DESCRIPTION OF THE CURRICULUM

(TEACHING REGULATIONS OF THE COURSE)

BACHELOR'S DEGREE COURSE in

COMPUTER SCIENCE

a.y. 2022/2023

I. GENERAL INFORMATION

NAME OF THE DEGREE COURSE (DC)	Degree Course in IT
CLASS	L-31 – Computer science and technologies
TYPE	3-year degree course
COURSE LOCATION	Varese
COURSE WEBSITE	For information on the learning objectives of the DC, occupational opportunities, access requirements, admission procedures, expected educational results, curriculum / study plan, final exam, you may refer to the Annual Program Report (DC-APR), published on the course website at: www.uninsubria.eu/bachelor-computer-science
DEPARTMENT	Scienze teoriche e applicate - DiSTA (Theoretical and Applied Sciences – DiSTA)
DEGREE COURSE CORDINATOR	**Prof. Davide Tosi**
ACADEMIC OFFICE OF THE DEGREE COURSE	Servizio di Ascolto Manager Didattici per la Qualità - DiSTA (in Italian)
LESSONS TIMETABLE	19/09/2022 - 22/12/2022 1st semester 20/02/2023 - 01/06/2023 2nd semester 09/01/2023 - 17/02/2023 1st exam session 05/06/2023 - 22/09/2023 2nd exam session (August excluded) For the lessons suspension dates and holidays for national, local and other vacations (Christmas break, Easter break, University holidays), students should refer to the **University's Academic Calendar** approved by the University bodies at the following link: www.uninsubria.it/chi-siamo/sedi-e-orari/calendario-didattico-di-ateneo (in Italian)
FURTHER INFORMATION	- COURSE ACCESS: **open-access** - TEACHING LANGUAGE: **Italian** - TEACHING PROCEDURES: traditional Optional courses will be aided by videoconferencing, in order to ensure that lectures are offered via both didactic channels at the same time. - TEACHING ACTIVITIES PROCEDURES: lessons will take place in Varese on the university campus. Starting from A.Y. 2019/20 the university offers a further teaching channel in Como to improve access to the teaching activities by students from the Como area.

TUTORS	The DC tutors orient and assist students during their entire educational path making them actively participate in the educational process and removing obstacles to a profitable attendance to courses, also through specific initiatives related to the needs and attitudes of individual students. The TUTORS of the DC in Computer Science are professors Pietro Colombo Mauro Ferrari Brunella Gerla Paolo Massazza Sandro Morasca Simone Tini

LECTURERS OF THE DC	**Lecturer**	**Course**
	ALBERTINI Davide Alberto	1. Database systems
	CARMINATI Barbara	1. Fundamentals of data security 2. Database systems 2
	COLOMBO Pietro	1. Computer architecture
	FERRARI Mauro	1. Automata and languages 2. Logic 3. Functional programming
	GERLA Brunella	1. Algebra and geometry
	LANOTTE Ruggero	1. Algorithms and data structures
	LAVAZZA Luigi Antonio	1. Distributed and concurrent programming
	MASSAZZA Paolo	1. Algorithms and data structures 2. Procedural and object-oriented programming
	MAZZA Mariarosa	1. Mathematical analysis
	MILICI Pietro	1. Algebra and geometry
	RIZZARDI Alessandra	1. Computer programming
	SABADINI Nicoletta	1. Automata and languages 2. History of automata and computing
	SICARI Sabrina Sophy	1. Networking
	TINI Simone	1. Operating systems
	TOSI Davide	1. Computer architecture 2. Big Data

ADMISSION, ASSESSMENT OF EDUCATIONAL BACKGROUND AND ADDITIONAL LEARNING REQUIREMENTS (OFA) REMEDIAL PROCEDURES	Pursuant to current regulations, a secondary high-school diploma or equivalent title obtained abroad is necessary to access the degree course. Required knowledge is not associated to a specific secondary high-school diploma, the following skills being sufficient: good general culture; logical reasoning and reading comprehension skills; good knowledge of the basic mathematical notions.
	Enrollment in the degree course is openly accessible. Enrolled students must take a test to assess their educational background on mathematical topics.
	The test consists in 20 multiple-choice questions on the following topics: numeric comparisons, symbolic expressions, equations and inequalities, first-degree and quadratic, rational and fractional equations and inequalities, elements of Euclidean and Cartesian geometry, simple probability and combinatorial math problems and mathematical texts comprehension.
	To pass the test, students have to answer at least 8 questions correctly. The results will be shown immediately after the test.
	Students may take the test only once, following the schedule compiled by the reference teaching structure, by the first semester of the first year.
	The test will take place on the limited access e-learning platform using the credentials provided by the University at the end of the enrollment procedure. Students can register to the test by accessing their restricted area https://uninsubria.esse3.cineca.it
	Students who do not pass the educational background assessment test will be assigned an additional learning requirement (OFA) which entails mandatory attendance to a Mathematics remedial course, at the end of which a further test will be organized by the end of the first semester of the first year. Students who do not pass this test may not take any of the exams of the following year, unless they have passed the Algebra and geometry exam provided for the first year.
	In case of late enrollment, the Council of the Degree Course may decide whether to organize extra tests and dedicated office hours to support students who have been assigned OFA.
	Students who, after the abovementioned tests, still do not pass the test, must pass the Algebra and Geometry exam organized for the end of the first semester of the first year in order to take other exams.
	Enrollment in the second year in "Regular" position is nonetheless subject to having met the OFA by 30 September of the year after enrollment.
	Students that do not take an educational background assessment test will have their careers blocked and will not, therefore, be able to take exams.
	Students in the following conditions do not have to take the test:
	- Students transferring from another degree course of the University of Insubria (internal transfer), as long as they have taken an educational background assessment test similar to that provided for the degree course;
	- Students transferring from another University in which they have already taken an educational background assessment test similar to that provided for the degree course;
	- Students who enroll having already obtained a diploma
	Students who are interested in obtaining the exoneration must submit a certificate or self-certification to the Students Services Office with the exams taken in their previous career.
ADDITIONAL PREPARATORY TEACHING ACTIVITIES FOR THE EDUCATIONAL BACKGROUND ASSESSMENT TEST	To prepare for the educational background assessment test, students may use two different Mathematics pre-courses available online: one reserved for students with university credentials (at http://elearning.uninsubria.it/ by registering to the "Pre-corso di matematica", which means "Mathematics pre-course"; in Italian) and an open course http://precorso.dista.uninsubria.it/ (in Italian)

	A further preparation tool is provided by the CISIA (open access prior to registration at https://allenamento.cisiaonline.it/; in Italian): please refer to the CISIA Basic Mathematics, Engineering and Science MOOC, chapters 1, 2.1.4, 2.2.1, 4, 5, 6.1, 6.2, 7.1, 7.2, 7.3, 8.1, 8.2, 8.3, 9.1, 9.2 (when only the chapter number is given, all paragraphs should be included). Moreover, students can also attend the entrance exam preparation courses organized by the University for the period between the end of August and the beginning of September: www.uninsubria.it/precorsi (in Italian)
ORIENTATION, ENROLLMENT PROCEDURES AND OTHER ADMINISTRATIVE ASPECTS	**INFOSTUDENTI SERVICE** The INFOSTUDENTI service is a web application that offers a communication channel through which students and future students can obtain some useful information by contacting the different offices of the University (Student Services office, Right to Study and Student Services, Orientation and Placement, Academic Offices and International Relations). Via this system, students can ask questions and receive answers, attach documents and follow the status of their requests. The service may be accessed at the following link: www.uninsubria.it/infostudenti (in Italian)

II. STUDY PLAN

MANDATORY COURSES - 2022/2023 COHORT

Mandatory courses refers to all the courses provided for the entire degree course, which will have to be taken by all students enrolling in the current A.Y. (Enrollment cohort) in order to complete the degree program and obtain the qualification.

1st YEAR							
INTEGRATED COURSE / COURSE Title	**MODULE Title**	**ECTS**	**Academic field**	**DISCIPLINARY FIELD / Type of Teaching Activity**	**HOURS**	**SEM.**	**ASSESSMENT METHOD***
ALGEBRA AND GEOMETRY		9	MAT/02	A/ Mathematical-physical education	LEC:72	First	M
COMPUTER ARCHITECTURE		9	INF/01	A / Basic Computer Science education	EXE:24 LECT: 56	First	M
COMPUTER PROGRAMMING		12	ING-INF/05	A / Basic Computer Science education	EXE:24 LEC:80	First	M
MATHEMATICAL ANALYSIS		9	MAT/05	A / Mathematical-physical education	EXE:12 LEC:64	Second	M
ALGORITHMS AND DATA STRUCTURES		9	INF/01	B / Computer Science disciplines	LEC:72	Second	M
ENGLISH		6	L-LIN/12	E / For the knowledge of at least one foreign language	LEC:48	Second	M
INTERDISCIPLINARY WORKSHOP A and B	*INTERDISCIPLINARY WORKSHOP A*	3 (of 6)	ING-INF/05	B / Computer Science disciplines	LEC:8	Second	Q
EDUCATIONAL BACKGROUND ASSESSMENT TEST		0	NN	NN	LEC:0	ND	Q

2nd YEAR							
INTEGRATED COURSE / COURSE Title	**MODULE Title**	**ECTS**	**Academic field**	**DISCIPLINARY FIELD / Type of Teaching Activity**	**HOURS**	**SEM.**	**ASSESSMENT METHOD***
INTERDISCIPLINARY WORKSHOP A and B	*INTERDISCIPLINARY WORKSHOP B*	3 (of 6)	ING-INF/05	B / Computer Science disciplines	LEC:8	Second	M
DATABASE SYSTEMS		9	INF/01	B / Computer Science disciplines	WRK:16 LEC:64	First	M
SOFTWARE DESIGN		8	ING-INF/05	B / Computer Science disciplines	EXE:24 LEC:48	First	M
OPERATING SYSTEMS		8	INF/01	B / Computer Science disciplines	EXE:24 LEC:48	First	M
DISTRIBUTED AND CONCURRENT PROGRAMMING		8	ING-INF/05	B / Computer Science disciplines	EXE:24 LEC:48	Second	M
LOGIC		6	MAT/01	C / Related or supplementary educational activities	LEC:48	Second	M
PROBABILITY AND STATISTICS FOR COMPUTER SCIENCE		6	MAT/06	C / Related or supplementary educational activities	LEC:48	First	M
Second-year students will also have to choose 12 ECTS among the optional courses offered in BLOCK 1 Disciplinary field B/Computer Science disciplines (see OPTIONAL COURSES BLOCK 1 table)							

3rd YEAR							
INTEGRATED COURSE / COURSE Title	**MODULE Title**	**ECTS**	**Academic field**	**DISCIPLINARY FIELD / Type of Teaching Activity**	**HOURS**	**SEM.**	**ASSESSMENT METHOD***
AUTOMATA AND LANGUAGES		6	INF/01	B / Computer Science disciplines	EXE:12 LEC:40	First	M
NETWORKING		9	ING-INF/05	B / Computer Science disciplines	EXE:12 LEC:64	First	M
FUNDAMENTALS OF DATA SECURITY		6	INF/01	B / Computer Science disciplines	LEC:48	First	M
Third-year students will also have to choose: 6 ECTS among the optional courses offered in BLOCK 1 Disciplinary field B/ Computer Science disciplines and 6 ECTS among the optional courses offered in BLOCK 2 Disciplinary field C / Related or supplementary educational activities (see OPTIONAL COURSES BLOCK 1 and BLOCK 2 tables)							

*J - JUDGMENT   M - EXAM   Q - QUALIFICATION   A - ATTENDANCE

OPTIONAL COURSES (CURRICULAR, IN BLOCKS/AMONG)

BLOCK 1 Disciplinary field B/ Computer Science disciplines (Students have to choose 12 ECTS for the 2nd YEAR and 6 ECTS for the 3rd YEAR)						
COURSE Title	**ECTS**	**Academic field**	**DISCIPLINARY FIELD / Type of Teaching Activity**	**HOURS**	**SEM.**	**ASSESSMENT METHOD***
BIG DATA	6	ING-INF/05	B / Computer Science disciplines	LEC:48	Second	M
DATABASE SYSTEMS 2	6	INF/01	B / Computer Science disciplines	LEC:48	Second	M
THE INTERNET OF THINGS FUNDAMENTALS	6	ING-INF/05	B / Computer Science disciplines	LEC:48	Second	M
INNOVATIVE MODELS FOR DATA MANAGEMENT	6	INF/01	B / Computer Science disciplines	LEC:48	Second	M
MOBILE DEVICES PROGRAMMING	6	INF/01	B / Computer Science disciplines	WRK:16 LEC:40	Second	M
PROCEDURAL AND OBJECT-ORIENTED PROGRAMMING	6	INF/01	B / Computer Science disciplines	LEC:48	Second	M
HISTORY OF AUTOMATA AND COMPUTING	6	INF/01	B / Computer Science disciplines	LEC:48	Second	M
Please note: some courses may be activated once every two years. The complete list of activated courses for the relevant year will be made available when study plans online submission / modification opens.						

*J - JUDGMENT   M - EXAM   Q - QUALIFICATION   A - ATTENDANCE

BLOCK 2 Disciplinary field C/Related or supplementary educational activities (Students have to choose 6 ECTS for the 3rd YEAR)						
COURSE Title	**ECTS**	**Academic field**	**DISCIPLINARY FIELD / Type of Teaching Activity**	**HOURS**	**SEM.**	**ASSESSMENT METHOD***
MICROCONTROLLERS	6	ING-INF/01	C / Related or supplementary educational activities	LEC:48	First	M
FUNCTIONAL PROGRAMMING	6	MAT/01	C / Related or supplementary educational activities	LEC:48	First	M
INFORMATION SYSTEMS	6	SECS-P/10	C / Related or supplementary educational activities	LEC:48	First	M

*J - JUDGMENT   M - EXAM   Q - QUALIFICATION   A - ATTENDANCE

FURTHER MANDATORY COURSES

3rd YEAR							
INTEGRATED COURSE / COURSE Title	**MODULE Title**	**ECTS**	**Academic field**	**DISCIPLINARY FIELD / Type of Teaching Activity**	**HOURS**	**SEM.**	**ASSESSMENT METHOD***
ELECTIVE		12	NN	D / elective		ND	M
FINAL EXAM		3	NN	Language / Final Exam / Towards the final exam		Second	M

EDUCATIONAL INTERNSHIP		15	NN	Other / Educational and orientation internships	INT:375	Annual	Q

*J - JUDGMENT   M - EXAM   Q - QUALIFICATION   A - ATTENDANCE

III. RULES FOR THE CURRICULUM

PREREQUISITES
In order to be admitted to the exams of the degree course, students must follow the following rules:

COURSE THAT CANNOT BE TAKEN	IF STUDENTS HAVE NOT PASSED THE COURSE(S) OF
- DISTRIBUTED AND CONCURRENT PROGRAMMING	- COMPUTER PROGRAMMING
- OPERATING SYSTEMS	- COMPUTER PROGRAMMING + COMPUTER ARCHITECTURE
- SOFTWARE DESIGN	- COMPUTER PROGRAMMING
- DATABASE SYSTEMS	- COMPUTER PROGRAMMING
- MOBILE DEVICES PROGRAMMING	- COMPUTER PROGRAMMING + COMPUTER ARCHITECTURE
- LOGIC	- ALGEBRA AND GEOMETRY
- AUTOMATA AND LANGUAGES	- ALGEBRA AND GEOMETRY
- FUNCTIONAL PROGRAMMING	- COMPUTER PROGRAMMING

VALIDATION OF LINGUISTIC CERTIFICATIONS
The validation of ECTS is automatic for the ENGLISH course, by forwarding to the Student Services office the certificate attesting that students have passed a B2 or higher level test. Such certificate must have been obtained within the previous 5 years, with the exception of IGCSE, IELTS and TOEFL certifications, which, instead, have a validity of only 2 years. For the full list of recognized certifications, please visit:
www.uninsubria.it/la-didattica/bacheca-della-didattica/riconoscimento-certificazioni-lingue-straniere-dista (in Italian)

VALIDATION OF PROFESSIONAL ABILITIES
Pursuant to article 5, paragraph 7 of the Ministerial Decree 270/04, the Council of the Degree Course may validate:
• professional knowledge and skills certified pursuant to current regulations;
• knowledge and skills developed in educational activities at a post-secondary level in whose organization and implementation the university was involved. The validation application will be assessed by the Council of the Degree Course. The validation may take place if the activity is related to the specific educational objectives of the degree course and of the educational activities for which the validation is being requested, also taking into consideration the content and duration in terms of hours of the activity. The maximum number of ECTS that may be validated is 12.

ATTENDANCE OBLIGATIONS: not applicable

ENROLLING IN SUBSEQUENT YEARS

Enrolling in the second year
Enrollment in the second year is allowed if students have obtained at least 18 ECTS by September of the year after enrollment. Students who do not fulfill this condition will be enrolled in the first year as repeating students.

Enrolling in the third year
Enrollment in the second year is allowed if students have obtained at least 48 ECTS by September of the year after enrollment in the second year. Students who do not fulfill this condition will be enrolled in the second year as repeating students.

RULES FOR THE SUBMISSION OF STUDY PLANS AND INDIVIDUAL STUDY PLANS

Students will have to submit their Study Plan in their second year, with the possibility to modify it in the following year, following the University's administrative fulfillments calendar.

Information on how to submit and fill in the study plan are available on the Students Services Office webpage (www.uninsubria.it/servizi/presentazione-piano-di-studio; in Italian). Elective educational activities may be chosen among all courses activated by the University, with the exception of some integrated courses offered by the limited access healthcare degree courses. The Council of the Degree Course will assess the coherence of these elective activities to the educational curriculum students have enrolled in. Please note that the lessons of elective courses taken from other Degree courses of the University may take place at the same time as the lessons of the Degree Course in IT.

EDUCATIONAL INTERNSHIP

Students will have to carry out an internship activity at a public or private Company or Institution or with a research team under the supervision of an academic tutor.

The curricular internship - corresponding to 375 hours of activity - can be undertaken by students when remaining ECTS to complete the study plan are fewer than 33, no more than 18 of which should be related to first- and second-year mandatory courses.

www.uninsubria.it/link-veloci/cerca-i-servizi/tirocini-curriculari-dista (in Italian)

FINAL EXAM

The final exam consists in writing a dissertation under the guidance of a lecturer who works as supervisor. The degree mark, expressed out of 110 and, if applicable, a summa cum laude, depends, in part, on the type of activity carried out by students, which consists in writing one of the following: a) a report and detailed analysis of a work carried out as part of the internship at an external company or institution; b) a report on an experimental and/or theoretical work carried out as part of the internship for a research project of the University itself; c) a compilation on innovative methodologies or technologies proposed as solutions to emerging problems.

The degree mark is determined by the sum of the following addends:

1) weighted average score according to ECTS of the marks obtained in the individual exams, out of 110, following the provisions established in the University Students Regulations;
2) an increment, related to the mark obtained in the final exam, which is decided upon according to the following criteria:
   − from 0 to 7 points for type a) and b) works.
   − from 0 to 3 points for type c) works.
3) an increment from 0 to 3 points of the degree mark for students who have spent a period abroad within the context of the ERASMUS program, decided upon according to the criteria described below.

For type a) works, the increment described in point 2) will be established taking into consideration the assessment provided by the company tutor on the work carried out by the student.

The increment described in point 3) is established taking into consideration two parameters which offer an indication of the student's work during the study abroad period, namely:

− number N of ECTS validated on the student's career after having passed the exams included in the Learning Agreement (including following modifications) at the host University;
− average score value A of the marks converted out of 30 which have been validated on the student's career after having passed the exams included in the Learning Agreement (including following modifications) at the host University.

Additional points are calculated according to the following rules:

1 point if N is between 20 and 29 ECTS;

2 points if N is equal to or higher than 30 ECTS and A is not higher than 25/30;

3 points if N is equal to or higher than 30 ECTS and A is higher than 25/30.

TRANSFER PROCEDURES FROM OTHER DEGREE COURSES

Students from other Universities or from another Degree Course of the University of Insubria, or from previous systems, can apply for a transfer/change to the Degree Course. Transfer/change applications will be assessed by the Council of the Degree Course, which will proceed to the validation of the ECTS according to the following criteria:

• analysis of the curriculum

• assessment of the adequacy of the academic fields and of the contents of the activities undertaken by the student in their previous career, with regard to the specific educational objectives of the degree course and of the individual educational activities provided for in the curriculum.

The abovementioned validation is carried out as provided for in article no. 3, paragraphs 8 and 9 of the ministerial decree of Class redefinition (16 March 2007). The validation is carried out until the ECTS provided for by the curriculum are reached.

For further information please refer to the degree course webpage.

www.uninsubria.eu/bachelor-computer-science

For students with disabilities and/or specific learning disorders, please visit:

www.uninsubria.it/studentidisabilidsa (in Italian)