DIDACTIC REGULATIONS OF THE DEGREE PROGRAM

MARINE BIOLOGY AND AQUACULTURE

CLASS LM-6

School: Polytechnic of Basic Sciences

Department: Biology

Regulations in force since the academic year 2025/26

ACRONYMS

CCD	[Commissione di Coordinamento Didattico]	Didactic Coordination Commission
CdS	[Corso/i di Studio]	Degree Program
CFU	[Crediti Formativi Universitari = 1 ECTS]	University training credits
CPDS	[Commissione Paritetica Docenti-Studenti]	Joint Teachers-Students Committee
OFA	[Obblighi Formativi Aggiuntivi]	Additional Training Obligations
SUA-CdS	[Scheda Unica Annuale del Corso di Studio]	Annual single form of the Degree Program
RDA	[Regolamento Didattico di Ateneo]	University Didactic Regulations

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Art. 1
Object

1. This Regulation regulates the organizational aspects of the Master's Degree Program in " Marine Biology and Aquaculture " (class LM-6 - Biology). The Master's Degree Program in Marine Biology and Aquaculture is hinged to the Department of Biology.
   General Information
   Master's Degree Program name in Italian: Biologia Marina e Acquacoltura
   Master's Degree Program name in English: Marine Biology and Aquaculture
   Class: LM-6 - Biology
   Teaching language: English
   Course delivery methods: conventional
2. The Course is governed by the Teaching Coordination Commission (CCD), pursuant to Art. 4 of the RDA.
3. The Regulation is issued in compliance with current legislation on the subject, the Statute of the University of Naples Federico II and the University Teaching Regulations.

Art. 2
Training objectives

In accordance with the qualifying educational objectives of the LM-6-degree class, the Master's Degree Program in Marine Biology and Aquaculture has as its qualifying educational objectives the preparation of master's graduates who will have:

- a solid and integrated cultural background in basic biology and in the various fields of biology applied to the marine environment;
- a thorough knowledge of marine biodiversity, from the morpho-functional, evolutionary, biogeographical and ecological points of view, and of its management and conservation strategies, as well as knowledge of biomonitoring methods in the marine environment;
- an adequate knowledge of the mechanisms governing life strategies, including reproductive and behavioural strategies of marine organisms, and of those governing the structure and dynamics of marine trophic networks and ecosystems;
- an adequate knowledge of the physico-chemical and geological foundations of the dynamics of the marine environment, particularly in terms of their interactions with the biotic component;

In addition, depending on the chosen curriculum, master graduates will have:

- adequate theoretical and practical skills in biomolecular applications related to marine organisms;
- a thorough understanding of the mechanisms regulating the life strategies, including reproductive and behavioural strategies, of marine organisms and those governing the structure and dynamics of trophic networks;
- a thorough grounding in the biochemical adaptations of organisms in the marine environment, with a focus on bioremediation mechanisms;
- adequate theoretical and practical skills in biomolecular applications related to the marine environment, in particular in the fields of marine genomics;

or:

- an adequate knowledge of sustainable fisheries management;
- an advanced knowledge of production processes related to the marine environment, inland and transitional waters (coastal, lagoon and brackish waters);

- specific methodological skills in the field of biology applied to aquatic productions, in relation to the impact and sustainability of the anthropic activities related to them;
- solid theoretical and specific experimental knowledge and adequate professional skills, related to the evaluation and management of all the biological and ecological aspects of production processes linked to the aquatic environment.
- a thorough knowledge of the eco-physiological and eco-pathological responses of marine organisms, including the toxicological basis, in relation to ecosystem modifications;

In particular, the course aims to train professionals who, according to the chosen curriculum, will be:

a) experts in the sustainable management of marine resources engaged in providing responses and solutions through the use of ecosystem services

b) marine biodiversity specialists engaged in monitoring marine organisms in different habitats

c) marine environment experts engaged in monitoring and protecting the resource

d) marine conservation experts engaged in the management of marine protected areas

e) experts in the management and operation of aquaculture and mariculture facilities

f) experts in the quality control of fishery and aquaculture products and their processing

g) experts in the management and operation of fish processing facilities.

The Master's Degree Program in Marine Biology and Aquaculture is divided into a block of characterising courses, which ensure a solid preparation in basic biology, and a series of related and supplementary courses, which provide the necessary in-depth multidisciplinary studies and individual training paths.

The curriculum is organised to provide in-depth knowledge and professional skills in the fields of marine biology or aquaculture.

For the indicated purposes, depending on the chosen curriculum, the pathway includes:

1) training activities aimed at acquiring in-depth knowledge of theoretical knowledge and instrumental methodologies, analytical tools and techniques for data acquisition and analysis in all fields of biology, with particular regard to investigations on biodiversity, ecology, eco-pathology, conservation and recovery of the marine environment;

2) theoretical and methodological knowledge used in biochemistry, bioinformatics, molecular biology, microbiology, including the manipulation and analysis of biological macromolecules, microorganisms, cells and complex organisms for investigations relating to the biodiversity, physiology, ecology and overall quality of the marine environment, its management and conservation, the use of natural substances obtained from marine organisms;

3) theoretical and methodological instrumental and field acquisition knowledge and laboratory analysis techniques;

or:

1) theoretical and methodological knowledge in the field of nutrition and animal welfare in aquaculture, pathologies and hygiene in aquatic productions, verification, reduction and adaptation of environmental impact in aquaculture activities;

2) specific theoretical and methodological knowledge in the field of biotechnologies applied to aquatic productions.

An important part of the training pathway will be the performance of practical activities carried out in the laboratory and in the field, aimed above all at the preparation of an experimental thesis, and aimed at the application and deepening of specific acquired knowledge, which will enable the student to learn the correct ways of approaching and solving the problems that the biologist will have to face in the various relevant work areas.
By carrying out an internship at a biological research laboratory or an analytical or monitoring laboratory, or a production company in the field of environmental biology, or an aquaculture or biotechnology plant, or a health facility in charge of animal welfare in aquaculture, or a territorial body active in environmental or conservation practices, a park or a nature reserve a marine protected area or a structure engaged in voluntary work, or alternatively through the acquisition of further knowledge useful for entry into the world of work, the student acquires knowledge of the complex world of work in the biological sector and consolidates his/her perception and awareness of the relationship between university preparation and professional activities.
The Master's Degree student in Marine Biology and Aquaculture will be in possession of at least one European Union language in addition to Italian, and will have adequate knowledge of the use of IT tools, necessary in the specific field of competence and for the exchange of general information.

Art. 3
Professional profile and work opportunities

The Master's Degree Program aims to train the professional figure of the Biologist. Graduates of the class will be able to carry out professional activities recognised by the regulations in force as competences of the professional figure of the biologist (Section A of the professional register) in all the specific fields of application as reported in paragraph 1 of Article 31 of DPR 328 -5 June 2001 (Supplement G.U. 190-17 June 2001) and in Law 396 of 24/05/67 on the regulation of the profession of biologist. The course prepares for the profession of biologist, as regulated by Law no. 396 of 24 May 1967 and D.P.R. no. 328 of 5 June 2001, after passing the State Examination.
The object of the professional activity consists in holding roles of high responsibility to be carried out autonomously, which, depending on the chosen curriculum, will concern activities:

- Of promotion and development and management of scientific and technological innovation in the marine environment in public and private research companies;
- Of basic and applied research in public and private companies engaged in the protection and management of marine resources (regional, provincial and municipal, ARPA);
- Professionals exercised in public entities engaged in the management and protection of coastal areas, marine protected areas, and in the recovery of polluted sites;
- Professionals practised in environmental ecosystem services and consultancy companies;
- Dissemination and dissemination of acquired knowledge;
- Participation in competitions for teaching in secondary and high schools.

Or:

- of management of areas intended for aquaculture activities;

- of care and enhancement of productive activities in aquatic, natural and artificial environments; activities to verify, reduce and adapt the environmental impact of aquaculture activities;
- enhancement of craft, artistic and cultural activities related to aquaculture production;
- dissemination and diffusion of the knowledge acquired;
- participation in teaching competitions in lower and upper secondary schools.

Skills associated with the function

To perform the functions described above, the Master's degree student in Marine Biology and Aquaculture will possess the following specific skills and abilities:

Solid cultural background in basic and applied biology in the marine environment;

knowledge of at least one European Union language, in addition to Italian, in the specific field of competence; adequate skills and tools for communication and information management; ability to work in a team, autonomously and to be able to fit in with working environments; possession of basic cognitive tools for the continuous updating of one's knowledge.

Furthermore, depending on the chosen curriculum, the Master's degree student in Marine Biology and Aquaculture will possess the specific skills and abilities listed below:

- high scientific and operational background in the fields of environment and biodiversity, in the management and protection of the marine environment and ecosystem services;
- solid competences and technological skills in wide-ranging biological and instrumental analyses, aimed both at research activities for monitoring, conservation and restoration;

or

- multidisciplinary methodological and technological knowledge for biological investigation aimed at the marine environment and aquatic production;
- -skills for the operation and management of fish hatcheries and freshwater, brackish and marine, intensive and extensive fish farms;
- skills in the management of the technical, hygienic, and economic environmental aspects of aquaculture and mariculture companies also by means of innovative animal welfare systems.

Occupational opportunities

The Master’s Degree Program holder in Marine Biology and Aquaculture will be able to take on roles of high responsibility as a freelancer (after registration with the National Order of Biologists) or as an employee, also assuming management functions, in companies or organisations in the following sectors:

employment in public administration;

scientific research activities at universities, CNR, ENEA, and other public bodies; training and scientific dissemination.

In addition, also in relation to the chosen curriculum, the Master's Degree in Marine Biology and Aquaculture will be able to hold roles of high responsibility in:

direction and management of public and private companies engaged in the protection and management of marine resources (regional, provincial and municipal, ARPA)

direction and management of public entities engaged in the management and protection of coastal areas, marine protected areas, and in the rehabilitation of polluted sites;

direction and management of ecosystem environmental services and consulting companies;
employment in marine biology stations;
or

management and operation of aquaculture and mariculture facilities including quality control of fishery and aquaculture products and their processing;
employment in zoo prophylactic institutes;

employment in aquatic biotechnology centres;

employment in breeding centres for ornamental species.

Art. 4
Admission requirements and knowledge required for access to the Degree Program[1]

Students wishing to enrol in the master's degree Course in Marine Biology and Aquaculture must be in possession of a bachelor's degree or a three-year university diploma or another qualification obtained abroad, recognised as suitable according to current regulations. Students must also be in possession of the minimum curricular requirements and adequate personal preparation.
The following curricular requirements are required for admission to the master's degree course in Marine Biology and Aquaculture:

The student must demonstrate that he/she has acquired the knowledge of the three-year degree in class L-13 (i.e. class 12 ex D.M. 509).

Students from other degree classes must have knowledge in the SSDs BIO/, CHIM/, FIS/, MAT/. Curricular requirements are determined by having acquired:
1) At least 18 CFU in the fields BIO/01-3, BIO/05, BIO/06, BIO/07.
2) At least 6 CFU in the sectors BIO/04, BIO/09, BIO/10, BIO/11, BIO/18, BIO/19.
3) At least 6 CFU in the sectors CHIM/01-06; at least 12 CFU in the sectors MAT/01- 09, FIS/ 01-08;
The methods for verifying personal preparation for admission to the master's degree Course in Biology are defined year by year by the CCD and published on the Biology Department's website.
The course is delivered in English; therefore the student must have an adequate knowledge of the English language (level B2).

Art. 5
Procedures for access to the Degree Program

The CCD of the Master's Degree Program normally regulates the admission criteria and any scheduling of enrolments, except in the case subject to different provisions of law.
Verification of personal preparation is always mandatory, and only students who meet the curricular requirements can access it.
The verification methods will be redefined annually by the CCD and published on the web site of the Department of Biology.

[1] Artt. 7, 13, 14 of the University Didactic Regulations.

Art. 6
Teaching activities and university training credit
(Teaching activities and CFU)

Each training activity, prescribed by the Degree course detail sheet, is measured in CFU. Each CFU corresponds to 25 hours of overall training commitment[2] per student and includes the hours of teaching activities specified in the curriculum as well as the hours reserved for personal study or other individual training activities.
For the Degree Program covered by this Didactic Regulations, the hours of teaching specified in the curriculum for each CFU, established in relation to the type of training activity, are as follows [3]:

- Lecture: 8 hours for ECT.
- Seminar: 8. hours for ECT.
- Laboratory or field activities: 8 hours for ECT

For Thesis activities, each CFU corresponds to 25 hours of overall training commitment [4].

The ECT corresponding to each training activity acquired by the student is awarded by satisfying the assessment procedures (examination, pass mark) indicated in the Course sheet relating to the course/activity attached to this Didactic Regulations.

Art. 7
Description of teaching methods

The didactic activity is carried out in conventional modality.
If necessary, the CCD decides which courses also include teaching activities offered online, according to Ministerial Decree 289 of 25 March 2021 (general guidelines for the three-year planning of universities 2021-2023), in Annex 4, letter A.

Some courses may also take place in seminar form and/or involve classroom exercises, language, and computer laboratories.
Detailed information on how each course is conducted can be found in the course sheets.

[2] According to Art. 5, c. 1 of Italian Ministerial Decree No 270/2004, "25 hours of total commitment per student correspond to university training credits; a ministerial decree may justifiably determine variations above or below the aforementioned hours for individual classes, by a limit of 20 per cent".
[3] The number of hours considers the instructions in Art. 6, c. 5 of the RDA: "of the total 25 hours, for each CFU, are reserved: a) 5 to 10 hours for lectures or guided teaching exercises; b) 5 to 10 hours for seminars; c) 8 to 12 hours for laboratory activities or fieldwork, except in the case of training activities with a high experimental or practical content, and subject to different legal provisions or different determinations by DD.MM.".
[4] For Internship activities (Inter-ministerial Decree 142/1998), subject to further specific provisions, the number of working hours equal to 1 CFU may not be less than 25.

Art. 8
Testing of training activities[5]

1. The CCD, within the prescribed regulatory limits[6], establishes the number of examinations and other means of assessment that determine the acquisition of credits. Examinations are individual and may consist of written, oral, practical, graphical tests, term papers, interviews, or a combination of these modes.
2. The examination procedures published in the course sheets and the examination schedule will be made known to students before the start of classes on the Department's website.[7]
3. Examinations are held subject to booking, which is made electronically. In case the student is unable to book an exam for reasons that the President of the Board considers justifiable, the student may still be admitted to the examination, following those students already booked.
4. Before examination, the President of the Board of Examiners verifies the identity of the student, who must present a valid photo ID.
5. Examinations are marked out of 30. Examinations involving an assessment out of 30 shall be passed with a minimum mark of 18; a mark of 30 may be accompanied by honours by unanimous vote of the Board. Examinations are marked out of 30 or with a simple pass mark. Assessment following tests other than examinations are marked out with a simple pass mark.
6. Oral exams are open to the public. If written tests are scheduled, the candidate has the right to see his/her paper(s) after correction.
7. Examination Boards are governed by the University Didactic Regulations[8].

Art. 9
Degree Program structure and Study Plan

1. The legal duration of the Degree Program is 2 years.
   The student must acquire 120 CFU[9], attributable to the following Types of Training Activities (TAF):

[5] Article 22 of the University Didactic Regulations.

[6] Pursuant to the DD.MM. 16.3.2007 in each Degree Programs the examinations or profit tests envisaged may not be more than 20 (Bachelor's Degrees; Art. 4. c. 2), 12 (Master's Degrees; Art. 4, c. 2), 30 (five-year single-cycle Degrees) or 36 (six-year single-cycle Degrees; Art. 4, c. 3). Pursuant to the RDA, Art. 13, c. 4, "the assessments that constitute an eligibility evaluation for activities referred to in Art. 10, c. 5, letters c), d), and e) of Ministerial Decree no. 270/2004, including the final examination for obtaining the degree, are excluded from the calculation." For Master's Degree Program and single-cycle Master's Degree Program, however, pursuant to the RDA, Art. 14, c. 7, "the assessments that constitute a progress evaluation for activities referred to in Art.10, c. 5, letters d) and e) of Ministerial Decree no. 270/2004 are excluded from the exam count; the final examination for obtaining the Master's Degree and single-cycle Master's Degree is included in the maximum number of exams".

[7] Reference is made to Art. 22, c. 8, of the University Teaching Regulations, which states that "the Department or School ensures that the dates for progress assessments are published on the portal with reasonable advance notice, which normally cannot be less than 60 days before the start of each academic period, and that an adequate period of time is provided for exam registration, which is generally mandatory."

[8] Reference is made to Art. 22, paragraph 4 of the RDA according to which "Examination Boards and other assessments committees are appointed by the Director of the Department or by the President of the School when provided for in the School's Regulations. This function may be delegated to the CCD Coordinator. The Commissions comprise of the President and, if necessary, other professors or experts in the subject. In the case of active courses, the President is the course instructor, and in such cases, the Board can validly make decisions even in the presence of the President alone. In other cases, the President is a professor identified at the time of the Board's appointment. In the comprehensive evaluation of the overall performance at the conclusion of an integrated course, the professors in charge of the coordinated modules participate, and the President is appointed when the Commission is appointed."

[9] The total number of CFU for the acquisition of the relevant degree must be understood as follows: six-year single-cycle Degree, 360 CFU; five-year single-cycle Degree, 300 CFU; Bachelor's Degree, 180 CFU; Master's Degree, 120 CFU.

A) basic,
B) characterising,
C) related or complementary,
D) at the student's choice[10],
E) for the final exam,
F) further training activities.

2. The degree is awarded after having acquired 120 CFU by passing examinations, not exceeding 12, including the final, and the performance of other training activities.
   Unless otherwise provided for in the legal framework of university studies, examinations taken as part of basic, characterising, and related or supplementary activities, as well as activities chosen autonomously by the student (TAF D) are taken into consideration for counting purposes. Examinations or assessments relating to activities independently chosen by the student may be considered in the overall calculation corresponding to one unit[11]. Tests constituting an assessment of suitability for the activities referred to in Article 10, paragraph 5, letters c), d) and e) of Ministerial Decree 270/2004[12] are excluded from the count. Integrated Courses comprising of two or more modules are subject to a single examination.
3. To acquire the ECT relating to independently chosen activities, the student has freedom of choice among all the courses offered at the University, as well as training activities that are not courses. if they are consistent with the training project. This coherence is evaluated by the Teaching Coordination Commission of the Course. Even for the acquisition of ECTs relating to independently chosen activities, "passing the exam or other form of profit verification" is required (Art. 5, c. 4 of Ministerial Decree 270/2004).
4. The study plan summarizes the structure of the course by listing the courses provided divided by year of the course and possibly by curriculum. At the end of the study plan table the preparatory requirements provided for by the Study Course are listed. The study plan offered to students, with an indication of the scientific-disciplinary sectors and the relevant area, of the credits, and of the type of teaching activity is reported in Annex 1 to these Regulations.
5. Pursuant to the Art. 11, paragraph 4-bis, of Ministerial Decree 270/2004, it is possible to obtain the Degree according to an individual study plan that also includes educational activities different from those specified in the Didactic Regulations if they are consistent with Degree course detail sheet of the academic year of enrollment. The individual study plan is approved by the CCD.

Art. 10

[10] Corresponding to at least 12 ECTs for Bachelor's Degrees and at least 8 CFU for Master's Degrees (Art. 4, c. 3 of Ministerial Decree 16.3.2007).

[11] Pursuant to the D.M. 386/2007.

[12] Art. 10, c. 5 of Ministerial Decree. 270/2004: "In addition to the qualifying training activities, as provided for in paragraphs 1, 2 and 3, Degree Programs shall provide for: a) training activities autonomously chosen by the student as long as they are consistent with the training project [TAF D]; b) training activities in one or more disciplinary fields related or complementary to the basic and characterising ones, also with regard to context cultures and interdisciplinary training [TAF C]; c) training activities related to the preparation of the final exam for the achievement of the degree and, with reference to the degree, to the verification of the knowledge of at least one foreign language in addition to Italian [TAF E]; d) training activities, not envisaged in the previous points, aimed at acquiring additional language knowledge, as well as computer and telematic skills, relational skills, or in any case useful for integration in the world of work, as well as training activities aimed at facilitating professional choices, through direct knowledge of the job sector to which the qualification may give access, including, in particular, training and guidance programs referred to in Decree no. 142 of 25 March 1998 of the Ministry of Labour [TAF F]; e) in the hypothesis referred to in Article 3, paragraph 5, training activities relating to internships and apprenticeships with companies, public administrations, public or private entities including those of the third sector, professional orders and colleges, on the basis of appropriate agreements".

Attendance requirements[13]

1. In general, attendance of frontal lectures is strongly recommended but not compulsory.
   In the case of individual courses with compulsory attendance, this option is indicated in the relative teaching/activity course sheet available in Annex 2.
2. If the lecturer envisages a different syllabus modulation for attending and non-attending students, this is indicated in the individual Course detail published on the Degree course web page and on the teacher's UniNA website.
3. Attendance at seminar activities that award training credits is compulsory. The relative modalities for the attribution of CFU are the responsibility of the CCD.

Art. 11
Prerequisites and prior knowledge

1. The list of incoming and outgoing propedeuticities (necessary to sit a particular examination) can be found at the end of Annex 1 and in the teaching/activity course sheet (Annex 2).
2. Any prior knowledge deemed necessary is indicated in the individual Teaching Schedule published on the course webpage and on the teacher's UniNA website.

Art. 12
Degree Program Calendar

The Degree Program calendar can be found on the Department's website well in advance of the start of the activities (Art. 21, c. 5 of the RDA).

Art. 13
Criteria for the recognition of credits earned in other Degree Programs in the same Class[14]

For students coming from Degree Programs of the same class, the Didactic Coordination Commission ensures the full recognition of CFU, when associated with activities that are culturally compatible with the training Degree Program, acquired by the student at the originating Degree Program, according to the criteria outlined in Article 14 below. Failure to recognise credits must be adequately justified. This is without prejudice to the fact that the number of credits relating to the same scientific-disciplinary sector directly recognised by the student may not be less than 50% of those previously achieved. If the course of origin is carried out in distance mode, the minimum quota of 50% is recognized only if the course of origin is accredited pursuant to the ministerial regulation referred to in article 2, paragraph 148, of the legislative decree 3 October 2006, n. 262, converted by law 24 November 2006, n. 286.

Article 14
Criteria for the recognition of credits acquired in Degree Programs of different classes, in university or university-level Degree Programs, through single courses, at online Universities and in international Degree Programs[15]; criteria for the recognition of credits acquired in extra-curricular activities

[13] Art. 22, c. 10 of the University Didactic Regulations.
[14] Art. 19 of the University Didactic Regulations.
[15] Art. 19 of the University Didactic Regulations.

1. Regarding the criteria for the recognition of CFU acquired in Degree Programs of different Classes, in university or university-level Degree Programs, through single courses, at online Universities and in International Degree Programs, the credits acquired are recognised by the CCD on the basis of the following criteria:
   - analysis of the activities carried out;
   - evaluation of the congruity of the disciplinary scientific sectors and of the contents of the training activities in which the student has earned credits with the specific training objectives of the Degree Program and of the individual training activities to be recognised.

   Recognition is carried out up to the number of credits envisaged by the didactic system of the Degree Program. Failure to recognise credits must be adequately justified. Pursuant to the Art. 5, c. 5-bis, of Ministerial Decree 270/2004, the acquisition of CFU from other Italian universities is also possible, based on agreements established between the concerned institutions in accordance with the current regulations[16].
2. Any recognition of CFU relating to examinations passed as single courses may take place within the limit of 36 CFU, upon request of the interested party and following the approval of the CCD. Recognition may not contribute to the reduction of the legal duration of the Degree Program, as determined by Art. 8, c. 2 of Ministerial Decree 270/2004, except for students who enrol while already in possession of a degree of the same level[17].
3. With regard to the criteria for the recognition of CFU acquired in extra-curricular activities, pursuant to Art. 3, par. 2, of Ministerial Decree (D.M.) 931/2004, within the limit of 24 CFU, the following activities may be recognised (Art. 2 of D.M. 931/2024):
   - Professional knowledge and skills, certified in accordance with the current regulations as well as knowledge and skills acquired in post-secondary-level training activities.
   - Training activities carried out in the cycles of study at the public administration training institutions as well as knowledge and skills acquired in post-secondary-level training activities, which the University contributed to developing and implementing.
   - Achievement of an Olympic or Paralympic medal or the title of absolute world champion, absolute European champion or absolute Italian champion in disciplines recognized by the Italian National Olympic Committee or the Italian Paralympic Committee.

Art. 15
Criteria for enrolment in individual teaching courses

Enrolment in individual teaching courses, provided for by the University Didactic Regulations[18], is governed by the "University Regulations for enrolment in individual teaching courses activated as part of the Degree Program"[19].

[16] Art. 6, c. 9 of the University Didactic Regulations.
[17] R.D. No. 3241/2019.
[18] Art. 19, c. 4 of the University Didactic Regulations.
[19] R.D. No. 3241/2019.

Article 16
Features and modalities for the final examination

The master's degree in “Marine Biology and Aquaculture” is achieved after passing a final test which consists in the discussion of the results achieved during activities carried out in a research laboratory, both in university facilities and in research centres, companies, or external bodies, including international ones, according to the methods established by the CCS. The completion of a final exam includes the writing of an original paper in English by the student and under the guidance of a supervisor in which the results of the scientific or technological research carried out are reported. The thesis discussion will take place in the presence of a commission appointed for this purpose and may include the use of audio-visual aids. To be admitted to the final test, the student must have obtained all the training credits required by the course's teaching regulations, excluding those reserved for the final test.

The judging commission for the final test, established in accordance with the provisions of paragraph 7 of the art. 29 of the RDA, once the pass has been verified, establishes the degree mark, expressed in one hundred and tenths, considering the curriculum, the thesis and the presentation.

The judging commission for the final test, established in accordance with the provisions of paragraph 7 of the art. 29 of the RDA, once the pass has been verified, establishes the degree mark, expressed in one hundred and tenths, considering the curriculum, of the thesis and presentation. The Commission, in the case of reaching a mark of 110/110, can assign honours with a unanimous decision.

Article 17
Guidelines for traineeship and internship

1. Students enrolled in the Degree Program may decide to carry out internships or training periods with organisations or companies that have an agreement with the University. Traineeship and internship are not compulsory and contribute to the award of credits for the other training activities chosen by the student and included in the study plan, as provided for by Art. 10, par. 5, letters d and e, of Ministerial Decree 270/2004[20].
2. The modalities and characteristics of traineeship and internship are regulated by the CCD with a specific regulation.
3. The University of Naples Federico II, through the internship office (https://www.unina.it/-/769094-ufficio-tirocini-studenti), ensures constant contact with the world of work, in order to offer students and graduates of the University concrete opportunities for internships and work experience and to promote their professional integration.

Article 18
Disqualification of student status[21]

A student who has not taken any examinations for eight consecutive academic years incurs forfeiture unless his/her contract stipulates otherwise. In any case, forfeiture shall be notified to the student by certified e-mail or other suitable means attesting to its receipt.

[20] Traineeships ex letter d can be both internal and external; traineeships ex letter e can only be external.

[21] Art. 24, c. 5 of the University Didactic Regulations.

Article 19
Teaching tasks, including supplementary teaching, guidance, and tutoring activities

1. Professors and researchers carry out the teaching load assigned to them in accordance with the provisions of the RDA and the Regulations on the teaching and student service duties of professors and researchers and on the procedures for self-certification and verification of actual performance[22].
2. Professors and researchers must guarantee at least two hours of reception every 15 days (or by appointment in any case granted no longer than 15 days) and in any case guarantee availability by e-mail.
3. The tutoring service has the task of orienting and assisting students throughout their studies and of removing the obstacles that prevent them from adequately benefiting from attending courses, also through initiatives tailored to the needs and aptitudes of individuals.
4. The University ensures guidance, tutoring and assistance services and activities to welcome and support students. These activities are organised by the Schools and/or Departments under the coordination of the University, as established by the RDA in Article 8.

Article 20
Evaluation of the quality of the activities performed

1. The Didactic Coordination Commission implements all the forms of quality assessment of teaching activities envisaged by the regulations in force according to the indications provided by the University Quality Presidium.
2. To guarantee the quality of teaching to the students and to identify the needs of the students and all stakeholders, the University of Naples Federico II uses the Quality Assurance (QA)[23] System, developed in accordance with the document "Self-evaluation, Evaluation and Accreditation of the Italian University System" of ANVUR, using:
   - surveys on the degree of placement of graduates into the world of work and on post-graduate needs;
   - data extracted from the administration of the questionnaire to assess student satisfaction for each course in the curriculum, with questions relating to the way the course is conducted, teaching materials, teaching aids, organisation, facilities.

   The requirements deriving from the analysis of student satisfaction data, discussed, and analysed by the Teaching Coordination Committee and the Joint Teachers' and Students' Committee (CPDS), are included among the input data in the service design process and/or among the quality objectives.
3. The QA System developed by the University implements a process of continuous improvement of the objectives and of the appropriate tools to achieve them, ensuring that planning, monitoring, and self-assessment processes are activated in all the structures to allow the prompt detection of problems, their adequate investigation, and the design of possible solutions.

[22] R.D No. 2482//2020.

[23] The Quality Assurance System, based on a process approach and adequately documented, is designed in such a way as to identify the needs of the students and all stakeholders, and then translate them into requirements that the training offer must meet.

Article 21
Final Rules

The Department Council, on the proposal of the CCD, submits any proposals to amend and/or supplement these Rules for consideration by the Academic Senate.

Article 22
Publicity and Entry into Force

1. These Rules and Regulations shall enter into force on the day following their publication on the University's official notice board; they shall also be published on the University website. The same forms and methods of publicity shall be used for subsequent amendments and additions.
2. Annex 1 (Degree course structure) and Annex 2 (Teaching/Activity course sheet) are an integral part of this Didactic Regulations.

ANNEX 1.2

DEGREE PROGRAM DIDACTICIC REGULATIONS

MARINE BIOLOGY AND AQUACULTURE

CLASS LM-6

School: Polytechnic of Basic Sciences

Department: Biology

Didactic Regulations in force since the academic year 2025/26

STUDY PLAN

KEY

TYPE OF EDUCATIONAL ACTIVITY (TAF):

A = BASIC
B = CHARACTERISING
C = RELATED OR SUPPLEMENTARY
D = AT THE STUDENT'S CHOICE
E = FINAL EXAMINATION AND LANGUAGE KNOWLEDGE
F = FURTHER TRAINING ACTIVITIES

1st YEAR

The course is divided into two curricula called Marine Biology and Marine Resource Management respectively as shown in the diagram below. The First Year First Semester is common to the 2 Curricula.

1st Year 1st semester (common to both curricula Marine Biology and Aquaculture and Marine Resource Management)

Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities** *(lectures, workshops, etc.)*	**Course Modalities** ***(in-person, by distance)***	**TAF**	**Disciplinary area**	**Mandatory /Optional**
Physical and Chemical oceanography	GEO/12	Single	6	48	Frontal lesson	In-person	C	Related or supplementary Activity	Mandatory
Biodiversity and monitoring of the marine environment	BIO/05	Marine Animal Biodiversity	6	48	Frontal lesson	In-person	B	Biodiversity and Environment	Mandatory
	BIO/01	Marine Vegetal Biodiversity	6	48	Frontal lesson	In-person	B		
Marine Microbial Biodiversity	BIO/19	Single	6	48	Frontal lesson	In-person	B	Biomolecular	Mandatory
Algal Biology	BIO/01	Single	6	48	Frontal lesson	In-person	B	Biodiversity and Environment	Mandatory
At the student's choice activity		Single	6	48	Frontal lesson	In-person	D	At the student's choice	Mandatory

1st YEAR II SEMESTER									
Curriculum Aquaculture and Marine Resource Management									
Fishery ecology	BIO/07	Single	6	48	Frontal lesson	In-person	B	Biodiversity and Environment	Mandatory
Physiology of nutrition and functional anatomy of fish	BIO/06	Functional Anatomy of Fish	6	48	Frontal lesson	In-person	B	Biodiversity and Environment	Mandatory
	BI0/09	Physiology of Animal Nutrition and Welfare	6	48	Frontal lesson	In-person	B	Biomedical	
Scientific Diving	BIO/05	Single	6	48	Frontal lesson and practice	In-person	B	Biodiversity and Environment	Mandatory
1st YEAR II SEMESTER									
Curriculum Marine Biology									
Developmental Biology and Physiology of Marine Organisms	BIO/06	Developmental Biology of Marine Organisms	6	48	Frontal lesson	In-person	B	Biodiversity and Environment	Mandatory
	BIO/09	Physiology of marine organisms	6	48	Frontal lesson	In-person	B	Biomedical	
Scientific Diving	BIO/05	Single	6	48	Frontal lesson and practice	In-person	B	Biodiversity and Environment	Mandatory
At the student's choice activity		Single	6	48	Frontal lesson	In-person	D	At the student's choice	Mandatory

2nd YEAR									
Curriculum Aquaculture and Marine Resource Management									
Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities** *(frontal lesson, labs, etc.)*	**Course Modalities** ***(in-person, by distance)***	**TAF**	**Disciplinary Area**	**Mandatory /Optional**
Pathology in aquaculture	VET/03	Diagnosis of mollusc and crustacean diseases	6	48	Frontal lesson	In-person	C	Related or supplementary Activity	Mandatory
	VET/03	Pathology of Teleosts	6	48	Frontal lesson	In-person	C	Related or supplementary Activity	
Aquatic production hygiene	MED/42	Single	6	48	Frontal lesson	In-person	B	Biomedical	Mandatory
At the student's choice activity		Single	6	48	Frontal lesson	In-person	D	At the student's choice	Mandatory
Further knowledge useful for job placement/Further language knowledge*		Single	6			In-person/by-distance	F	Further training activities	Mandatory

Thesis Activity			30	750		In-person	E	Final examination	Mandatory

* for foreign students: 3 CFU for Italian language acquisition and 3 CFU for knowledge useful for job placement

2nd YEAR									
Curriculum Marine Biology									
Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities *(frontal lesson, labs, etc.)***	**Course Modalities *(in-person, by distance)***	**TAF**	**Disciplinary Area**	**Mandatory /Optional**
Marine Genomics	BIO/11	Single	6	48	Frontal lesson	In-person	C	Related or supplementary Activity	Mandatory
Biochemical adaptations to the marine environment	BIO/10	Single	6	48	Frontal lesson	In-person	B	Biomolecular	Mandatory
Eco-Pathology of Marine Animals	VET/03	Single	6	48	Frontal lesson	In-person	C	Related or supplementary Activity	Mandatory
Marine Ecology	BIO/07	Single	6	48	Frontal lesson	In-person	B	Biodiversity and Environment	Mandatory
Further knowledge useful for job placement/Further language knowledge*		Single	6	150		In-person/by-distance	F	Further training activities	Mandatory
Thesis Activity			30	750		In-person	E	Final test	Mandatory

* for foreign students: 3 CFU for Italian language acquisition and 3 CFU for knowledge useful for job placement

At the student's choice courses						
Title Course	**SSD**	**Module**	**Credits**	**Hours**	**Type Activities *(lectures, workshops, etc.)***	**Course Modalities *(in-person, by distance)***
Evolutionary and conservation genetics	BIO/18	single	6	48	Frontal lesson	In person
Marine geology	GEO/03	single	6	48	Frontal lesson	In person
Management of marine resources	BIO/07	single	6	48	Frontal lesson	In person
Rearing techniques of aquatic species	AGR/20	single	6	48	Frontal lesson	In person

ANNEX 2.1

DEGREE PROGRAM DIDACTIC REGULATIONS

MARINE BIOLOGY AND AQUACULTURE

CLASS LM-6

School: Polytechnic and Basic Sciences

Department: Biology

Didactic Regulations in force since the academic year 2025/26

Common to both curricula (Marine Biology and Aquaculture and Marine Resource Management)

Course: **Physical and Chemical oceanography**	**Teaching Language:** English
SSD (Subject Areas): GEO/12	**CREDITS:** 6
Course year: first	**Type of Educational Activity: C –** related or supplementary
Teaching Methods: In-person	
Contents extracted from the SSD declaratory consistent with the training objectives of the course: The GEO/12 sector deals with geophysical applications in many fields of Earth Sciences, the environment and cultural heritage. Furthermore, Fluid Earth Geophysics studies the physical processes that characterize the dynamics of terrestrial fluids and, more generally, climate sciences, with the specific focus and purposes of Earth Sciences and their environmental applications. In particular it deals with the structure and evolution of the atmosphere and hydrosphere; of the circulation of fluids, including the transport of pollutants, in all compartments of the fluid Earth and of their interactions, through exchanges of both mass and energy.	
Objectives: The course aims to provide students with specialist knowledge on the main physical, chemical and biological processes that regulate ocean dynamics, as detailed in the program.	
Propaedeuticities: None **Is a propaedeuticity for:** None	
Types of examinations and other tests: Oral examination	

Course: **Biodiversity and monitoring of the marine environment**	**Teaching Language:** English
SSD (Subject Areas): BIO/01 BIO/05	**CREDITS:** 6 6
Course year: first	**Type of Educational Activity: B –** characterising
Teaching Methods: In-person	
Contents extracted from the SSD declaratory consistent with the training objectives of the course: The BIO/01 sector studies plant biology at all levels of organization, including autotrophic prokaryotes, algae and fungi, as well as their symbioses. General Botany investigates, theoretically and experimentally, the aspects of the structural and functional organization and their evolution of these organisms, to establish their relationships and interpret, from an evolutionary perspective, their structures and functions, as well as the reproductive mechanisms, the articulation of the processes which lead to the formation of complex organisms and the optimization of the reproductive process.	

The BIO/05 sector deals with the study of metazoans and their evolution at population, species and community levels. Research, conducted through theoretical and experimental methodologies in the field, investigates behaviour, intra- and interspecific interactions and with the environment, biogeography, systematics and phylogeny.

Objectives: Acquisition of theoretical and applicative tools for the characterization of marine photoautotrophic eukaryotic biodiversity at a structural and functional level in an evolutionary context. Acquisition of knowledge on the reproduction of marine phototrophic organisms and their potential for evolutionary divergence.
Acquisition of theoretical and applicative tools for the study of the structure and function of marine animal biodiversity at population and community levels. Knowledge of the theoretical and applicative tools of biomonitoring methods through the identification of specific bioindicators.

Propaedeuticities:
None
Is a propaedeuticity for:
None

Types of examinations and other tests:
Oral examination

Course: Marine Microbial Biodiversity	**Teaching Language:** English
SSD (Subject Areas): BIO/19	**CREDITS:** 6
Course year: first	**Type of Educational Activity: B –** characterising

Teaching Methods:
In-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course: interactions of all microorganisms, including viruses, as simple models for studying and understanding biological processes in the marine environment. Distribution of microorganisms in nature and the role they play in the environment.

Objectives: The student must be able to independently evaluate the main microbial processes necessary for the functioning of a given marine ecosystem and to evaluate and select the most suitable investigative tools for the analysis of the microbial community. The student must demonstrate the ability to explain basic concepts of marine microbiology to non-technical personnel engaged in work or recreational activities in the marine environment, highlighting the role of the microbial compartment in the functioning of the marine ecosystem.

Propaedeuticities:
None
Is a propaedeuticity for:
None

Types of examinations and other tests:
Written and Oral examination

Course: Algal Biology	**Teaching Language:** English
SSD (Subject Areas): BIO/01	**CREDITS:** 6
Course year: Firts	**Type of Educational Activity: B –** characterising

Teaching Methods:
In-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:
Algal biology involves the study of all organization levels of the algae, including autotrophic prokaryotes and their symbioses. The structural and functional organization and their evolution of algae are studied in detail. The course aims to establish evolutionary and ecological relationships and interpret, from an evolutionary perspective, morphological structure and function, as well as reproductive mechanisms. It delves into the ways in which algae cells acquire the ability to carry out specialized functions and the processes that lead to the formation of multicellular organisms and the optimization of the reproductive process. The course particularly highlights the relationships between cytological, ultrastructural, anatomical, morphological, organographic, and physiological perspectives of the

algae, framing them in the characteristics of the development environment, with regard to morphogenesis. The course also investigates the development and application of functional methods and related biotechnological applications.
Objectives: The course aims to provide students with a basic and specialized formation in algae biology. Specifically, this course covers the following topics: Identification of main groups of algae. The evolution of the main algal divisions. Understanding the importance of, and the factors that influence, algal reproduction. Understanding the factors that can influence the distribution of different groups of algae. Methods for understanding the biogeography of algae and their conservation.
Propaedeuticities: None **Is a propaedeuticity for:** None
Types of examinations and other tests: Oral examination

Curriculum Aquaculture and Marine Resource Management

Course: Fishery ecology	**Teaching Language:** English	
SSD (Subject Areas): BIO/07		**CREDITS:** 6
Course year: first	**Type of Educational Activity: B –** characterising	
Teaching Methods: In-person		
Contents extracted from the SSD declaratory consistent with the training objectives of the course: Fisheries ecology and use of marine biological resources; control of exotic species, strategies for maintaining marine biodiversity and sustainability; methodological aspects of fishing systems, conservation and management of marine ecosystems; environmental monitoring and information systems.		
Objectives: The course delves into both the theoretical and applied aspects of fisheries ecology. The main topics of the course will include the production processes of the marine environment, individual ecology (nutrition, growth and reproduction), population ecology, community ecology (predation and competition), tools and techniques of fishing. The course will facilitate the understanding of the general ecological, social and economic aspects governing fisheries ecology and their interaction in an overall ecological context, through the application of case studies and incorporating methods and data sources. Lectures and practical activities will facilitate understanding of the complex nature of the processes that influence and control marine biodiversity in fishing areas; they will also allow students to become familiar with multiple definitions typical of the world of fishing and to learn about both the main tools and the most common fishing techniques. Students will learn how to collect data to value stocks and how different valuation methods work.		
Propaedeuticities: None **Is a propaedeuticity for:** None		
Types of examinations and other tests: Oral examination		

Course: Physiology of nutrition and functional anatomy of fish	**Teaching Language:** English	
SSD (Subject Areas): BIO/06 BIO/09		**CREDITS:** 6 6
Course year: first	**Type of Educational Activity: B –** characterising	
Teaching Methods: In-person		
Contents extracted from the SSD declaratory consistent with the training objectives of the course: The BIO/06 sector addresses the problem of form in animal biology, at its various levels of organization, in the dual morpho-functional and embryological-evolutionary perspective. From a structural point of view, the correlations between the molecular, cellular, tissue and organological levels are explored in depth, with the use of advanced techniques (microscopic,		

cytochemical, immunohistochemical, karyological, cytotoxicological), and the possible application aspects of biotechnology and the modifications determined by environmental alterations. Disciplines characterizing the sector are comparative anatomy, cell biology, animal cytology and histology, developmental biology, evolutionary biology of vertebrates.
Physiology (BIO/09) evaluates the nutritional characteristics of foods, the state of nutrition, energy expenditure and need, the physiological use of nutrients in the diet.

Objectives: The course aims to provide students with anatomical and functional knowledge of teleosts, with theoretical, methodological and practical aspects necessary for understanding the mechanisms underlying their adaptation and evolution. The course also aims to provide students with knowledge relating to the processes of digestion, absorption and metabolic fate of nutrients as well as the evaluation of body composition in relation to physiological and pathological states in aquatic organisms.

Propaedeuticities:
None
Is a propaedeuticity for:
None

Types of examinations and other tests:
Oral examination

Course: Scientific Diving	**Teaching Language:** English
SSD (Subject Areas): BIO/05	**CREDITS:** 6
Course year: first	**Type of Educational Activity: B –** characterising

Teaching Methods:
In-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:
Study of metazoans and their evolution at species and community levels. Research, conducted through theoretical and experimental methodologies, in the field relating to intra- and interspecific interactions and with the environment, biogeography, systematics and phylogeny.

Objectives:
Basic knowledge, theoretical and practical, for the study of marine biodiversity during diving. Acquisition of methodologies and techniques for the characterization of benthic, pelagic and planktonic species for the purposes of analyzing zoological populations and their dynamics and interactions.

Propaedeuticities:
None
Is a propaedeuticity for:
None

Types of examinations and other tests:
Written and oral examination

Course: Pathology in aquaculture	**Teaching Language:** English
SSD (Subject Areas): VET/03 VET/03	**CREDITS:** 6 6
Course year: second	**Type of Educational Activity: C –** related or supplementary

Teaching Methods:
In-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:
The sector includes the disciplines and research topics inherent to the etiopathogenesis of diseases, the macroscopic and microscopic pictures of system pathologies and individual nosological entities, also included in the sector of oncology, ichthyopathology, environmental pathology, and the related diagnostic technologies to autopsies of aquatic animals.

Objectives:
The course aims to provide basic knowledge about the diagnostic techniques used in the study of diseases of the most common aquatic species in aquaculture: Teleosts, Molluscs (gastropods and bivalves) and Decapod Crustaceans

The student must demonstrate that he understands and knows at a basic level the issues relating to the general pathogenetic mechanisms of diseases of teleosts, molluscs and crustaceans in aquaculture. Furthermore, he or she must be able to understand the intimate relationships between human, animal and environmental health from a "One Health" perspective
Propaedeuticities: None **Is a propaedeuticity for:** None
Types of examinations and other tests: Oral examination

Course: Aquatic production hygiene	**Teaching Language:** English
SSD (Subject Areas): MED/42	**CREDITS:** 6
Course year: second	**Type of Educational Activity: B –** characterising
Teaching Methods: In-person	
Contents extracted from the SSD declaratory consistent with the training objectives of the course: The sector has specific expertise in the field of hygiene applied to the environment, workplaces, preventive, rehabilitative and social medicine, epidemiology, public health, planning, organization and management of health services and health education.	
Objectives: The course provides knowledge regarding the objectives and purposes of hygiene and hygiene applied to aquatic production, the methods for collecting data in the hygiene sector and for measuring the state of health in the population with hints of public health, the main epidemiological study models and their practical application, the main measures to evaluate the risk to human health and the related primary, secondary and tertiary prevention in the context of aquatic productions, the main pathologies linked to the consumption of foods from aquatic productions.	
Propaedeuticities: None **Is a propaedeuticity for:** None	
Types of examinations and other tests: Oral examination	

Curriculum Marine Biology

Course: Developmental Biology and Physiology of Marine Organisms	**Teaching Language:** English
SSD (Subject Areas): BIO/06 BIO/09	**CREDITS:** 6 6
Course year: first	**Type of Educational Activity: B –** characterising
Teaching Methods: In-person	
Contents extracted from the SSD declaratory consistent with the training objectives of the course: The BIO/06 sector addresses the problem of form in animal biology, at its various levels of organization, in the dual morpho-functional and embryological-evolutionary perspective. From an embryological-evolutionary point of view, the relationships between phylogeny and morphogenesis are studied, with a comparative approach, in order to highlight the interconnection between structure, function and adaptation, in various processes such as reproduction, development, endocrine integration and neural, immune defence. Characterizing disciplines of the sector are developmental biology and evolutionary biology of vertebrates, comparative anatomy, cell biology, animal cytology and histology. Physiology (BIO/09) analyses how the living organism obtains and maintains the homeostasis of its internal medium at the molecular, cellular and tissue level, in the context of changes in the surrounding environment.	

Objectives:
Provide knowledge on reproductive strategies and intra- and inter-genus competition; on the anatomy of the reproductive systems and comparative embryology of the main animal phyla. Furthermore, describe the reproductive adaptations of aquatic vertebrates, relating them to the physiological and behavioural mechanisms underlying the adaptation of animal organisms to the marine environment.

Propaedeuticities:
None
Is a propaedeuticity for:
None

Types of examinations and other tests:
Written and oral examination

Course: Scientific Diving	**Teaching Language:** English
SSD (Subject Areas): BIO/05	**CREDITS:** 6
Course year: first	**Type of Educational Activity: B –** characterising

Teaching Methods:
In-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:
Study of metazoans and their evolution at species and community levels. Research, conducted through theoretical and experimental methodologies, in the field relating to intra- and interspecific interactions and with the environment, biogeography, systematics and phylogeny.

Objectives:
Basic knowledge, theoretical and practical, for the study of marine biodiversity during diving. Acquisition of methodologies and techniques for the characterization of benthic, pelagic and planktonic species for the purposes of analyzing zoological populations and their dynamics and interactions.

Propaedeuticities:
None
Is a propaedeuticity for:
None

Types of examinations and other tests:
Written and oral examination

Course: Marine genomics	**Teaching Language:** English
SSD (Subject Areas): BIO/11	**CREDITS:** 6
Course year: second	**Type of Educational Activity: C –** related or supplementary

Teaching Methods:
In-person

Contents extracted from the SSD declaratory consistent with the training objectives of the course:
Molecular biology studies the biological functions at the molecular level of informational macromolecules. This field is interested in analysing the biochemical and evolutionary characteristics of nucleic acids, interactions between nucleic acids and proteins, protein-protein interactions, and the relationships between the three-dimensional structure of proteins and nucleic acids and their biological functions across all eukaryotes. Special attention is given to macromolecules involved in preserving, transcribing, and translating the information contained in nucleic acids, as well as those responsible for controlling gene expression phenomena.

Objectives:
The course aims to provide students with advanced knowledge concerning the function of genomic sequences in various marine organisms to understand biological diversity and molecular evolution. Additionally, course objectives will focus on understanding transcriptional and epigenetic mechanisms, as well as gaining insight into cutting-edge methodological analyses used in genomics and transcriptomics.

Propaedeuticities:
None
Is a propaedeuticity for:
None

Types of examinations and other tests:
Oral examination

Course: Biochemical adaptation to the marine environment	**Teaching Language:** English
SSD (Subject Areas): BIO/10	**CREDITS:** 6
Course year: second	**Type of Educational Activity: B –** characterising
Teaching Methods: In-person	
Contents extracted from the SSD declaratory consistent with the training objectives of the course: Biochemical mechanisms and biomarkers in aquatic organisms exposed to stressors; methods and technologies for the identification of pollutant molecules; biochemical mechanisms of adaptation to extreme marine environments; acquisition of theoretical and application tools for the identification of suitable bioremediation systems.	
Objectives: Acquisition of the theoretical and applicative tools for the biochemical study of adaptations to the marine environment and for the identification of suitable bioremediation systems.	
Propaedeuticities: None **Is a propaedeuticity for:** None	
Types of examinations and other tests: Written examination Oral examination	

Course: Eco-Pathology of Marine Animals	**Teaching Language:** English
SSD (Subject Areas): VET/03	**CREDITS:** 6
Course year: Second	**Type of Educational Activity: C –** related or supplementary
Teaching Methods: In-person	
Contents extracted from the SSD declaratory consistent with the training objectives of the course: The sector includes the disciplines and research topics intrinsic of the etiopathogenesis of diseases, the macroscopic and microscopic characteristic of system pathologies and individual nosological entities, also included in the sector of environmental pathology and diagnostic technologies related to aquatic animals.	
Objectives: The course aims to provide the basis of marine animal pathology, and to address the topic of diseases of different taxonomic groups in the context of global environmental changes. The student must acquire the basic knowledge of pathology necessary to understand the dynamics of aquatic animal diseases in a given marine ecosystem. The student must demonstrate the ability to explain basic concepts of pathology and pathology of marine animals to non-technical personnel engaged in work or recreational activities in the marine environment, highlighting the role of diseases in the marine ecosystem.	
Propaedeuticities: None **Is a propaedeuticity for:** None	
Types of examinations and other tests: Oral examination	

Course: Marine Ecology	**Teaching Language:** English
SSD (Subject Areas): BIO/07	**CREDITS:** 6
Course year: second	**Type of Educational Activity: B –** characterising
Teaching Methods: In-person	

Contents extracted from the SSD declaratory consistent with the training objectives of the course: The sector studies the marine environment, biodiversity, strategies for maintaining biodiversity and the sustainability of the biosphere, the biology of plankton, nekton and benthos, environmental gradients and community structure, ecological interactions and food webs, production cycles in different marine contexts, biodiversity and spatial and temporal scales, natural and anthropic disturbances, the European Marine Strategy and experimental design. The conservation and management of ecosystems, the ecological aspects of environmental recovery, the modeling and representation of ecological data
Objectives: The course aims to provide students with the logical and methodological tools to understand the distribution methods of biodiversity in the coastal marine environment and the processes responsible for the observed patterns. These tools, supported by specific exercises for data collection and analysis, will allow students to acquire the fundamental concepts of marine ecology and biology to understand the natural variability of the systems treated and the causes that can determine substantial changes.
Propaedeuticities: None **Is a propaedeuticity for:** None
Types of examinations and other tests: Oral examination

Teachings at the student's choice

Course: Evolutionary and conservation genetics		**Teaching Language:** english
SSD (Subject Areas): BIO/18		**CREDITS:** 6
Course year: first/second	**Type of Educational Activity: D –** at student's choice	
Teaching Methods: In-person		
Contents extracted from the SSD declaratory consistent with the training objectives of the course: The sector studies the transmission, modification, and expression of hereditary characteristics at the level of prokaryotic and eukaryotic cells, individuals, and populations. It defines and analyses the structure of genetic material and its levels of organization in microbial, plant, and animal systems, including humans. It analyses the structure and evolution of genes and genomes. It studies the regulation of gene expression and mechanisms of mutagenesis. It investigates the genetic and molecular bases of evolution, development, immune response, behaviour, and hereditary diseases.		
Objectives: The course aims to provide the student with knowledge of molecular genetics for understanding evolution of life and its biodiversity for population management and species preservation. The teaching aims to provide the student with the tools to investigate biological problems and genetic biodiversity using the correct theoretical and methodological approach in the experimental phase. The student must demonstrate that he is able to apply the knowledge acquired in the field of protection of species at risk of extinction (for example, analysis of reduction of genetic diversity) and management of marine resources, as well as monitoring the effects of activities anthropic.		
Propaedeuticities: Genetic **Is a propaedeuticity for:** None		
Types of examinations and other tests: Oral examination		

Course: Marine geology		**Teaching Language:** Italian
SSD (Subject Areas): GEO/03		**CREDITS:** 6
Course year: first/second	**Type of Educational Activity: D –** at student's choice	

Teaching Methods: In-person
Contents extracted from the SSD declaratory consistent with the training objectives of the course: The sector deals with the study of the processes of the internal dynamics of the Earth and the planets, of the modifications induced in superficial and deep geological units. To this end, it takes care of the creation of basic and thematic geological maps at different scales and makes use of the interpretation of seismic lines and geophysical data in general, numerical and analogue models, IT methodologies and remote sensing and photointerpretation techniques. Participates in geological applications in the environmental and impact assessment fields, in the mitigation of natural risks (seismic risk), in the procurement of geo-resources.
Objectives: The course offers a historical framework of marine geology in the context of the plate tectonics revolution and aims to: - provide basic knowledge regarding the genesis and geological structure of the seabed, ocean basins and their relationships and control with respect to ocean circulation and architecture of the main depositional environments. - offer basic concepts for understanding and their interpretation of the main geophysical techniques for mapping the ocean floor (sonar) and imaging the seabed (boomer, seismic reflection chirps) as well as core sampling of the ocean floor. - introduce the reconstruction of past and current marine depositional environments as a function of climate control - introduce site surveying methods in the marine environment through a practical exercise.
Propaedeuticities: None **Is a propaedeuticity for:** None
Types of examinations and other tests: Oral examination

Course: Management of marine resources	**Teaching Language:** Italian	
SSD (Subject Areas): BIO/07		**CREDITS:** 6
Course year: first/second	**Type of Educational Activity: D –** at student's choice	
Teaching Methods: In-person		
Contents extracted from the SSD declaratory consistent with the training objectives of the course: The sector deals with the conservation and management of ecosystems, use of biological resources, control of exotic species, strategies for maintaining biodiversity and the sustainability of the biosphere, environmental impact assessment, ecological aspects of environmental rehabilitation and recovery.		
Objectives: Acquisition of essential knowledge for the management of marine resources.		
Propaedeuticities: None **Is a propaedeuticity for:** None		
Types of examinations and other tests: Oral examination		

Course: Rearing techniques of aquatic species	**Teaching Language:** Italian	
SSD (Subject Areas): AGR/20		**CREDITS:** 6
Course year: first/second	**Type of Educational Activity: D –** at student's choice	
Teaching Methods: In-person		
Contents extracted from the SSD declaratory consistent with the training objectives of the course:		

The sector brings together research topics relating to avian, rabbit and aquatic species, characterized by the brevity of the biological cycle and industrialization of the production, transformation and marketing processes of the products, and develops breeding systems and techniques which produce qualitatively and quantitatively elevated. The training skills concern zootechnical physio-climatology, aquaculture, breeding of avifauna, laboratory and fur animals, aviculture and rabbit farming.
Objectives: The course aims to provide the student with knowledge of the breeding techniques of the main fish and shellfish species farmed in Italy and of new emerging species for aquaculture, as well as of their nutrition and feeding needs, technologies of the most widespread farming systems. The breeding techniques of the most common bivalve molluscs in Italy will also be covered.
Propaedeuticities: None **Is a propaedeuticity for:** None
Types of examinations and other tests: Oral examination

ANNEX 2.2

DEGREE PROGRAM DIDACTIC REGULATIONS

MARINE BIOLOGY AND AQUACULTURE

CLASS LM-6

School: Polytechnic of Basic Sciences

Department: Biology

Didactic Regulations in force since the academic year 2025/26

Training activity: under Art. 10, c. 5, letter d	**Activity language:** English/Italian
Activity: For Italian students: other knowledge useful for job placement; IT and telematics skills; training and orientation periods) that contribute to the achievement of the CdS objectives. for foreign students: acquisition of Italian language knowledge.	**CREDITS:** 6
Anno di corso: Second year	**Further training activities: F** – further training activities
Teaching Methods: In person/by-distance	
Objectives: The further training activities are aimed at acquiring further knowledge useful for entering the world of work and aimed at facilitating professional choices.	
Propaedeuticities: None **Is a propaedeuticity for:** None	
Tipologia delle prove di verifica del profitto: aptitude	