones geográficas, temáticas y socioeconómicas que abarca el consorcio, y la apuesta por la interdisciplinariedad como enfoque más adecuado para la solución de muchos desafíos en el ámbito marino-marítimo, entendiendo por interdisciplinariedad

i) la investigación científica que vincula formas de conocimiento, teorías, métodos y conjuntos de habilidades a través de silos de conocimiento convencionales (Christie, 2011; Clark et al., 2011),
ii) el trabajo entre disciplinas (Arbo et al., 2018; Aswani, 2019; Bennett, 2019),
iii) la colaboración e implicación de los socios, promoviendo el intercambio de conocimientos a través de la ciencia, la política y las partes interesadas (Evans y Cvitanovic, 2018; Bennett, 2019),

iv) la interacción con comunidades, industrias y gobiernos para proponer soluciones que tengan en cuenta los cambios en curso (Arbo et al., 2018; Aswani, 2019; Bennett, 2019).

Tales competencias interdisciplinarias se fomentan a través de un compromiso a largo plazo con la creatividad y la innovación, la creación de relaciones y la perseverancia para abordar desafíos complejos a través del enfoque "aprender haciendo" (Wiek et al., 2011; Galway et al., 2016; Ommer, 2018).

7) Suficiencia de recursos de personal e infraestructuras.

Recursos de Personal:

Como resultado de la cooperación de la Alianza SEA-EU, una de las tareas más relevantes realizadas, en el proyecto anidado ReSEArch-EU, ha sido la creación de una **Base de Datos de Potencial de Investigación e Infraestructuras Compartidas**, tarea coordinada por la UG (https://research.sea-eu.ug.edu.pl/). La iniciativa ayudó al conocimiento mutuo de nuestras universidades y desarrolló un directorio detallado de grupos de investigación y áreas de investigación de los diferentes miembros de SEA-EU para identificar temas comunes y estratégicos. Los datos recopilados sentaron las bases para la realización de futuras actividades y ayudarán a forjar lazos entre los investigadores de las nueve universidades asociadas. Esta plataforma simplifica el proceso de búsqueda de socios potenciales a la hora de solicitar financiación a través de distintos proyectos. La base de datos también ha permitido introducir información sobre las infraestructuras que poseen los socios. Puede utilizarse para buscar recursos de infraestructura por palabras clave o disciplina científica, y para presentar personas o entidades que hayan facilitado información detallada. La plataforma se actualiza continuamente y hasta ahora se han registrado 379 grupos de investigación y 67 elementos de infraestructura. Los investigadores de todas las universidades asociadas pueden navegar y encontrar grupos de investigación para iniciar una colaboración. También cabe mencionar que algunas de las universidades SEA-EU (UBO, UM, UNIST), utilizando financiación adicional interna o de sus ministerios, han publicado convocatorias de proyectos de investigación, creando hasta el momento más de 25 equipos de investigación de al menos dos universidades SEA-EU.

Además del personal académico e investigador de las universidades participantes del consorcio internacional se podrá contar con colaboradores externos, profesionales de la industria, investigadores visitantes o expertos en campos específicos, que pueden enriquecer la experiencia educativa y de investigación de los doctorandos.

Recursos Materiales:

Se prevé que el programa no requerirá recursos extraordinarios en cuanto a equipamiento e infraestructuras, ya que se utilizarán los ya disponibles en las universidades

participantes que proponen la titulación dentro de la Alianza SEA-EU.

Una descripción detallada de dichos recursos de cada universidad participante en el título se incluirá en la memoria de verificación. Contemplándose los siguientes:

Infraestructura de investigación y Servicios Centralizados: acceso a laboratorios, equipos especializados y su mantenimiento, software y tecnología de vanguardia para llevar a cabo investigaciones de alta calidad. Esta infraestructura será la garantía para que los estudiantes tengan acceso a los recursos necesarios para llevar a cabo su investigación de manera efectiva.

Equipos y materiales de enseñanza: Además de recursos para investigación, también se incluirán los recursos para la enseñanza, como equipos audiovisuales, software educativo, materiales didácticos y otros recursos necesarios para impartir clases y seminarios de alta calidad.

Espacios de estudio y trabajo: salas de estudio, áreas de trabajo compartido, laboratorios y otros espacios dedicados para actividades académicas.

Biblioteca y recursos de información: acceso a una amplia variedad de recursos académicos, incluidas revistas especializadas, libros, bases de datos en línea y otros materiales de investigación.

Recursos para eventos académicos como conferencias, seminarios, talleres y otros eventos académicos para fomentar la colaboración, el intercambio de ideas y el desarrollo profesional de los estudiantes.

Apoyo técnico y administrativo: personal técnico y administrativo dedicado para ayudar en la gestión de proyectos de investigación, mantenimiento de equipos, apoyo informático y otras tareas administrativas necesarias para el funcionamiento del programa.

El Comité Académico Internacional determinará la adecuación o la mejora de los recursos requeridos dentro del plan de investigación presentado por el doctorando y sus directores de tesis para la aprobación final de dicho plan.

8) Solvencia y viabilidad económica.

La Universidad de Cádiz contaría de forma estimativa con la dotación presupuestaria suficiente para garantizar la impartición del título, teniendo en cuenta el actual modelo de financiación ordinaria de las Universidades Públicas de Andalucía. De producirse una

eventual insuficiencia de financiación que afectará a la continuidad del título, la Universidad recurrirá a las vías y sistemas que fueran necesarios para su garantía.

9) Aseguramiento de la calidad.

El doctorado conjunto contará con un sistema de aseguramiento de la calidad, fundamental para cualquier título de nueva creación, y, especialmente, en uno cuyo enfoque innovador implica también la colaboración de un consorcio internacional de seis universidades de distintos países.

Ello implica considerar tanto los estándares de calidad académica establecidos a nivel europeo y nacionales, como las especificidades del campo de la economía azul. Para ello, el Grupo de Trabajo de los Títulos Conjuntos de SEA-EU (Joint Programmes Working Group, JPWG), compuesto por personal técnico y administrativo de cada universidad de la Alianza está creando un manual conjunto donde se describan los principales aspectos que deben ser contemplados y analizados para la buena implementación de un programa conjunto, cuya finalidad es la creación de un *Manual Conjunto de Buenas Prácticas* para determinar un Sistema de Aseguramiento de la Calidad común.

Por otra parte, en la estructura de gobernanza del Doctorado será el Comité de Doctorado el principal órgano responsable del Aseguramiento de Calidad del Programa de Estudios. Véase la información detallada sobre este aspecto en el informe adjunto.

10) Calendario de implantación.

1er Curso del Doctorado Conjunto 2025/26

2º Curso del Doctorado Conjunto 2026/27

3er Curso del Doctorado Conjunto 2027/28

FIRMA DEL RECTOR O LA RECTORA (o persona en quien delegue)

Co-funded by
the European Union

SELF-REPORT FOR THE SEA-EU JOINT DOCTORAL

STUDY PROGRAMME

in

MARINE AND MARITIME

SCIENCES AND TECHNOLOGIES

THE SEA-EU JOINT DOCTORAL STUDY PROGRAMME

JOINT SEA- EU DOCTORAL STUDY PROGRAMME IN MARINE AND MARITIME SCIENCES AND TECHNOLOGIES IS ORGANISED IN THE FOLLOWING MAIN AREAS:

I. MARITIME TECHNOLOGIES

Maritime Technologies is a multidisciplinary research field that encompasses the study and development of various technologies and systems related to maritime activities. This field is crucial for addressing the challenges and demands of the maritime industry, which plays a vital role in global trade, transportation, and environmental sustainability. It involves in-depth research and advanced studies in several key areas, for example:

- Naval Architecture and Ship Design
- Ocean Engineering
- Maritime Safety and Navigation
- Marine Environmental Sustainability
- Regulatory Compliance and Policy
- Maritime Logistics
- Marine Robotics and Autonomous Systems

II. OCEAN & EARTH SCIENCES

The field of Ocean and Earth Sciences encompasses a broad and interdisciplinary range of research that explores the Earth's oceans, marine environments, and the interconnected processes shaping our planet. Doctoral candidates in this field engage in advanced studies and research projects that contribute to our understanding of the Earth System and the role of Oceans and its interaction in Earth System functioning. Below we provide some research lines:

- Physical Oceanography
- Marine Geology and Geophysics
- Paleoceanography
- Climate Science
- Coastal Processes and Geomorphology
- Ocean Remote Sensing and Technology
- Marine Biogeochemistry
- Natural Hazards

Doctoral research in Ocean and Earth Sciences often involves a combination of fieldwork, laboratory analysis, numerical modelling, and data interpretation. Collaboration with other disciplines, such as atmospheric sciences, maritime technologies, natural and social sciences is common to address complex questions related to Earth's interconnected systems and address socio challenges.

III. MARINE NATURAL SCIENCE AND TECHNOLOGY

Marine Natural Science and Technologies integrates the study of marine ecosystems, biodiversity (Genetic, Species, and Ecological diversity), and natural resources with the development and application of advanced technologies. Doctoral candidates in this field engage in cutting-edge research to deepen our understanding of marine life, ecosystems, and the sustainable use of marine resources. Here is a comprehensive description of the key areas within Marine Natural Science and Technology for a doctoral program:

- Marine Biology and Ecology
- Marine Conservation and Management
- Aquaculture and Fisheries Science
- Marine Biotechnology
- Marine Chemistry and Chemical Oceanography
- Marine Environmental Monitoring and Assessment

Doctoral research in Marine Natural Science and Technology often involves a combination of fieldwork, laboratory experiments, data analysis, and technology development. Collaboration between biologists, ecologists, chemists, engineers, and other specialists is common to address the complex and interdisciplinary nature of marine science and technology. The goal is to contribute to the sustainable use and conservation of marine resources while advancing our understanding of the intricate relationships within marine ecosystems.

IV. COASTAL & MARINE SOCIAL SCIENCE AND HUMANITIES

Coastal and Marine Social Science and Humanities for a doctoral programme focus on understanding the intricate interactions between human societies and the coastal and marine environments. This interdisciplinary field investigates the social, cultural, economic, and political aspects of coastal and marine spaces, as well as the human dimensions of marine resource use, conservation, and management. Doctoral candidates in this field engage in advanced research to address the complex challenges and opportunities presented by the dynamic coastal and marine contexts. Here is a detailed description of the key areas within Coastal and Marine Social Science and Humanities for a doctoral program:

- Maritime Anthropology and Sociology
- Coastal and Marine Governance
- Fisheries and Coastal Livelihoods
- Tourism and Recreation in Coastal Areas
- Maritime History and Archaeology
- Environmental Justice and Coastal Vulnerability
- Coastal Cultural Heritage Preservation
- Maritime Policy and Law

- Marine Geospatial Analysis/Planning

Doctoral research in Coastal and Marine Social Science and Humanities often involves a combination of qualitative and quantitative research methods, fieldwork, archival studies, and community engagement. Collaboration with natural scientists, policymakers, and local communities is common to address the complex socio-environmental issues that characterise coastal and marine spaces. The goal is to contribute to informed decision-making, sustainable resource management, and the well-being of coastal communities.

The central focus of this joint study Programme is innovative scientific research and learning through research, internationalisation, transparency, international quality standards and international competitiveness.

Contents

1. PURPOSE OF THE STUDY PROGRAMME

The Ocean covers most of our planet's surface, determining Earth's climate, weather conditions, harbouring enormous biological diversity, providing resources and pathways that have contributed to humankind evolution and being fundamental to societal development. Those are the reasons why ancient civilizations bloomed along the coasts, those are the reasons why nearly 40% of the World population is living within 100 km from the coastline.

This essential role the Ocean plays in the climate and environment, in the provision of living and non-living resources to humankind, in facilitating the movement of people and goods, in preserving invaluable tangible and intangible cultural heritage, among other reasons highlights the need for boosting research, development and innovation in Marine and Maritime Sciences and Technologies. This conclusion is backed by the approval of a stand-alone United Nations Sustainable Development Goal (SDG) on the ocean, SDG14. “However, if we are to succeed in achieving SDG14 "to conserve and sustainably use the oceans, seas, and marine resources” and in implementing the necessary global ocean policies that will sustain healthy ocean ecosystems, we must build a global constituency for the ocean. Several national reports have been produced over the last decade that document the centrality of the ocean, coasts, and seas to the economy, environment, and quality of life. They emphasise the need for increased ocean literacy to improve economic stability and national security, and to allow society to understand critical issues associated with important ocean-related topics spanning ecology, trade, energy exploration, climate change, biodiversity, the ocean and human health, and developing a sustainable future." [1]

The immense challenges associated with realising ocean and coastal sustainability require highly skilled interdisciplinary marine and maritime scientists and technologists. [2] The task is even more complex considering the rapid changes marine and coastal environments are undergoing, which would be likely amplified as ocean economies are further developed. [3] Therefore, new integrative knowledge and novel pathways for action are needed to meet the challenges of rapid change and support management efforts to advance sustainability.[4]

[1] F. Santoro et al. (eds). 2017. Ocean Literacy for All - A toolkit, (IOC Manuals and Guides, 80 revised in 2018)

[2] Andrews, Evan et al. (2020). Supporting early career researchers: Insights from interdisciplinary marine scientists. ICES Journal of Marine Science. 10.1093/icesjms/fsz247

[3] Food and Agriculture Organization of the United Nations, 2014; Organization for Economic Cooperation and Development, 2016

[4] Andrews, Evan et al. (2020). Supporting early career researchers: Insights from interdisciplinary marine scientists. ICES Journal of Marine Science. 10.1093/icesjms/fsz247

THE MISSION

The main objective of the Joint Doctoral Study in Marine and Maritime Sciences and Technologies is to reveal and fill up the key remaining knowledge and capacity-building gaps, so as to offer an excellent education to candidates, introducing them to the most advanced knowledge, skills and competencies in these fields, within the framework of sustainability of the Ocean, its resources and services. As a Joint Doctoral Programme, we will offer an international experience, promoting the integration of information, enhancing mobility, and facilitating mutual learning and cooperation among countries, according to the core mission of SEA-EU: to promote a connected and inclusive academic community, addressing global and local challenges, advancing excellence, inclusion, impact, and innovation.

THE VISION

The Joint Doctoral Study in Marine and Maritime Sciences and Technologies aims to become a reference academic and research asset contributing to developing human capital for achieving the conservation and sustainable use of the oceans, seas, and marine resources and for implementing the necessary marine and maritime policies that will sustain healthy ocean ecosystems and a more friendly and fair society.

2. DOCTORAL STUDY STRUCTURE PROPOSAL

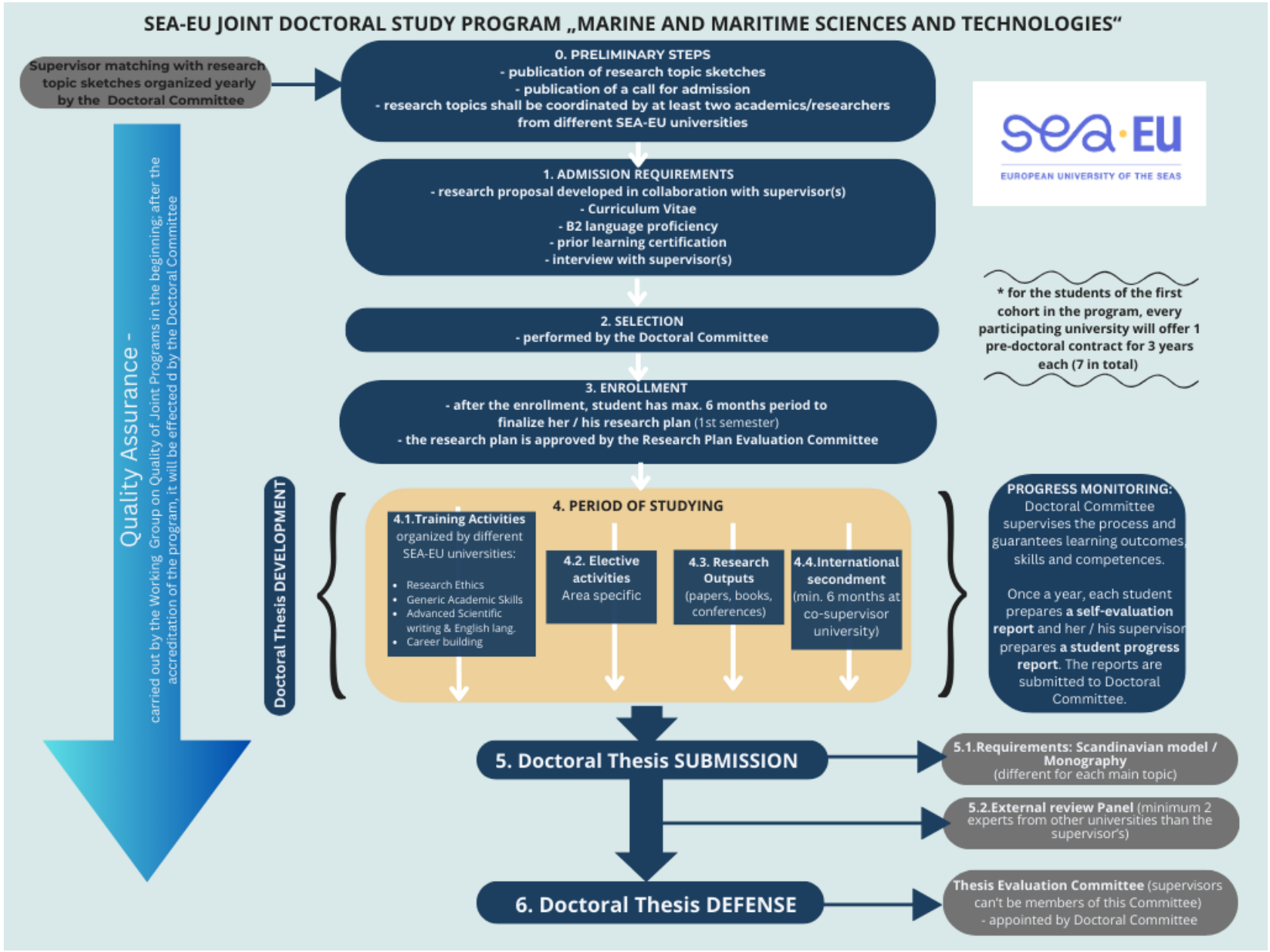
The Doctoral Study Programme structure proposal builds upon the Principles for Innovative Doctoral Training and the experience of the Partner Universities' academic teams. The main specificities of this Doctoral Study Programme, being interdisciplinary and distributed (across countries, environments, coasts, seas and scientific fields) demand a flexible structure, to properly account for its multifaceted nature. Guaranteeing excellence within a flexible framework requires an extraordinary effort in accountability. Therefore, Quality Assurance and Supervision (doctoral Programme candidate steering) will be of the utmost importance in the Doctoral Study Programme. The Doctoral Study Programme structure and candidate roadmap will be optimised for the demands imposed by its interdisciplinary and widespread nature and built upon a careful analysis of the pros and cons of the existing different Doctoral Study Programme structures. A large number of consortium members is an asset in this sense.

The structure of this Doctoral Study Programme is research-based with an additional list of optional doctoral training courses. The Programme contains a mandatory international mobility period (of 6 months minimum).

The scheme of a Doctoral Study Programme roadmap is presented below and will be presented in detail in sections 8 and 9. The Programme will be organised, coordinated and run by the following bodies:

- the Doctoral Council
- the Doctoral Committee
- the Research Plan Evaluation Committee
- the Thesis Evaluation Committee
- Doctoral candidate Services

The role of these bodies will be described in detail in section 7 (Study Management).


SEA-EU JOINT DOCTORAL STUDY PROGRAM „MARINE AND MARITIME SCIENCES AND TECHNOLOGIES“
Supervisor matching with research topic sketches organized yearly by the Doctoral Committee
0. PRELIMINARY STEPS
- publication of research topic sketches
- publication of a call for admission
- research topics shall be coordinated by at least two academics/researchers from different SEA-EU universities
1. ADMISSION REQUIREMENTS
- research proposal developed in collaboration with supervisor(s)
- Curriculum Vitae
- B2 language proficiency
- prior learning certification
- interview with supervisor(s)
2. SELECTION
- performed by the Doctoral Committee
3. ENROLLMENT
- after the enrollment, student has max. 6 months period to finalize her / his research plan (1st semester)
- the research plan is approved by the Research Plan Evaluation Committee
EUROPEAN UNIVERSITY OF THE SEAS
* for the students of the first cohort in the program, every participating university will offer 1 pre-doctoral contract for 3 years each (7 in total)
Quality Assurance -
carried out by the Working Group on Quality of Joint Programs in the beginning, after the accreditation of the program, it will be effected d by the Doctoral Committee
Doctoral Thesis DEVELOPMENT
4. PERIOD OF STUDYING
4.1.Training Activities organized by different SEA-EU universities:
Research Ethics
Generic Academic Skills
Advanced Scientific writing & English lang.
Career building
4.2. Elective activities Area specific
4.3. Research Outputs (papers, books, conferences)
4.4.International secondment (min. 6 months at co-supervisor university)
PROGRESS MONITORING: Doctoral Committee supervises the process and guarantees learning outcomes, skills and competences.
Once a year, each student prepares a self-evaluation report and her / his supervisor prepares a student progress report. The reports are submitted to Doctoral Committee.
5. Doctoral Thesis SUBMISSION
5.1.Requirements: Scandinavian model / Monography (different for each main topic)
5.2.External review Panel (minimum 2 experts from other universities than the supervisor's)
6. Doctoral Thesis DEFENSE
Thesis Evaluation Committee (supervisors can't be members of this Committee) - appointed by Doctoral Committee

DISTRIBUTED NATURE

A Joint Doctoral Programme aims to offer an international experience, allowing the integration of information, enhancing mobility, facilitating mutual learning and cooperation between countries, the exchange of experiences and sharing of academic and research infrastructures. The consortium approach to the Doctoral Study Programme will capitalise on the members' experience, fostering doctoral research in multiple local issues, with different geographic, climatic, environmental and socioeconomic conditions, and thus building a more complete approach facing locally diverse to globally unique problems. This initiative must be projected beyond the SEA-EU consortium members: outstanding candidates from all over the world have to be recruited, and scientific outputs, academic innovations and successful experiences have to be widely spread.

INTERDISCIPLINARY NATURE

Interdisciplinarity is necessary to successfully address these challenging demands, understanding interdisciplinarity as a:

i) scientific investigation that links ways of knowing, theories, methods, and skill sets across conventional knowledge silos, [5]

ii) working across disciplines, [6]

iii) collaborating and involving partners and promoting knowledge exchange across science, policy, and stakeholders, [7]

iv) interacting with communities, industries, and governments to propose solutions accounting for the ongoing changes. [8] Such interdisciplinary competencies are fostered through a long-term commitment to creativity and innovation, relationship building, and perseverance to address complex challenges through a “learning-by-doing” approach. [9]

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[5] Christie P. 2011. Creating space for interdisciplinary marine and coastal research: five dilemmas and suggested resolutions. Environmental Conservation, 38; Clark S. G., Steen-Adams M., Pfirman S., Wallace R. L. 2011. Professional development of environmental scholars. Journal of Environmental Studies and Sciences, 1

[6] Arbo P., Knol M., Linke S., St Martin K. 2018. The transformation of the oceans and the future of marine social science. Maritime Studies, 17; Aswani S. 2019. Perspectives in coastal human ecology (CHE) for marine conservation. Biological Conservation, 236; Bennett N. J. 2019. Marine social science for the peopled seas. Coastal Management, 47

[7] Evans T. M., Bira L., Beltran Gastelum J., Weiss L. T., Vanderford N. L. 2018. Evidence for a mental health crisis in graduate education. Nature Biotechnology, 26; Bennett N. J. 2019. Marine social science for the peopled seas. Coastal Management, 47

[8] Arbo P., Knol M., Linke S., St Martin K. 2018. The transformation of the oceans and the future of marine social science. Maritime Studies, 17; Aswani S. 2019. Perspectives in coastal human ecology (CHE) for marine conservation. Biological Conservation, 236; Bennett N. J. 2019. Marine social science for the peopled seas. Coastal Management, 47).

[9] Wiek A., Withycombe L., Redman C. L. 2011. Key competencies in sustainability: a reference framework for academic program development. Sustainability Science, 6; Galway L. P., Parkes M. W., Allen D., Takaro T. K. 2016.

3. LEARNING OUTCOMES

Framework of Qualifications of the European Higher Education Area (QF-EHEA)

LOs corresponding to the Qualifications Framework for the European Higher Education Area (QF-EHEA; third cycle). Qualifications that signify completion of the third cycle are awarded to candidates who:

QF-EHEA 1.	have demonstrated a systematic understanding of a field of study and mastery of the skills and methods of research associated with that field;
QF-EHEA 2.	have demonstrated the ability to conceive, design, implement and adapt a substantial process of research with scholarly integrity;
QF-EHEA 3.	have made a contribution through original research that extends the frontier of knowledge by developing a substantial body of work, some of which merits national or international refereed publication;
QF-EHEA 4.	are capable of critical analysis, evaluation and synthesis of new and complex ideas;
QF-EHEA 5.	can communicate with their peers, the larger scholarly community and with society in general about their areas of expertise;
QF-EHEA 6.	can be expected to be able to promote, within academic and professional contexts, technological, social or cultural advancement in a knowledge-based society.

JOINT DOCTORAL STUDY PROGRAMME LEARNING OUTCOMES (PLOs)

PLO 1.	Understanding of the fundamentals of Coastal, Marine and Maritime Sciences and Technologies.
PLO 2.	Capability to use advanced measurement and observing platforms, methodologies and strategies appropriate for Coastal, Marine and Maritime Sciences and Technologies, including the latest advances.
PLO 3.	Abilities to perform laboratory, field studies, theoretical, and/or computational techniques necessary to contribute to knowledge in Coastal, Marine and Maritime Sciences and Technologies, including high-performance computing and advanced analysis and visualisation techniques.
PLO 4.	Information literacy: Adequate use and merging of very different sources of information.
PLO 5.	Critical Thinking: Coastal, Marine and Maritime Sciences and Technologies deal with complex and non-linear processes: Results from one research study may lead in directions not originally anticipated, or even in multiple directions, therefore a dynamic and robust application of the scientific method is needed.

Building interdisciplinary research capacity: a key challenge for ecological approaches in public health. AIMS Public Health, 3; Ommer R. E. 2018. Curiosity, interdisciplinarity, and giving back. ICES Journal of Marine Science, 75

PLO 6.	Quantitative Reasoning: numerical skills along a range of scales that are essential to succeeding in an increasingly quantitative field (i.e., understanding orders of magnitude, reading maps and charts, mastering software, calculating and interpreting simple and advanced statistics, developing indicators, properly applying advanced data analysis methods, using/developing complex numerical models).
PLO 7.	Qualitative Reasoning: candidates engaging in qualitative reasoning would be expected to demonstrate a deep understanding of qualitative research methods, ethical considerations in social sciences research, and the ability to critically analyse and interpret complex social and cultural phenomena. They may also be encouraged to contribute to the advancement of theoretical frameworks within their specific field of study.
PLO 8.	Communication skills: Coastal, Marine and Maritime Sciences and Technologies deal with topics of uttermost importance for the society (weather and climate, marine resources, sustainability, environment, logistics, economy, etc.), therefore it is paramount that candidates are able to present and disseminate scientific results in a variety of ways for different target recipients.
PLO 9.	Teamwork and collaboration: Coastal, Marine and Maritime Sciences and Technologies problems often require an interdisciplinary and cross-border multi-method approach, demanding the collaboration of scientists with varied expertise. At the same time, Coastal, Marine and Maritime Sciences and Technologies provide a common scientific ground, which requires an unprejudiced and open-minded readiness for teamwork and collaboration.
PLO 10.	Creativity and Innovation: Coastal, Marine and Maritime Sciences and Technologies are fast-evolving and changing, due to advances in measurements and observation, computing power, data analysis methods, and of our understanding, so our doctoral candidates need to be trained to quickly learn and apply new technologies/methods to better understand the complex nature.
PLO 11.	Global and social awareness: Climate change, environmental threats, and the rational and sustainable use of marine resources are all issues with a strong societal significance, and with implications at local, regional, and global scales.
PLO 12.	Research ethics and scientific integrity.
PLO 13.	Contribution through original research that extends the frontier of knowledge by developing a substantial body of work, some of which merits national or international refereed publication

Matrix of alignment with the Qualifications Framework in the European Higher Education Area (QF-EHEA) for the third cycle (doctoral programme) with PLOs (Programme Learning Outcomes)

QF-EHEA 1. have demonstrated a systematic understanding of a field of study and mastery of the skills and methods of research associated with that field; **PLO 1, PLO 2, PLO 3, PLO 6, PLO 7**

QF-EHEA 2. have demonstrated the ability to conceive, design, implement and adapt a substantial process of research with scholarly integrity; **PLO 12**

QF-EHEA 3. have made a contribution through original research that extends the frontier of knowledge by developing a substantial body of work, some of which merits national or international refereed publication; **PLO 9, PLO 10, PLO 13**

QF-EHEA 4. are capable of critical analysis, evaluation and synthesis of new and complex ideas; **PLO 4, PLO 5, PLO 10**

QF-EHEA 5. can communicate with their peers, the larger scholarly community and with society in general about their areas of expertise; **PLO 8, PLO 9**

QF-EHEA 6. can be expected to be able to promote, within academic and professional contexts, technological, social or cultural advancement in a knowledge-based society. **PLO 11** [10]

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9	PLO 10	PLO 11	PLO 12	PLO 13
QF-EHEA 1.	X	X	X			X	X						
QF-EHEA 2.												X	
QF-EHEA 3.									X	X			X
QF-EHEA 4.				X	X					X			
QF-EHEA 5.								X	X				
QF-EHEA 6.											X		

[10] General Learning Outcomes and Programme Learning Outcomes can also be categorised by knowledge, skills and general competences. Detailed categorization is available in the Appendix 2.

4. GENERAL OBJECTIVES

Doctoral Programme graduates should be professionals who:

- Can analyse and evaluate different sources of scientific data.
- Can critically evaluate the published original scientific results of other authors in the field of research.
- Can analyse and evaluate new and specialised knowledge, methods, tools and instruments in the field of scientific research.
- Can formulate scientific research problems based on current research results.
- Can select appropriate qualitative and quantitative scientific methods for research.
- Can plan and conduct research independently or as part of an interdisciplinary team.
- Can present and explain results of scientific research to other scientists as well as people outside the profession.
- Can communicate research findings in an international, peer-reviewed publication.
- Can assume ethical and social responsibility for the success of research and apply methods to define and protect intellectual property rights.
- Can create new knowledge, methods and interpretations.
- Can approach and solve relevant research, applied and societal problems within one or several main areas.

5. DURATION OF STUDIES

The Doctoral Study Programme in Marine and Maritime Sciences and Technologies lasts three years / six semesters. Doctoral Study Programme candidates pursuing the joint Programme (hereinafter referred to as “doctoral candidates”) on a full-time basis shall complete it within 3 years. In justified cases, the Council may, upon request, exceptionally extend the duration of all rights of the doctoral candidate by additional academic years after the 3rd year. The extension may not exceed six years from the date of commencement of the study Programme.

The doctoral candidate status shall terminate:

- with completion of the study Programme and defence of the doctoral thesis,
- following withdrawal from the study Programme,
- if not enrolled in the next academic year without justification accepted by the Doctoral Committee,
- in case of academic misconduct.

6. LANGUAGE OF STUDY

The study Programme language is English.

During the application procedure, potential doctoral candidates must submit, among other documents, a valid English-level proficiency certificate testifying of a B2 level minimum in the Common European Framework of Reference for Languages (CEFR). [11]

The doctoral Thesis is written and defended in English with at least a summary in the local language of the countries of the hosting institutions (unless otherwise indicated by national legal regulations).

7. STUDY MANAGEMENT

The study is overseen by the appropriate authorities:

SUPERVISOR(S) provide(s) the doctoral candidate with academic advice and practical support, collaborating in the inception of the research project and its development through choosing courses of study and training, instructing the candidate in the literature and the use of appropriate scientific research methods, assisting the doctoral candidate in preparing the Thesis, and encouraging and assisting the doctoral candidate in the preparation of research outputs.

Supervisor(s) may be an employee(s) of one of the partner institutions who has been elected to the scientific-teaching position and who has published at least 3 scientific papers in journals indexed in the Web of Science platform (in the case of candidates in social sciences and the humanities, listed in Scopus or otherwise eligible as high-quality publication) in the last five years. One doctoral candidate will have a (leading) supervisor and one co-supervisor from different partner institutions. The supervising team can have an additional co-supervisor who will be an academic from a SEA-EU partner institution, or an academic/researcher coming from an institution outside the SEA-EU alliance, or in the case of the industrial doctorate a company representative can be appointed in the role of mentor.

The supervisor(s) and co-supervisor(s):

- have a scientific-teaching position in the scientific field related to the Thesis topic
- prepare a Research Topic Outline prior to the publication of the call for candidate applications
- interview applicants and advise them to prepare a Research Proposal, including a financial plan with a timetable
- guide a selected and enrolled doctoral candidate to develop and finalise the Research Plan to defend in front of the Research Plan Evaluation Committee within the first 6 months
- prepare yearly progress reports about the candidates they supervise,

[11] Accepted certificates (not exhaustive): IELTS, TOEFL, and all accredited national certifications.

- guide and supervise the doctoral candidate throughout the development and until the finalisation of his/her Thesis.

THE DOCTORAL COMMITTEE makes recommendations on the suitability of the supervisors to the Council (see below).

The supervisor(s) is/are obliged to prepare a brief report on the doctoral candidate's progress once a year and submit it to the Doctoral Committee.

The Doctoral Committee, led by the Doctoral Committee Director has an executive role and responsibility for managing the Doctoral Study Programme, its execution, and monitoring of individual doctoral candidates' progress. They meet at least once a year and represent the operational level of execution.

After the external accreditation agency [12] approves the study Programme, the Doctoral Committee becomes the main body responsible for its Quality Assurance.

The Doctoral Committee shall perform the following tasks:

- organising supervisors' meetings, analyses their potential matching fields of expertise, and approves supervising teams prior to admission calls,
- approving candidates' finalised Research Plan (that has been endorsed by the Research Plan Evaluation Committee),
- checking whether supervisors and candidates follow the Programme rules,
- drafting proposals for ordinances and regulations necessary for the normal operation of the joint doctoral Programme,
- conducting the selection procedure and enrolment of doctoral candidates in the study Programme,
- answering doctoral candidates' requests,
- analysing doctoral candidates' self-evaluation reports and supervisors' reports about candidates' progress. This analysis is conducted in collaboration with all involved staff,
- preparing documents for the meetings of the Council within the scope of its competence,
- suggesting the thesis supervisor, co-supervisor, and thesis to be discussed at the Council,
- reviewing reports of unethical practices (e.g., plagiarism).

THE DOCTORAL COUNCIL, composed of two representatives from the partner universities, has a governing role and is responsible for communication with the relevant authorities of each partner. The Council is hierarchically above the Doctoral Committee and establishes communication with the governing bodies of each Partner university.

[12] Since the coordinating institution in the task of implementation of the joint doctoral study programme is the University of Split, the Croatian Agency for Science and Higher Education is chosen as the accrediting institution of the joint doctoral programme “Marine and Maritime Sciences and Technologies.

For the entire duration of the doctoral Programme, the Council:

- communicates with each partner university (in coordination with the Doctoral Committee) and obtains necessary annual approvals of individual Partners, in line with their individual doctoral study policies, that are necessary for the continuous execution of the study Programme,
- announces the selection procedure for enrolment in the Joint Doctoral Programme,
- appoints the members of the Doctoral Committee and its Director,
- manages and updates the pool of supervisors/co-supervisors and their matching on specific topic proposals,
- approves the Thesis supervisor(s) and co-supervisor (that were proposed by the Doctoral Committee),
- approves the Research Plan Evaluation Committees, appointed by the Doctoral Committee for the defence of the Research Plan,
- approves the Thesis Evaluation Committee, appointed by the Doctoral Committee for the defence of the Thesis,
- analyses and decides on any reports of the Doctoral Committee,
- decides on the suspension of the candidate status of doctoral candidates, proposes changes in the study Programme,
- approves specific training courses, workshops and other activities foreseen for candidate progress monitoring,
- decides on pedagogical, organisational, financial, technical and other issues related to the successful implementation of doctoral studies.

THE RESEARCH PLAN EVALUATION COMMITTEE is appointed by the Doctoral Committee for the evaluation of the research project plan.

For the evaluation of the Research Plan, the Council shall appoint a committee of academics (the Research Plan Evaluation Committee) for each research project based on the proposal made by the Doctoral Committee. The Research Plan Evaluation Committee members must hold a doctoral title and have expertise in the general area of the research topic. The proposed supervisor/co-supervisor of the doctoral candidate can be a member of the Research Plan Evaluation Committee for the evaluation of the Research Plan.

THE THESIS EVALUATION COMMITTEE is appointed by the Council for the evaluation and the defence of the Thesis.

For the evaluation and defence of the dissertation, the Council shall appoint the Thesis Evaluation Committee of at least **three members**, for each dissertation based on the proposal made by the Doctoral Committee (it is possible to include a representative from the Industry if the study Programme is organised as the Industrial Doctoral Study Programme). The Thesis Evaluation Committee members must hold a doctoral title and have an appropriate background (publication

record, project coordination, professional activity) in the topic of the Doctoral Thesis. The proposed supervisor/co-supervisor of the doctoral candidate cannot be a member of the Thesis Evaluation Committee.

ACCREDITATION AGENCY(IES), as external authorities, have the responsibility to accredit and periodically audit the joint doctoral study Programme.

CANDIDATE SERVICE NETWORK, designated by the Council and usually an existing doctoral candidate service of one of the Partner universities, has the responsibility to perform administrative procedures, and administratively support the Doctoral Committee and the doctoral candidate and archive documentation.

Candidate services are there to ensure systematic support for all candidates studying joint studies.

The candidate Services Network is in charge of:

- conducting the registration of candidate applications and dissemination of the selection procedure results,
- archiving personal files of enrolled candidates,
- keeping a record of the documents issued upon the completion of studies and the academic degrees and titles acquired,
- archiving candidates' progress reports,
- following up on other requirements for the administrative operation of the Study Programme.

Candidate Services communicate through the Candidate Service Network and collaborate on all important administrative questions.

The chairperson of the Doctoral Committee - DIRECTOR, manages the work of the Doctoral Committee. He/she shall be appointed by the Council for the term of one academic year and will at least have the rank of mid or senior university professor (associate professor or equivalent).

The Director:

- coordinates the work of the staff involved in the organisation, implementation, and execution of the joint doctoral Programme and reports the work of the Doctoral Committee to the Council.
- must ensure the quality of the joint doctoral Programme.

8. ENROLLMENT IN STUDIES

Prior to the publication of the call for applications for the SEA-EU joint doctoral study Programme, the Doctoral Committee organises an event to connect the potential supervisors and encourage them to collaborate on a matching topic for research and develop Research Topic Outlines. Preferably the event will be organised in person, within the same week when doctoral candidates hosted at different universities meet, potentially paired with the Erasmus staff week framework.

The public call for enrolment in the joint doctoral Programme shall be published by all standard means of communication of individual Partners at least 90 days before the commencement of the Programme.

The applicant should be in possession of a degree equivalent to Level 7 of the European Qualifications Framework. The applicants for the joint doctoral study Programme coming from non-EU universities must submit diplomas for recognition following current regulations developed within the alliance (if they exist) or internally at the university through which they are applying.

Compulsory application documents consist of a Research Proposal developed with assistance from supervisor(s), a Curriculum Vitae, prior learning certifications, an English Level certificate of proficiency (at least B2) and a motivation letter.

Additional enrolment requirements shall be determined by the Council.

The interview of the applicant with the supervisor(s) who offered the Research Topic Outline of interest to them will be a mandatory part of the selection procedure during which the supervisor(s) will evaluate potential applicants and the applicant will obtain the necessary information to develop his/her Research Proposal.

The selection procedure must be clearly described within each yearly call, including the wish to make a shortlist selection, then an interview of shortlisted candidates, etc.

An applicant whose application for enrolment has been denied may appeal to the Council through the Doctoral Committee within 15 days of receipt of the decision.

The partner University shall conclude the Doctoral Candidate Agreement with a doctoral candidate. The agreement should regulate the status of doctoral candidates, tuition fees, other costs with respective due dates, and the rights and obligations of the contracting parties. It is signed between the doctoral candidate, the hosting Universities (from which the co-supervisors are coming from) and the University organising the Doctoral Study Programme.

After enrolment, a doctoral candidate has to finalise the Research Plan assisted by his supervising team. If his/her Research Plan is approved, within a maximum of 6 months from enrolment, by

the Research Plan Evaluation Committee, he/she proceeds with the development of his doctoral Thesis.

REQUIRED MINIMUM LEVEL IN ENGLISH

The expected minimum level in English is B2 in the Common European Framework of Reference for Languages (CEFR) which corresponds to an Independent User level on the global scale. See https://www.coe.int/en/web/common-european-framework-reference-languages/table-1-cefr-3.3-common-reference-levels-global-scale for more information. This B2 level testifies that candidates:

- can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialisation,

- can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party,

- can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.

LIST OF CERTIFICATES PROVING A B2 LEVEL IN ENGLISH FOR ADMISSION (NON-EXHAUSTIVE LIST)

Each candidate must provide proof of his/her level in English. Those certificates can be: IELTS, TOEFL, and all accredited national certifications.

Accepted certificate	Level / Score
TOEFL iBT	65 - 78
IELTS	6.0 – 6.5
Cambridge certificate	FCE
National certification (according to the CEFR)	B2

9. DOCTORAL STUDY

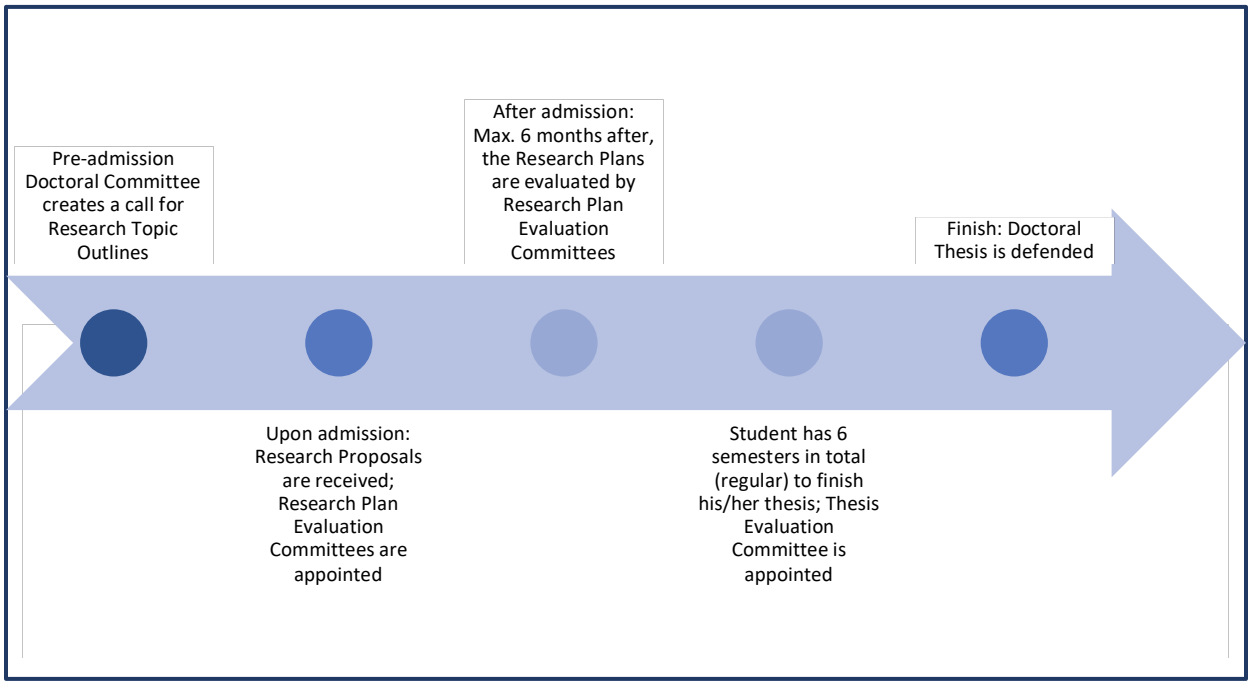

Figure 2. SEA-EU Joint PhD Doctoral Study Programme candidate timeline

The studies shall be carried out primarily by research and to a lesser extent by targeted courses and/or workshops that improve general skills related to scientific tools and methodology, specific knowledge related to the topic of research, or transversal skills useful to apply and disseminate his/her research. This is defined initially, upon admission in the Research Proposal and afterwards within 6 months from admission in the Research Plan and supported by a viable financial plan and timeline. The study period begins on the date of enrolment.

A detailed research proposal is to be submitted within 6 months from the start of the study. If the developed research proposal does not meet the required quality, they will be asked to improve it. The supervisor, assisted by co-supervisor(s), is jointly responsible with the doctoral candidate for the preparation of the finalised Research Plan. The academics engaged in the study by giving taught-based courses and workshops shall have adequate qualifications in agreement with the rules of good practice of the individual Partner who is organising it.

Before submitting the Thesis, the doctoral candidate is required to publish or have been accepted for publication at least one scientific paper in journals listed in the Web of Science database (Q1 or Q2) or, in the case of candidates in social sciences and the humanities, listed in Scopus or otherwise eligible as high-quality publications and thematically related to the doctoral research in which he or she is one of the principal authors.

The candidate's progress is monitored yearly by means of a progress report submitted by the supervisor to the Doctoral Committee and approved by the Council. The progress must be in line with the previously approved Research Plan.

ORGANISATION OF JOINT DOCTORAL STUDY PROGRAMME

The research project is the core of the Programme. The Research Proposal is developed based on the announced Research Topic Outline and based on the interview(s) with the supervisor and co-supervisor(s) before the submission of the application for the doctoral Programme. During the first 6 months of doctoral studies, the final version of the Research Plan is developed and defended in front of the Research Plan Evaluation Committee.

Topic selection for research planning is done in line with four main Study Programme themes:

Theme 1: Maritime Technologies

Theme 2: Ocean & Earth Sciences

Theme 3: Marine Natural Sciences and Technologies

Theme 4: Coastal & Marine Social Sciences and Humanities

Specific topics can be interdisciplinary between main themes or within one.

Every spring, prior to the publication of the available Research Topic Outlines, potential supervisors meet (online or physically) and discuss potential collaboration options. During the meetings, the framework for the thesis topics is developed. The supervisor matching process is encouraged continuously by the Doctoral Committee and supervised by the Council in order to ensure a sufficient number of Research Topic Outlines for a yearly call for admission. During the application process, doctoral candidates submit a Research Proposal based on the targeted Research Topic Outline and interview with the supervisor(s) in charge of it.

TRAINING ACTIVITIES

The candidate can be involved in different training activities during her/his studies.

Research Ethics and Scientific Integrity are mandatory courses for all SEA-EU joint doctoral study Programme candidates. Other trainings offered to Joint Doctoral Study Programme candidates are as follows:

GENERIC ACADEMIC SKILLS

The course aims to provide guidance to participants on the elements of being a scientist that are generic.

ADVANCED SCIENTIFIC WRITING AND ENGLISH LANGUAGE

Literature review in scientific research. Drafting scientific dissemination instruments (research papers, patents, conferences, books, etc.). English Language for academic and research purposes: Writing scientific papers, monographs and dissemination texts.

RESEARCH DESIGN AND RESEARCH PROJECT MANAGEMENT

Project and Time Management for Scientists. Design and writing research projects (national and international, private and public funded). Management of funded research projects.

CAREER BUILDING

Entrepreneurship/ Marketing for Scientists.

Training activities are being offered by participating partner universities (each university offers at least one training activity per academic year). Candidates can participate in training activities outside of the SEA-EU alliance if they are allowed to do so by the Doctoral Committee.

Other training activities are offered by SEA-EU partner universities and approved by the Doctoral Committee.

INTERNATIONAL MOBILITY

The candidate is usually hosted at the (leading) supervisor university. During the studying period, research stays/mobility periods are mandatory. The minimum mobility period is 6 months (this mobility period can be longer or the 6 months can be divided into several shorter periods), usually at the co-supervisor's university but not limited to. Preferably, but not mandatory, training activities are taken at other than supervisor/co-supervisor universities.

DOCTORAL THESIS MODALITIES ASSESSMENT AND DEFENCE PROCEDURE

The doctoral candidate initiates the procedure for acceptance of the Thesis by submitting the request to the Council via the Doctoral Committee.

10. THESIS DEFENCE AND EVALUATION PROCEDURE.

The procedure for defending a doctoral thesis will be as follows:

1. Submission of the Thesis: the doctoral candidate must submit their completed thesis to the Evaluation Committee. After completing their research Plan and training activities, the doctoral candidate should present a written request to the Doctoral Committee, including the Doctoral Thesis manuscript and all supporting information, asking for authorization to submit the Doctoral Thesis for evaluation. The Doctoral Committee will guarantee that the presented Doctoral Thesis complies with the quality requirements of the Joint Doctoral Study Programme.

*This written request can be presented only after the first year of study in the Joint Doctoral Study Programme.

2. Appointment of the External Panel Review:

Before issuing a recommendation on the Thesis submission, the Doctoral Committee will send the Doctoral Thesis for assessment to two expert reviewers. The expert reviewers shall send back a short report on Doctoral Thesis suitability. The expert reviewers must hold a doctoral title and have an appropriate background (publication record, project coordination, professional activity) in the topic of the Doctoral Thesis, and must not belong to the Partner Universities of the Supervisors. These expert reviewers may later form part of the Thesis Evaluation Committee. The evaluation report of the Thesis shall be submitted to the Doctoral Committee not later than 45 days after receiving receipt of the Doctoral Thesis may:

   - accept the Thesis as is or with minor modifications and suggest that to the Doctoral Committee to proceed the candidate proceeds to the Thesis Defence,
   - to instruct the candidate to resubmit the Thesis with major modifications. In this case, the Doctoral Candidate has the right to respond to the Reviewers' remarks.

3. Doctoral Committee. Upon positive reports from the external panel reviewers, the Doctoral Committee recommends the Thesis for final submission and public defence. The recommendation of the Doctoral Committee to the Council is co-signed and signed by the supervisor/co-supervisor(s).

4. Announcement and Scheduling: Once the Doctoral Committee appoint the Examination Committee, the date, time, and location of the thesis defence are announced. This information is typically circulated within the partner institutions and publicly advertised for interested attendees.

5. Preparation by the Candidate: The doctoral candidate should prepare an oral presentation summarizing their research, findings, and contributions. This presentation is

often accompanied by slides or visual aids. The candidate may also review their thesis, anticipate potential questions, and rehearse their presentation.

6. Public Defence: On the scheduled date, the doctoral candidate will present their research to the examination committee and any other attendees. The presentation will be followed by a question-and-answer session, during which the committee members ask the candidate questions about their research, methodology, findings, and conclusions. The defence typically lasts for a specified duration, often ranging from one to two hours.

Deliberation: the Thesis Evaluation Committee will make a decision regarding the outcome of the defence.

MODALITIES OF THE THESIS:

a. Scandinavian model:

The thesis manuscript should include:

i. An extended abstract in at least two European languages: English & local language of the home institution.

ii. If the thesis consists of several smaller works, an account must be provided of how they are related together and with the thesis topic in an introductory summary section.

iii. A minimum of 3 papers with the candidate as first author, 2 of which must be published or accepted in peer-reviewed WoS/Scimago/or other relevant list journals.

iv. The remaining parts of the thesis are to be kept brief and act as a setting/framework for the research.

v. A conclusion chapter including all the conclusions from the whole Thesis as a piece. It could be in the form of a policy brief or a management recommendation or an executive summary that demonstrates how the research undertaken can be used in the field.

vi. Bibliography.

vii. Annexes.

b. Monography. At least one WoS/Scimago paper published as first author, or 1 book/book chapter (to be decided by the Doctoral Committee)

The thesis manuscript should include:

i. Introduction

ii. State(s) of the Art

iii. Object of study

iv. Method(s) of data collection or system of analysis

iv. Results

v. Discussion

vi. Conclusions

vii. Bibliography

THE DEFENCE OF THE THESIS

The defence of the Thesis topic is an essential part of the Programme. It is conducted in front of the Thesis Evaluation Committee and other interested public no later than 30 days after acceptance of the submitted written Thesis by the Council. All members of the Thesis Evaluation Committee must be present during the defence of the topic (presential or online). The chair of the Thesis Evaluation Committee shall prepare a report on the defence, evaluating, in particular, the clarity and organisation of the presentation, the scientific basis of the topic, the originality, the quality and impact of results and the methodology of conducting research.

The Thesis defence is conducted according to the protocol of the leading supervisor Partner institution. The defence must take place on the premises of the leading supervisor Partner institution in English. If necessary and technically possible, a small part of the members of the Thesis Evaluation Committee may be present via video conference. The Thesis is defended only once.

The chair of the Thesis Evaluation Committee shall keep a record of the Thesis defence, which shall be signed by all members of the Thesis Evaluation Committee. The decision of the Thesis Evaluation Committee is noted along with the defence record.

After the Thesis defence, the Thesis Evaluation Committee shall decide on the result of the defence, which may read:

- successfully defended by unanimous decision of the Thesis Evaluation Committee,
- successfully defended by the majority decision of the Thesis Evaluation Committee, and
- did not defend.

The chairman of the Thesis Evaluation Committee publicly announces the decision.

If the research results of the Thesis contain an innovation requiring intellectual property protection, the doctoral candidate and the supervisor-co-supervisor(s) must inform the Council which shall inform the Partners whose academics were (co)supervising the doctoral candidate. In this case, before submitting the Thesis for review, the doctoral candidate may request, with consent from the supervisor - co-supervisor(s), that the submitted Thesis be kept secret until the time of the defence.

After a successful defence of the Thesis, the doctoral candidate shall attach to the Thesis a sheet indicating the composition of the Thesis Evaluation Committee and the date of the defence.

The doctoral candidate shall submit several hard copies specified by the candidate service according to individual Partners' requirements.

The Partners’ Libraries shall archive the Thesis according to their individual rules. In order to protect the author's rights, the Thesis must be accompanied by permission for publication in the

national repositories signed by the author of the Thesis. If the research results presented in the Thesis are protected by intellectual property rights, the publication may be delayed by up to 2 years.

11. DOCTORAL DIPLOMA

A doctoral candidate who has successfully defended his/her Thesis shall receive a diploma and a supplementary certificate on the completed doctoral studies and the achieved academic degree of Doctor of Science. Considering the multiplicity of scientific fields covered by the interdisciplinary framework of the Programme, the supplementary certificate shall explicitly state the scientific discipline(s) exercised by an individual candidate within his/her Thesis.

The Council shall submit to the Rector of the leading supervisor Partner University an application with the required documents for issuing the Doctor of Science degree.

The certificate shall be presented by the Rector of the leading supervisor Partner University during a formal Doctoral Awards Ceremony.

12. QUALITY ASSURANCE

The Doctoral Committee is the main body responsible for the Quality Assurance of the Study Programme. It shall be obliged to keep detailed records of the research work and other fulfilled study obligations of each doctoral candidate, including the Research Plan with timelines and financial aspects along with candidates' yearly progress reports.

The Doctoral Committee must take note of the supervisor/ co-supervisor(s) workload and success and keep records for each supervisor/co-supervisor(s) on the number of enrolled doctoral candidates and the number of doctoral candidates who have defended their Thesis.

The quality of the supervisor(s)/co-supervisor(s)' work is evaluated as part of the annual evaluation procedures. Every doctoral candidate must submit an annual self-evaluation report. The supervisor prepares an annual report about the candidate's progress. These reports are submitted to the Doctoral Committee.

The Doctoral Committee shall conduct an annual self-evaluation based on annual progress reports of the doctoral candidates' reports and submit a report to the Council.

The evaluation criteria include the scientific performance of the supervisors/co-supervisors and doctoral candidates, the relevance and quality of the Thesis, statistical indicators on the duration of the study, statistical indicators on the annual number of new doctoral degrees in relation to the number of doctoral candidates, and international cooperation.

13. FINAL PROVISIONS

The Doctoral Council is responsible for the interpretation of the provisions of the Doctoral Committee's Self-Evaluation Report.

All terms used in this and related documents are gender-neutral and refer to males and females.

Agency and Commission are not responsible for: Any communication or publication that relates to the action, made by the beneficiaries jointly or individually in any form. This document and other communications are only the author's (SEA-EU) view. Agency and the Commission are not responsible for any use that may be made of the information it contains.

Appendix 1: Structure for diploma supplement

OUTLINE STRUCTURE FOR THE DIPLOMA SUPPLEMENT [13]

The purpose of the Diploma Supplement is to provide sufficient independent data to improve international 'transparency' and fair academic and professional recognition of qualifications (diplomas, degrees, certificates etc.). It is designed to provide a description of the nature, level, context, content, and status of the studies that were pursued and successfully completed by the individual named on the original qualification to which this supplement is appended. It is free from any value judgements, equivalence statements or suggestions about recognition. This Diploma Supplement model was developed by the European Commission, Council of Europe, and UNESCO.

1 INFORMATION IDENTIFYING THE HOLDER OF THE QUALIFICATION

1.1 Last name(s):

1.2 First name(s):

1.3 Date of birth (day/month/year):

1.4 candidate identification number or code (if available):

2 INFORMATION IDENTIFYING THE QUALIFICATION

2.1 Name of qualification and (if applicable) title conferred (in original language):

2.2 Scientific area(s) of study for the qualification:

2.3 Name and status of awarding institution (in original language):

2.4 Name and status of institution (if different from 2.3) administering studies (in original language):

2.5 Language(s) of instruction/examination:

3 INFORMATION ON THE LEVEL AND DURATION OF THE QUALIFICATION

3.1 Level of the qualification:

3.2 Official duration of programme in credits and/or years:

3.3 Access requirements(s)

[13] https://europa.eu/europass/en/diploma-supplement-templates-and-instructions

4 INFORMATION ON THE PROGRAMME COMPLETED AND THE RESULTS OBTAINED

4.1 Mode of study:

4.2 Programme learning outcomes:

4.3 Programme details, individual credits gained and grades/marks obtained: (if this information is available in an official transcript, this should be used here)

4.4 Grading system and, if available, grade distribution table:

4.5 Overall classification of the qualification (in original language):

5 INFORMATION ON THE FUNCTION OF THE QUALIFICATION

5.1 Access to further study:

5.2 Access to a regulated profession (if applicable)

6 ADDITIONAL INFORMATION

6.1 Additional information:

6.2 Further information sources:

7 CERTIFICATIONS OF THE SUPPLEMENT

7.1 Date:

7.2 Signature:

7.3 Capacity:

7.4 Official stamp or seal:

8 INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM

(N.B. Institutions who intend to issue Diploma Supplements should refer to the explanatory notes that explain how to complete them.)

Appendix 2: Learning Outcomes [14]

On completion of the doctoral degree, the candidate should have achieved the following learning outcomes, defined as knowledge, skills and general competencies, within the science of professions, limited to one or more of the focus areas of language, relationships and actions:

Knowledge:

The candidate:

- is at the forefront of knowledge in the science of professions at a high international level, within one or more of the focus areas of language, relationships and actions
- is able to make independent and innovative contributions to the development of new knowledge and theory within the science of professions
- has extensive knowledge of relevant dissemination channels for the science of professions
- has mastered critical and independent reflection on relevant theory, issues, the philosophy of science and methods
- has in-depth knowledge of research ethics, including legislation and regulations

Skills:

The candidate:

- is able to critically and independently address complex questions relating to the science of professions and challenge established knowledge and practices in this field
- is able to critically and independently assess and explain the appropriateness and application of various methods and processes in research projects, as well as explain the limitations of methodologies used
- is able to conduct research at a high international level through its own research project
- is able to formulate research questions, and plan and execute research projects and innovation processes of a high academic standard using relevant technology
- is able to critically and independently initiate, conduct, evaluate and disseminate research, and discuss the implications of the research for professions and society

General competence:

The candidate:

- is able to identify, critically assess and discuss relevant academic and ethical issues in their own and other's research, and conduct their own research with academic integrity

[14] https://www.nord.no/en/studies/phd-in-science-of-professions-phd

- is able to lead complex interdisciplinary work and projects in an independent manner and in collaboration with others
- is able to disseminate research through recognised, and preferably open access, national and international channels
- is able to critically assess the need for innovation and research with societal relevance and initiate this
- is able to actively participate in discussions in national and international forums, and contribute expert input to the public discourse