UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2026/27
IN
COMPUTATIONAL SOCIAL AND POLITICAL SCIENCE (Classe LM-62 R/LM-88 R)
Immatricolati a.a. 2026/2027

HEADING

Degree classification - Denomination and code:	LM-62/88 R
Degree title:	Dottore Magistrale
Length of course:	2 years
Credits required for admission:	180
Total number of credits required to complete programme:	120
Course years currently available:	1st
Access procedures:	Cap on student numbers,student selection based on entrance test
Course code:	BBN

PERSONS/ROLES

Head of Study Programme

Prof. Flaminio Squazzoni

Tutors - Faculty

Prof. Luigi Curini (tutor for Academic guidance)
Prof. Andrea De Angelis (tutor for Labs and other activities)
Prof. Anne-Marie Jeannet (tutor for International mobility and erasmus)
Prof. Raffaele Vacca (Tutor for Student internships)

Referente del CdS:Prof. Flaminio Squazzoni

Email: flaminio.squazzoni@unimi.it

Segreteria Studenti

Via S. Sofia 9/1 - 20122 Milano (MI) https://www.unimi.it/it/studiare/servizi-gli-studenti/segreterie-informastudenti

CHARACTERISTICS OF DEGREE PROGRAMME

General and specific learning objectives

The Master's Degree Programme in Computational Social and Political Science (CSPS) equips students with the knowledge and competences needed to provide empirically-grounded and theoretically-informed explanations of political and social phenomena applying computational and quantitative methods of analysis to quantitative and qualitative data. Entirely taught in English, the program combines the hypothesis-driven deductive approach typical of the social sciences with the inductive approach of data science, enabling students to develop a robust conceptual, methodological, and practical repertoire for empirically grounded analysis of social and political phenomena. Graduates are able to conduct projects in social and political research, with observational or experimental research designs, with the aim of testing theoretically-grounded hypotheses, exploring aggregate phenomena and trends, and developing evidence-based proposals for political and social interventions. Students work with primary survey data, digital data (including social media data), and secondary data, including numerical and textual data, to be collected, managed and analyzed using statistical or computational models, large language models, machine learning, and statistical learning techniques. By integrating attention to theory, qualitative data and factors, and advanced computational techniques, students are stimulated to develop a mindset for causal inference and fine-grained detection of generative, causal mechanisms driving complex socio-political outcomes, including collective opinions, social dynamics, and political trends.

Throughout the Programme, students receive extensive, integrated, and cutting-edge training in analytic methods, statistics, and computational science. Students are equipped with solid methodological foundations by means of a compact training on different designs for social research and policy analysis and evaluation. The focus is on survey, experimental, and computational approaches, and will be supported by appropriate foundations in computer programming and data management, including related ethical and legal issues. Course topics include state-of-the-art techniques in multivariate analysis, machine learning, text-as-data, social network analysis and network science, causal inference, and agent-based

computer simulation models. Epistemological frameworks, disciplinary theories and qualitative insights and data from the field are incorporated as the context supporting an informed use of each modelling technique.

The courses include a substantial amount of practical training, as well as individual and group project activities, closely connected with real-world data and case studies. The teaching methods aim to foster the methodological posture of computational social and political scientists, enabling students to approach the analysis of political and social phenomena starting from the formulation of relevant, empirically testable hypotheses, linking phenomena to models, designing consistent procedures for data collection and evidence mapping, and evaluating the implications of results in terms of strategic political decisions, intervention and evaluation.

The Programme requires the attainment of 84 credits from compulsory exams, including 27 credits from courses on observational and experimental designs for computational political and social research, 6 credits in computer science methods for large language models, 6 credits on ethical and legal issues related to data and computational analyses, and 45 credits on computational and statistical models for survey, digital, network, and text data. In addition, students acquire 12 credits from other additional elective and optional activities, 9 credits from internships (6 for students who need to earn 3 ECTS for Italian language A2), and 15 credits for the final thesis are provided.

Expected learning outcomes

- Knowledge and comprehension skills

The Programme offers an integrated pathway that enables students to translate knowledge of social behavior and dynamics into skills of analysis and support to policy-making. Students will acquire the following knowledge and skills: understanding the theory and methodological and operational aspects of statistical analysis and probability; grasping the logic, strategies, and tools for the empirical testing of theoretical hypotheses and the evaluation of causal relationships; mastering the logic, methods, and tools of observational and experimental research in the fields of sociology and political science. The expected learning outcomes will be achieved through the integration of theoretical, methodological, and domain-specific subjects in the Programme courses, with a shared analytical and causal epistemological approach. A common structuring of teaching around three pillars (literature/evidence, design/methods, and analysis/communication) will allow for an integrated development of knowledge and comprehension throughout the entire educational process. Theoretical lectures, practical exercises, in-class practical activities, and individual and group work will enable students to refine their knowledge, particularly in terms of understanding, communication, and presentation. The expected learning outcomes will be assessed through a variety of evaluation methods, including oral examinations, written tests, and personal projects.

- Application of knowledge and comprehension skills

By the end of the Programme, CSPS graduates will be able to manage primary and secondary data with knowledge of the methodological, technical, technological, and ethical issues involved. In addition, they will be proficient in the methodological, technical, and contextual aspects of coding/scripting for the analysis of large-scale data. The acquisition of advanced knowledge in the use of diverse types of data, the ability to manage complex datasets, and the development of critical skills in applying quantitative and computational analyses will be oriented toward problem-solving. The adoption of innovative teaching methods across all courses, with a focus on the principles and tools of open science, the inclusion of laboratory activities, the development of policy briefs and pitches, and the use of simulation techniques, will enable students to apply their acquired knowledge to complex problems. The expected learning outcomes will be achieved through the integration of theoretical, methodological, and domain-specific teachings, all centered around a shared analytical-causal epistemological approach. Theoretical lectures, practical exercises, in-class practical activities, and individual and group work will help students develop the ability to apply their knowledge to diverse problems and contexts. The expected learning outcomes will be assessed through a variety of evaluation methods, including oral examinations, written tests, and personal projects.

- Informed judgment

CSPS graduates will also develop the ability to: (i) read and critically evaluate scientific articles and reports presenting quantitative and computational analysis of social and political phenomena; (ii) analyse problems (both theoretical and practical) and identify key points to develop solutions; (iii) analyse a policy problem with data, models and evidence-based insights; (iv) work in research teams and interdisciplinary contexts. The Programme fosters students' skills of critical thinking and independent judgment, both in the evaluation of the problems considered and in the elaboration of the results. Student will be asked to solve theoretical and practical problems, requiring skills related to key points detection, solutions modelling, choice of suitable tools and techniques for problem resolution, and the interpretation of results. Students will also participate in group projects and will be involved in interdisciplinary research activities to develop collaborative and professional attitudes.

- Communication skills

CSPS graduates will be able to: (i) present, discuss, and effectively communicate the results of their work (e.g., project outcomes, reports, document analyses) in both oral and written presentations and in international settings, supporting their

conclusions with evidence and analytical findings; (ii) work within multidisciplinary teams while adapting to different communication styles and tools. More specifically, graduates will develop skills in: (i) articulating problems and evidence-based solutions using appropriate terminology; (ii) clearly reporting data analysis and results to personnel and stakeholders, including generalist audiences who may not be familiar with the subject matter; (iii) utilizing new technologies in communication, information management, and education to report on their work. Communication skills are primarily developed through the presentation and discussion of case studies. The integration of quantitative methods and computational skills in political and social science courses enhances the students' ability to use empirical evidence to support their conclusions. Additionally, CSPS courses involve activities such as drafting reports, scientific papers, or policy briefs. These writing tasks, together with thesis preparation, are designed to help students develop and refine their communication skills. Active participation in team-based exercises, labs, and professional internships are additional opportunities to build relational and communication skills. Communication abilities are assessed in group projects and exams, contributing to final grades, particularly in courses where communication is a key educational objective. Thesis preparation and defense also contribute to the development and evaluation of communication skills.

- Learning Skills

CSPS graduates will acquire the ability to effectively consult scientific publications, databases, and other scientific online resources. The Programme enhances methodological skills essential for independently pursuing professional careers, including management roles in research and policy institutions as well as academic research in PhD programmes. Specifically, graduates will develop the capability to: (i) conduct bibliographic research and synthesise the state-of-the-art in the scientific literature around a given topic, question or problem; (ii) identify unresolved issues and open questions in empirical research and policy, and propose strategies to address them; (iii) continually update their skills and apply them in different professional contexts across various sectors; (iv) assess the effectiveness of learned approaches and apply them to new areas of interest. The interdisciplinary nature of the CSPS Programme further facilitates learning by encouraging students to integrate methodological approaches from various disciplines. A substantial number of courses in social sciences and computer science provide the methodological knowledge and formal analysis techniques necessary to develop a scientific, problem-solving approach. Additionally, students will engage in activities based on reading and critically evaluating technical-scientific reports and articles, thus assessing their knowledge in light of the latest scientific literature. These skills will be evaluated through open-ended questions in exams, small projects, and final course papers.

Professional profile and employment opportunities

The CSPS Programme trains the following professional profiles:

Profile: Computational Social Scientist

Functions: (1) design and implement data collection on social phenomena (both offline and online); (2) analyse these data (or supervise and coordinate their analysis); (3) interpret and synthesize the results of these analyses to describe complex social phenomena, map behavioral, attitudinal, or market trends, test theories about the causes of these phenomena and trends, and provide probabilistic forecasts; (4) present the results of these activities, along with the information and insights derived from them, in textual, graphical, or audiovisual formats for public or private stakeholders.
Skills: knowledge of theories and methods for quantitative research; ability to collect and critically review relevant scientific literature; proficiency in designing research and studies, including research on groups, communities, and populations, surveys, experiments, and computer simulations; data collection skills for various types of data (numerical and textual) from online and offline sources; expertise in statistical and computational analysis of data on complex social contexts using languages such as R and Python.
Outlets: companies or organizations in the private sector (e.g., social media, human resources, corporate consulting); market research agencies; local or national public administrations and government agencies; university research institutes, public or private research centers; organizations in the non-profit sector.

Profile: Computational Analyst for Public Policy

Functions: design and implement systematic collections of evidence and data on political phenomena, including electoral campaigns and trends, the emergence and evolution of political movements and parties, and public opinion trends; analyse these data (or supervise and coordinate their analysis); interpret and synthesise results to describe complex political phenomena, map political and electoral trends, test theories about the causes of these phenomena and trends, or predict how such phenomena may unfold in the future.
Skills: knowledge of theories and methods of quantitative research; ability to gather and critically review relevant scientific literature; proficiency in designing research and studies, including experimental designs, randomized controlled trials, and the analysis of texts and documentary materials using quantitative and computational techniques with languages such as R and Python; expertise in predictive electoral models, political strategy analysis, campaign design, online disinformation tracking, and analysis; statistical and computational analysis of data on complex political contexts.
Outlets: companies or organizations in the private sector (e.g., political consulting, public opinion polling, social media), local or national public administrations or government agencies, political parties and organizations, foundations and think tanks, policy evaluation agencies, non-governmental organizations, international agencies, university research institutes, public or private research centers, or non-profit organizations.

Pre-requisites for admission

In order to ensure high quality education (in particular with respect to the capacity constraints necessary to run laboratories, and to hold individual and group presentations in some courses), the maximum number of students who can enroll in the Master's Degree programme in Computational Social and Political Science is set at 35, plus 10 places reserved for international non-EU candidates residing abroad. Applicants will be selected on the basis of an entrance test, according to the procedures defined in the admission notice.

1. Curricular requirements

Candidates for admission to the Programme may have different Bachelor's degrees, but they must have obtained at least 30 ECTS in computer science, mathematics, applied physics, statistics or econometrics (scientific disciplinary sectors: from MAT-01 to MAT-09, INF-01, ING-INF/05; from SECS-S/01 to SECS-S/06; SECS-P/05) and/or in the area of political science and sociology (scientific disciplinary sectors: SPS/04 and from SPS/07 to SPS/12), with a minimum requirements of 12 credits in the area of political science and sociology (scientific disciplinary sectors: SPS/04 and from SPS/07 to SPS/12) and at least 9 in the area of statistics (scientific disciplinary sectors: from SECS-S/01 to SECS-S/06; SECS-P/05).

2. Proficiency in English

Proficiency in English at a B2 level or higher per the Common European Framework of Reference for Languages (CEFR) is required for admission.
The B2-level requirement will be ascertained by the University Language Centre (SLAM) upon admission as follows:
- Language certificate of B2 or higher level issued no more than three years before the date of admission application. You will find the list of language certificates recognized by the University at: https://www.unimi.it/en/node/39322. The certificate must be uploaded when submitting the online application;
- English level achieved during a University of Milan degree programme and certified by the University Language Centre (SLAM) no more than four years before the date of admission application, including levels based on language certificates submitted by the applicant during their Bachelor's degree at the University of Milan. In this case the process is automatic, the applicant does not have to attach any certificates to the application;
- Entry test administrated by the University Language Centre (SLAM) according to the calendar published on the website: (https://www.unimi.it/en/node/39267/)
All those who fail to submit a valid certificate or do not meet the required proficiency level will be instructed during the admission procedure to take the Entry test.
Applicants who do not take or pass the Entry test will be required to obtain a language proficiency certificate recognized by the University (see https://www.unimi.it/en/node/39322) and deliver it to the SLAM via the InformaStudenti service by the deadline fixed for the masters programme (https://www.unimi.it/en/node/39267/).
Applicants who do not meet the requirement by said deadline will not be admitted to the master's degree programme and may not sit any further tests.

3. Personal competences and skills: assessment criteria

Admission is conditional and depends on the assessment of the personal competences and skills of the student provided by the Admission Board, whose members are appointed by the Faculty Board (Collegio Didattico).
The assessment of personal competences and skills for admission to the Programme is conducted through an online written test in English about basic competences in statistics, sociology and political science. Detailed information on the content and structure of the test content will be published on the Admission notice and on the Programme's website before the start of admissions. Candidates who do not achieve the minimum score required by the Admission Board on this test will not be admitted to the programme. The test can only be taken once.
The Admission Board will conduct an online video interview with non-EU candidates applying for a student VISA in order to further assess each applicant's competences and skills in relation to the Programme. A comprehensive list of potential interview topics is published on the Programme's website. Applicants with foreign qualifications must demonstrate that their academic credentials meet the basic requirements equivalent to those required of students with Italian qualifications.

Programme structure

Teaching modalities and subdivisions

The standard duration of the CSPS Programme is two years. To obtain the CSPS Master’s degree, students must acquire 120 credits, including those for the final examination.

The curriculum consists of a structured course load of 84 credits, complemented by a 9-credit internship (6 for students who need to earn 3 ECTS for Italian language A2), in the private sector, in government or public administration organisations, or in academic institutions (including departmental laboratories and centres). As part of the curriculum, students must also select elective courses for 12 additional credits. Certified professional knowledge and skills are allowed to be recognized, subject to a maximum limit of 9 credits. Finally, a 15-credit final thesis and examination are required.

To obtain the degree, those who do not hold an Italian high school diploma or degree must demonstrate proficiency in Italian

at the A2 or higher level per the Common European Framework of Reference for Languages (CEFR). This level must be demonstrated prior to completing the course programme in one of the following ways:
- by submitting a certificate of A2 or higher level issued no more than three years prior to the date of submission. You will find the list of language certificates recognized by the University at: https://www.unimi.it/en/node/349/). The language certificate must be uploaded through the dedicated Platform: http://studente.unimi.it/uploadCertificazioniLingue
- via an entry-level test administrated by SLAM that can be taken only once and is compulsory for all students who do not have a valid language certificate. Those who fail to reach A2 level will have to attend one or more than one 60-hour Italian course(s) geared to their level. Those who do not take the entry-level test or fail to pass the end-of-course test after six attempts will have to obtain language certification privately in order to earn the 3 credits of Additional language skills: Italian.
The CSPS tutors will assist students in their choice, providing advise and information on the syllabi of the courses, especially in in relation to the various centres and laboratories that support the Programme. The Programme's requirements are completed with a compulsory internship in external organisations, appropriately selected by the CSPS Faculty Board–Collegio Didattico, or in internal laboratories and centres. Finally, students can choose two 6-credit elective courses (one in the first year, the other in the second year), from among those offered by the University of Milan (including lab-based courses), for 12 total credits.

The course of study ends with the thesis.

Organization of courses

The programme offers a streamlined and compact set of interrelated courses covering three important areas of expertise: 1) hypothesis-driven research design for causal inference; 2) quantitative methods for observational and experimental research; 2) computational methods

Some CSPS courses are organized in multiple modules. Please check the website page of each course for further information.

Study plan submission

Submission procedures and terms
Students can choose a complete study plan beginning in the first year. The Programme's tutors will assist students in their choice by providing advice and information on the syllabi of the available courses. Further information about the study plan is available at the following webpage: https://www.unimi.it/en/study/bachelor-and-master-study/following-your-programme-study/plan-study

Didactic calendar
The calendar is available here: https://www.unimi.it/en/education/faculties-and-schools/political-economic-and-social-sciences/studying-political-economic-and-social-sciences

Lectures timetable
The course timetable can be consulted here: https://www.unimi.it/en/study/bachelor-and-master-study/following-your-programme-study/course-timetables

Tutoring

Each year a student tutor is selected to advise and support students with learning difficulties. The Programme also relies on the SPS Department tutors to support foreign students and working students.

Compulsory attendance

Course attendance is not required but is strongly recommended.

Procedures for exam registration and admittance

Students will be assessed at the end of each course via written or oral examinations. Overall evaluation may involve additional written or oral assessments throughout the course. Examinations will be scheduled according to the academic calendar of the Faculty of Political, Economic and Social Sciences.

Internship criteria

9 (6 for foreign students who do not have a certification in Italian) compulsory credits are devoted to a training internship or external internship.

Degree programme final exam

Once students have acquired a minimum of 96 credits from their prescribed coursework and 9 credits from an internship (6 for students who need to earn 3 ECTS for Italian language A2), they are eligible to undertake the final examination required for the Master's degree. The examination consists of the public defence of a thesis before a committee. The thesis must be an original piece of scholarly work written by the student under the supervision of an academic supervisor. 15 credits are allocated to the design, preparation, and writing of the thesis. These credits are awarded upon successful completion of the public defence.

EXPERIENCE OF STUDY ABROAD AS PART OF THE DEGREE PROGRAM

The University of Milan supports international mobility by providing its students with the opportunity to spend study and internship periods abroad. It is a unique chance to enrich your educational path in a new exciting environment.

The agreements entered into by the University with over 300 universities from the 27 EU member countries under the European Erasmus+ programme allow regularly enrolled students to carry out part of their studies at one of the partner universities or to undertake internships at companies, training and research centres and other organisations.

Similar international mobility opportunities are provided outside Europe, through agreements with a number of prestigious institutions.

The University of Milan is a member of the 4EU+ European University Alliance that brings together eight public multidisciplinary universities: University of Milan, Charles University of Prague, Heidelberg University, Paris-Panthéon-Assas University, Sorbonne University of Paris, University of Copenhagen, University of Geneva, and University of Warsaw. The 4EU+ Alliance offers integrated educational pathways and programmes to promote the international mobility of students (physical, blended and virtual).

Study and internships abroad

The CSPS Programme promotes internationalization among its students by encouraging their participation in the Erasmus+ Programme. Erasmus+ offers opportunities for students to engage in study exchanges, training programmes, and work experiences across various EU countries. Students can spend between three and twelve months abroad, which may include a traineeship period. Additional grants are available to support their studies or training abroad. Upon completion, students receive full recognition of their achievements in terms of credits towards their degree. Student mobility is facilitated through "inter-institutional agreements" between sending and receiving institutions, ensuring seamless transitions and academic integration. Moreover, students can opt for the traineeship program (Placement), allowing them to undertake internships abroad ranging from two to twelve months, beginning as early as the first year of study. For traineeships that are part of the curriculum, the sending institution provides full academic recognition. For non-curricular traineeships, recognition is granted through inclusion in the Diploma Supplement or a traineeship certificate for recent graduates. Traineeships may be conducted with private or public companies, including Public Administration/governmental organizations, as well as educational or research centers.

How to participate in Erasmus mobility programs

The students of the University of Milan can participate in mobility programmes, through a public selection procedure.
Ad hoc commissions will evaluate:
- Academic career
- the candidate's proposed study programme abroad
- his/her foreign language proficiency
- the reasons behind his/her application

Call for applications and informative meetings

The public selection for Erasmus+ mobility for study generally begins around February each year with the publication of a call for applications specifying destinations and requirements. Regarding the Erasmus+ Mobility for Traineeship, the University of Milan usually publishes two calls a year enabling students to choose a destination defined by an inter-institutional agreement or to find a traineeship position on their own.

The University organises informative meetings to illustrate mobility opportunities and rules for participation.

Erasmus+ scholarship

The European Union grants the winners of the Erasmus+ programme selection a scholarship to contribute to their mobility costs, which may be supplemented by the University funding for disadvantaged students.

Language courses

Students who pass the selections for mobility programmes can benefit from intensive foreign language courses offered each year by the University Language Centre (SLAM).
https://www.unimi.it/en/node/8/

Learn more at https://www.unimi.it/en/node/274/

For assistance, please contact:
International Mobility Office
Via Santa Sofia 9 (second floor)
Tel. 02 503 13501-12589-13495-13502

Contacts: InformaStudenti;
Student Desk booking through InformaStudenti

ADMISSION CRITERIA: 1ST YEAR CAP ON STUDENT, STUDENT SELECTION BASED ON ENTRANCE TEST

Application and enrolment information and procedures

Applications to be admitted to the Programme must be sent according to the deadlines published on the Programme website

Further information about admission procedures is available here: https://www.unimi.it/en/node/183/

Applicants will be selected based on admission test result, academic curricula, choice coherence and technical interview (when required), with the aim to ascertain the applicants' personal knowledge, competences and skills in the core areas of the CSPS programme. When required, the interviews of applicants will be held via electronic devices (i.e., via Teams, Skype, Zoom or other platforms) according to a calendar individually agreed with each applicant.

Further detailed information concerning the CSPS programme and the admission procedures is available on the Programme website, or can be asked directly to the Programme's Didactic Secretaria.

Links to enrolment information and procedures

https://www.unimi.it/en/node/183

N° of places reserved to non-EU students resident abroad

10

Number of places assigned

35

1st COURSE YEAR Core/compulsory courses/activities

Learning activity		Ects	Sector
Advanced Multivariate Analysis		6	STAT-03/B
Data Governance: Ethical and Legal Issues		6	GIUR-17/A
Foundations of Statistical Modelling for Social and Political Sciences		9	STAT-03/B
Policy Design		6	GSPS-02/A
Programming for Social Data Science		6	(3) GSPS-02/A, (3) INFO-01/A
Research Design and Experimental Methods in the Social Sciences		12	GSPS-05/A
Survey Methods for Public Opinion Research		9	GSPS-07/A
	Total number of compulsory credits/ects	54	

Elective courses

Students must earn 6 credits/ects for Elective substantial course

2nd COURSE YEAR (available as of academic year 2027/28) Core/compulsory courses/activities

Learning activity		Ects	Sector
Agent-Based Modelling		6	GSPS-05/A
Causal Inference in Social and Political Science		6	GSPS-02/A
Social Network Analysis		6	GSPS-05/A
Text Analytics and Machine Learning and Large Language Models		12	(6) GSPS-02/A, (6) INFO-01/A
	Total number of compulsory credits/ects	30	

Elective courses

Students must earn 6 credits/ects for Elective substantial course

Italian students or students with a certificate in Italian at level A2 or above must acquire 9 ECTS from an internship in the private sector, in government or public administration organisations or in academic institutions (including departmental laboratories and centres). Students who do not have a certificate in Italian at level A2 or above must acquire 3 ECTS of Italian language provided by the University Language Centre (SLAM), which reduces the ECTS for an internship to 6 ECTS.

End of course requirements

Final exam		15	NN
	Total number of compulsory credits/ects	15	