ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA | AREA
FORMAZIONE E DOTTORATO

PROFESSIONAL MASTER'S PROGRAMME DATA SHEET

Title	Battery Ecodesign
BIC/SWIFT	6219
Level	2nd level
Director	Prof. Francesca Soavi
Disciplinary area	Science and Technology
Professional Master's Programme description: **outcomes/targets**	Pursuant to Decree no. 270 of 22 October 2004 of the Ministry of Education, University and Research, for academic year 2025/2026, Alma Mater Studiorum – Università di Bologna, Administrative office of Bologna, will run a 2nd-level Professional Master's Programme in "Battery Ecodesign". The Professional Master's Programme has been set up on the proposal of the Department of Chemistry "Giacomo Ciamician". The Professional Master's Programme aims to address the challenge outlined by the European Community in the EU Strategic Action Plan on Batteries, namely the construction of a competitive, sustainable, and innovative battery ecosystem through the development of highly specialized skills in the sector. It seeks to train new professional profiles with interdisciplinary and multidisciplinary knowledge, ranging from expertise in materials and processes for battery production—particularly lithium batteries—to the assessment of the sustainability of production processes and end-of-life management, diagnostic techniques for evaluating system operation, as well as eco-design concepts (specifically from a 'safe and sustainable by design' perspective) and 'design for recycling. The Master's program thus differentiates itself from other courses at the University, both in terms of objectives and curriculum, as it prepares professionals capable of overseeing the process of battery design, development, production, and end-of-life management, as well as conducting research and development with a focus on innovation, automation, sustainability, and digitalization.
Qualifications required for admission	Second cycle/single cycle degree programme classes or equivalent titles in: LM 17 – Physics; LM 22 - Chemical Engineering; LM 25 - Automation Engineering; LM 28 - Electrical Engineering; LM 30 - Energy and Nuclear Engineering; LM 31 - Management Engineering; LM 33 - Mechanical Engineering; LM 35 - Environmental and Land Engineering; LM 53 - Materials Science and Engineering; LM 54 - Chemical Sciences; LM 71 - Industrial Chemistry Science and Technology; LM 74 - Geological Science and Technology; LM 75 - Environmental and Land Science and Technology.

	Other Chemistry and Engineering-related Degrees may also be accepted, subject to approval by the Scientific Committee.
Other admission requirements (registration with a professional register, specialisation school, other qualifications, English proficiency, work experience, etc.)	Knowledge of the English language (B2 level), which will be assessed through an individual interview during the selection process
Course structure diagram	Each course is divided into different modules, taught by various academic and/or external teachers. Only the name of the professor responsible for the course is listed. The teachers for the individual modules are available on the course website. 1.Electrochemisty & Batteries (7 CFU, CHEM-02/A, CHEM-03/A, CHEM-06/A; Prof. Francesca Soavi): M1.1. Electrochemistry: basic concepts and battery fundamentals M1.2. Lithium Batteries M1.3. Next Generation Batteries M1.4. Battery Manufacturing 2.Electrochemical and Advanced Analytical Techniques (4 CFU, CHEM-01/A, CHEM-03/A; Prof. Marco Giorgetti): M2.1. Electrochemical Techniques M2.2. Advanced Analytical Techniques 3. Materials Science (6 CFU, CHEM-03/A, CHEM-04/A, CHEM-05/A; Prof.ssa Chiara Samorì): M3.1. Chemistry of transition metal compounds M3.2. Polymer Chemistry M3.3. Green Chemistry 4. Energy scenarios (2 CFU, IIND-08/A, PHYS-06/A; Prof. Claudio Rossi): M4.1. e-Mobility M4.2. Renewable Energy Storage 5. Production & Process Engineering (6 CFU, IIND-03/A, IIND-08/A, CHEM-01/A; Prof. Claudio Rossi): M5.1. Battery Pack and battery management systems M5.2. Chemical plants (recycling lines) M5.3. Automation for batteries

	6. LCA & ECODESIGN (5 CFU, CHEM-01/B, CHEM-02/A; Prof. Luca Ciacci): M6.1. Introduction to LCA M6.2. Battery LCA M6.3. Ecodesign 7. Digital Twin & Machine Learning (2 CFU, IINF-05/A; Prof. Paolo Bellavista) 8. Regulatory framework for batteries (3 CFU , CHEM-02/A, CHEM-03/A; Prof. Eliana Quartarone) OTHER ACTIVITIES Participation in workshops, excellence seminars, and events organized by the international scientific community and the R&I community, such as Battery 2030+, Batteries Europe, GISEL Network, EIT Raw Materials, and trade fairs like E-TECH Europe (Bologna). Internship/Project Work 500 hours equivalent to 20 CFU
Closing date for applications (to register for selection)	Closing date 19 settembre 2025
Selection method	Selection based on qualifications and interview The final score, out of 100, will be determined by the sum of the evaluation of qualifications and the interview and will be distributed as follows: • Up to 40 points for qualifications; • Up to 60 points for the interview The selection is considered passed by candidates who achieve a score of **50/100 or higher**. **Tie-breaking criteria:** In the case of a tie, the candidate with the higher interview score

	will be given priority. If the tie persists, the younger candidate will be given priority.
Selection date	2-3/10/2025
Ranking list publication date	20/10/2025 The ranking lists may be viewed on Studenti Online using your username and password
Enrolment period	Enrolment start date: 20/10/2025 Enrolment end date: 30/10/ 2025
Available places	Minimum number: 12 Maximum number: 30
Fees	Selection procedure participation fee: € 60,00 (non-refundable fee for administrative services, Art. 1 of the Call for Applications) Total fee € 4000 (four thousand Euro): first instalment € 2500 (two thousand five hundred Euro) (to be paid by the enrolment end date); second instalment € 1500 (one thousand five hundred Euro) (to be paid by the 30/01/2026)
Places in excess of the maximum number reserved for students with a certified legal disability of 66% or more or with a certification under Law 104/92	Professional Master's Programmes do not entitle to exemption from tuition fees (Legislative Decree 68/2012, Article 9, paragraph 8). However, as per the applicable Guidelines and in accordance with the Professional Master's Programme director, subject to passing the selection, the enrolment of one or two students with a certified legal disability of 66% or more or with a certification under Law 104/92 will be permitted in excess of the maximum number. Such student(s) will be exempted from paying tuition fees, net of any fixed costs and of the selection procedure participation fee. In order to apply for a reserved place, an express request to that effect must be submitted by the closing date for applications, in the form of a self-certificate accompanied by the legal disability certificate issued by INPS, to be attached to the application. The benefit will only be recognised to the student that submitted all the appropriate documentation and scored better than any other applicants requesting the same benefit.

	No. 1 place for students in excess of the maximum number is provided, subject to passing the selection. Such student will be exempted from paying tuition fees, net of any fixed costs and of the selection procedure participation fee.
Places reserved for professional staff and foreign language instructors of the University of Bologna (part-time Professional Master's Programmes only)	On part-time Professional Master's Programmes only, two places in excess of the maximum number are reserved for professional staff and foreign language instructors of the University of Bologna. Such students will be exempted from paying tuition fees, net of any fixed costs. Preferably before registering for selection, please complete the form available on the intranet page Measures for participation of professional staff and foreign language instructors in postgraduate programmes recognised by the University of Bologna. APOS will inform the applicants directly of the outcome of their request. For further information, please contact apos.master-ta@unibo.it
Reserved seats for the Almae Matris Alumni Association	There will be 1 excess place, with reduced fees (20% less than the registration fee) for Alumni (i.e. former students of the Alma Mater Studiorum) registered with the Almae Matris Alumni Association
Auditors (if applicable)	Not applicable
Administrative office	Bologna
Place of teaching	Centro Ricerche Ambiente Energia e Mare (Marina di Ravenna) - Dipartimento di Chimica "Giacomo Ciamician"
Language	English
Duration	One year
University educational credits (CFUs)	60
Mandatory attendance	80%
Teaching mode	The frontal lessons will take place on weekends, on Fridays and Saturdays, for a total of 175 hours. They will be delivered in a blended mode (both in-person and remote in synchronous mode). The 'in-person' mode will only be activated for the lessons for which at least 5 students confirm their attendance in the classroom. A minimum of 70% attendance in person is required for the in-person lessons. 30% of the lessons can be followed remotely (in

	synchronous mode), with prior communication to the course tutor
Internship or project work and final examination	32 hours (4 CFU) will be dedicated to workshops, excellence seminars, and events organized by the international scientific community and the R&I Community. 500 hours (20 CFU) for internships will be mainly dedicated to internships at companies in the sector, to be carried out starting from the second half of the Master's Course, in a mode to be agreed upon with the companies, during which students will be involved in corporate R&D activities. Alternatively, for potential professional/working participants, they may develop an interdisciplinary project (project work mode), possibly working in groups, on case studies proposed by the professors and/or companies, on topics related to the battery supply chain. Internship and project work activities will be part of the discussion during the final exam. The internship or project work period can be agreed upon and carried out beyond May 2026, but must be completed by October 2026. An in-progress test is scheduled to assess learning, as well as a final exam with the presentation and discussion of the Master's thesis.
Class start date and teaching calendar information	The frontal lessons, for a total of 175 hours, will be held on Fridays and Saturdays at the Centro Ricerche Ambiente Energia e Mare, Via Ciro Menotti 48, 48122 Marina di Ravenna (RA), from November 7, 2025, to May 23, 2026, with part-time attendance on Fridays and Saturdays, with breaks on the following dates: from December 5, 2025, to January 15, 2016, and from April 18, 2026, to May 7, 2026. https://master.unibo.it/master-battery-ecodesign (under construction)
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