UNIVERSITA' DEGLI STUDI DI MILANO
PROGRAMME DESCRIPTION - ACADEMIC YEAR 2020/21
BACHELOR
Computer Science for New Media Comunications (Classe L-31)
Enrolled from 2018/2019 academic year

HEADING

Degree classification - Denomination and code:	L-31 Computer science
Degree title:	Dottore
Length of course:	3 years
Total number of credits required to complete programme:	180
Years of course currently available:	1st , 2nd , 3rd
Access procedures:	Cap on student, student selection based on entrance test
Course code:	F9X

PERSONS/ROLES

Head of Study Programme
Prof. Giovanni Pighizzini

Degree Course Coordinator
Prof. Roberto Sassi

Tutors - Faculty
TUTOR PER L'ORIENTAMENTO:
Sabrina Tiziana Gaito
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Degree Course website
https://icd.cdl.unimi.it/

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CHARACTERISTICS OF DEGREE PROGRAMME

General and specific learning objectives

The objectives of the degree programme in Computer Science for New Media Communication are, on the one hand, to provide a solid basic and methodological knowledge in the areas of computer and mathematical sciences and on the other to provide a good mastery of methodologies and technologies of communication and information and their use in the creation, integration and maintenance of high-tech environments for the dissemination of professional, scientific, cultural and entertainment contents. In addition, the programme offers adequate preparation for the different application areas of the discipline (web, cinema, photography, publishing, television, new media). The degree programme is structured with a common trunk, which then branches in two curricula (“Y” shape), aimed at creating professionals with different skills: one on the web and mobile computing, the other on multimedia. The two paths share a broad common basis that preserves the

uniqueness of the programme, allowing crossing between the paths and ensuring the homogeneity and cultural coherence of the graduates.

Expected learning outcomes

Knowledge and understanding

Acquisition of basic knowledge, related to mathematics, statistics, basic computer science, procedural and object programming languages, computer architectures, operating systems, databases and computer networks. Knowledge of multimedia computing, related to human-machine interaction, web and social media programming, cloud computing, distributed process management, signal processing and multimedia computing.

Applying knowledge and understanding

Acquisition of application skills in the field of information technology and its use for the realization of cultural mediation, entertainment and communication tools.

Scientific method: learning and using the scientific method through both lectures and laboratory sessions.

Modelling: the ability to use advanced tools in modeling systems at various scales, from "large" systems to applications that also require knowledge of hardware aspects and signal transmission problems in the implementation of multimedia tools, networks and mobile programming.

Operational skills: the ability to program a computer with different programming languages with particular reference to the ability to analyze, synthesize and implement technology-based human-to-human, human-to-machine communication systems based on computer science and communication technologies.

Use of modern technologies: use of programming environments and tools, the ability to use tools for capturing, compressing, encoding and transmitting distributed and multimedia information, as well as software systems for storage and fruition of digital content.

Ability to carry out teamwork: developed in laboratory courses and during the work for the preparation of the final thesis.

Making judgments

Graduates of the programme will acquire the ability to make independent and aware judgments about the decisions and design choices of the companies, organizations and institutions in which they will operate. They will also assimilate the principles of professional ethics that guide interpersonal relations in the professional contexts where they will operate after graduation, with particular attention to the economic and legal issues of intellectual property.

Communication skills

Acquisition of appropriate communication skills and the use of related tools with reference to: communication in Italian and foreign (English) language; skills in the practice of information technology for the acquisition, processing, generation, organization, storage and use of distributed and multimedia information. Graduates of the programme should be able to support their choices and communicate the results of their analyses and assessments clearly and effectively, using the language (English), which is most common in the international working contexts of reference, and using, with full technical mastery, the most up-to-date computer tools, as well as the most advanced tools (mathematical-statistical, economic-legal, for multimedia and distributed communication) for the analysis and representation of data and knowledge in social media, mobile and multimedia contexts.

Learning skills

The degree programme aims to lead its students, albeit gradually, to the frontier of the most advanced IT solutions in the multimedia, mobile and Internet sectors. For this reason, the programme has as a priority to promote the development of further learning skills by its students, as well as the acquisition of methodological and theoretical skills that allow its graduates to pursue autonomously self-learning and design activities according to international standards, also in order to continue their studies with master's degree programmes in computer science and other related fields.

Professional profile and employment opportunities

The programme is designed to train graduates who:

• have a wide range of knowledge and expertise in the various fields of information technology and communication, aimed at their use in the design, development and management of communication systems, in relation to a wide range of application domains, with particular reference to the web, multimedia and mobile applications;

• are familiar with the scientific investigation method, possess good modelling skills, and can understand and use mathematical tools to underpin computer skills and communication models;

• are able to use at least one language of the European Union, beyond Italian, in their dedicated field of expertise and to exchange general information;

• are able to carry out teamwork, operate autonomously and easily step into the job market.

The areas in which the graduates in Computer Science for New Media Communications can be included are: industry and services for cultural productions (web, publishing, radio, film, television, new media), services for corporate communication, services for political and social communication, advertising companies, public and private companies.

In these areas, graduates in Computer Science for New Media Communications can deal with issues related to the following activities:

• management of the production and distribution chain of digital multimedia content;
• digital and multi-channel publishing;
• mobile and distributed applications;
• cloud computing;
• support for digital multimedia technology-based communication;
• web communication design and evaluation;
• capturing, compressing, encoding, and transmitting multimedia information;

• software system integration and homogenization of distributed, web and multimedia sources;
• graphic and digital photography experts;
• technical experts in visual audio productions;
• development and testing of user interfaces and intelligent systems for user interaction;
• programming of basic and dedicated IT systems.

Notes

To obtain the degree, students are required to demonstrate an English language proficiency at level B1 within the Common European Framework of Reference for Languages (CEFR). This level can be assessed in the following ways:
- by submitting the language certificate achieved no more than three years prior to the submission, at level B1 or higher, recognised by the University (the list of recognised language certificates can be found at: https://www.unimi.it/en/node/297/). The language certificate must be uploaded during the admission process;
- by taking the Placement Test, organised by SLAM exclusively during the first year, from October to December. Students who fail to reach level B1 will have to attend an English course organised by SLAM. The Placement Test is compulsory for all students who do not have a valid language certificate.

Students who do not take the Placement Test within the deadline and students who fail the SLAM end-of-course test within six attempts will have to obtain a language certificate within the year in which the language exam is scheduled.

EXPERIENCE OF STUDY ABROAD AS PART OF THE TRAINING 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 30 different 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 organizations.

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

Study and internships abroad

The education program can be enriched by educational activities abroad both to deepen some topics and as socialization experience in international environments. WIthin the Erasmus+ program study periods can be taken in over 50 universities in Belgium, Finland, France, Germany, Greece, Lithuania, Norway, Netherlands, Poland, Portugal, Czech Republic, Romania, Spain, Switzerland, Hungary. Courses will be recognized in the personalized study plan. These periods abroad are typically 5-month long and include courses for about 30 CFU, in the area of information and communication technology and related applications. Recognition of these educational activities will be based on the Learning Agreement, to be defined in advance by the student and the Erasmus coordinator at the Computer Science Department before starting the period abroad: course in the learning agreement with passed exams will replace the educational activities of the study plan ("manifesto"), either by covering the same topics or complementing the acquired basic competences. The Erasmus Committee at the Computer Science Department will perform the recognition of CFU obtained abroad and the definition of the personalized study plan. Similarly, stages to prepare the final dissertation are allowed in the same foreign universities. Recognition will be performed by the Department Erasmus Committee.

How to participate in Erasmus mobility programs

How to participate in Erasmus+ mobility programmes

The students of the University of Milan can participate in mobility programmes, which last 3 to 12 months, through a public selection procedure.
Ad hoc commissions will evaluate:
- 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 generally begins around February each year with the publication of a call for applications specifying the destinations, with the respective programme duration, requirements and online application deadline.

Every year, before the deadline for the call, the University organizes informative meetings to illustrate opportunities and rules for participation to students.

Erasmus+ scholarship
The European Union grants the winners of the Erasmus+ programme selection a scholarship to contribute to their mobility costs, which is 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.

Learn more at https://www.unimi.it/en/international/study-abroad/studying-abroad-erasmus.

For assistance, please contact:
International Mobility Office
Via Santa Sofia 9 (second floor)
Tel. 02 503 13501-12589-13495-13502
E-mail: mobility.out@unimi.it
Desk opening hours: Monday to Friday 9 am - 12 noon

1st COURSE YEAR Core/compulsory courses/activities common

Learning activity		Ects	Sector
COMPUTER ARCHITECTURE		6	INF/01
COMPUTER PROGRAMMING		12	INF/01
CONTINUUM MATHEMATICS		12	MAT/09, MAT/01, MAT/02, MAT/03, MAT/04, MAT/05, MAT/06, MAT/07, MAT/08
DIGITAL MARKETING		9	SECS-P/08
English assessment B1 (3 ECTS)		3	ND
HUMAN-COMPUTER INTERACTION		6	INF/01
INFORMATION TECHNOLOGY LAW		6	IUS/20
MATHEMATICAL METHODS FOR DIGITAL COMMUNICATION		6	MAT/09, MAT/01, MAT/02, MAT/03, MAT/04, MAT/05, MAT/06, MAT/07, MAT/08
	Total compulsory credits	60	

2nd COURSE YEAR Core/compulsory courses/activities common

Learning activity		Ects	Sector
ALGORITHMS AND DATA STRUCTURES		6	INF/01
COMPUTER NETWORKS		6	INF/01
COMPUTER PROGRAMMING II		6	INF/01
DATABASES AND WEB		12	INF/01
OPERATING SYSTEMS		6	INF/01
SIGNAL PROCESSING		6	INF/01
STATISTICS AND DATA ANALYSIS		6	INF/01
WEB AND CLOUD APPLICATIONS		6	INF/01
	Total compulsory credits	54	

Elective courses

Students must acquire 6 credits by choosing the teaching related to one of the following two courses:
- Digital social media foundations for the "Social and Mobile Computing" path;
- Computer Graphics for the "Multimedia" path.

COMPUTER GRAPHICS		6	INF/01
FUNDAMENTALS OF DIGITAL SOCIAL MEDIA		6	INF/01

3rd COURSE YEAR Core/compulsory courses/activities common

Learning activity		Ects	Sector
PRINCIPLES AND MODELS OF PERCEPTION		6	M-PSI/01
	Total compulsory credits	6	

Elective courses

TABLE A.
Optional activities (Social and Mobile Computing path)

MOBILE COMPUTING		9	INF/01
SOCIAL MEDIA MINING		12	INF/01

TABLE B.
Optional activities (Multimedia path)

MULTIMEDIA INFORMATION		12	INF/01
MULTIMEDIA PROJECT		9	INF/01

Students will have to acquire 21 credits, following the teachings of the chosen course:
- "Social and Mobile Computing" path (Table A);
- "Multimedia" path (Table B).

Further elective courses

Free choice courses.
Students will have to achieve 12 free cfu among the courses of the previous tables, among the following courses activated by the Department, or among all the courses activated by the university.
Students can request the recognition of credits for training activities at external institutions, presenting a certification. Each certification can give rise to a maximum of 3 credits, and up to 2 certifications can be recognized. The students who intend to request the recognition of the certifications must complete the "application" form available on the page https://www.unimi.it/en/study/student-services/welcome-desk-infostudenti/general-forms and send ver to the secretary of his / her degree together with a copy of the certifications achieved.
The evaluation will be carried out by a special commission based on the following parameters:
- Validity: the certification must have been obtained for a maximum of 5 years.
- Specificity: the object of the certification must be those referable to those required by the degree course in which the student is regularly enrolled.
- Specialization: the certification must concern specialized and / or professional skills.
- Level: the certification must attest to skills of a medium or advanced level. Basic and entry level certifications are excluded.

NEW MEDIA SOCIOLOGY		6	SPS/08

End of course requirements

FINAL EXAM		3	NA
PROFESSIONAL STAGES		18	NA
	Total compulsory credits	21	

COURSE PROGRESSION REQUIREMENTS

The course contains the following obligatory or advised prerequisites

Learning activity	Prescribed foundation courses	O/S
SIGNAL PROCESSING	MATHEMATICAL METHODS FOR DIGITAL COMMUNICATION	Core/compulsory
	CONTINUUM MATHEMATICS	Core/compulsory
STATISTICS AND DATA ANALYSIS	CONTINUUM MATHEMATICS	Core/compulsory
ALGORITHMS AND DATA STRUCTURES	COMPUTER PROGRAMMING	Core/compulsory
DATABASES AND WEB	COMPUTER PROGRAMMING	Core/compulsory
COMPUTER PROGRAMMING II	COMPUTER PROGRAMMING	Core/compulsory