Università degli Studi di Genova

Regolamento Didattico del Corso di Laurea Magistrale in Computer Science
http://courses.unige.it/10852

Classe LM-18: Informatica

Art. 1 Requisiti di ammissione e modalità di verifica

Tutti coloro che intendano iscriversi al primo anno devono presentare la domanda di ammissione online entro il termine stabilito ogni anno dal Manifesto degli Studi.
Per iscriversi è necessario dimostrare il possesso dei seguenti requisiti curriculari minimi: aver conseguito almeno 180 CFU, 90 dei quali nei settori INF/01, ING-INF/03, ING-INF/04, ING-INF/05, ING-INF/06, FIS/01, FIS/02, FIS/03, FIS/07, MAT/01, MAT/02, MAT/03, MAT/05, MAT/06, MAT/07, MAT/08, MAT/09, SECS-S/01 e/o SECS-S/02. Nel caso di lauree italiane ottenute con ordinamenti che non prevedono crediti, o di titoli di studio ottenuti all'estero, il CCS attribuirà a ciascuna attività formativa acquisita un settore scientifico-disciplinare e un valore in CFU.
L'ammissione è subordinata al superamento di una verifica dell'adeguatezza della preparazione personale mediante un colloquio, effettuato da una apposita Commissione nominata dal CCS, che verterà sulle conoscenze di base necessarie per seguire con profitto gli studi, eventualmente differenziate per curriculum, sulla verifica di un'adeguata conoscenza della lingua inglese, e potrebbe suggerire azioni necessarie a colmare eventuali lacune disciplinari.
La Commissione delibererà sul raggiungimento dei requisiti (sia curriculari che individuali) dandone comunicazione all'interessato.

Art. 2 Curricula

Il CdLM è organizzato nei curricula

- *Data Science and Engineering*
- *Software Security and Engineering*

Art. 3 Frequenza e modalità di svolgimento delle attività didattiche

La frequenza alle attività didattiche in presenza, fisica o virtuale, è fortemente raccomandata. Tutte le attività didattiche del CdLM sono svolte in lingua inglese.

Art. 4 Esami e altre verifiche del profitto

Per ogni attività didattica la verifica del profitto individuale degli studenti avviene attraverso un esame finale, o attraverso altre forme specificate nei commi successivi. Ai fini del presente articolo si distinguono gli insegnamenti dalle altre attività formative. Per gli insegnamenti, l'esame finale può essere svolto con una o più delle seguenti modalità: prova scritta, prova orale e prova individuale di laboratorio. Forme alternative di verifica del profitto sono: laboratori guidati con obbligo di frequenza, realizzazione di progetti, redazione di tesine, preparazione e presentazione di seminari. Tali forme alternative sostituiscono una o più prove dell'esame finale e si svolgono una o più volte durante l'anno. Laboratori guidati, progetti, tesine e seminari si possono svolgere nel periodo di lezione, e sono integrativi delle prove di esame finale. L'esame finale, invece, non si può svolgere in periodo di lezione ma solo nei periodi espressamente dedicati, specificati nel Manifesto degli Studi. Il docente incaricato può derogare da questa regola

esclusivamente nel caso di studenti che, nell'anno accademico in corso, non abbiano inserito attività formative nel proprio piano di studi.

Per attività non riconducibili a quelle considerate nei commi precedenti le modalità di verifica sono riportate nel Manifesto degli Studi e sono possibili due tipologie di valutazione: idoneità, nel qual caso i CFU corrispondenti non concorrono al calcolo della media finale, oppure votazione in trentesimi, con valutazione demandata ad una apposita Commissione designata dal CCS.

Art. 5 Riconoscimento di crediti

La carriera pregressa degli studenti che si iscrivono al CdLM è valutata caso per caso tenendo conto dei contenuti e del carico di studio.
A ogni studente iscritto al CdLM, al quale siano stati riconosciuti dei CFU sulla base della valutazione della carriera pregressa, viene assegnata una coorte di riferimento e la durata attesa del suo percorso di studi.
Per quanto riguarda le conoscenze e le abilità professionali certificate individualmente ai sensi delle norme vigenti in materia, nonché le altre conoscenze e abilità maturate in attività formative di livello post-secondario alla cui progettazione e realizzazione l'Università abbia concorso, il numero massimo di CFU riconoscibili è pari a 12.

Art. 6 Mobilità e studi compiuti all'estero

Il CdLM, allo scopo di migliorare il livello di internazionalizzazione del percorso formativo, incoraggia gli studenti a svolgere periodi di studio all'estero, sulla base di accordi con università straniere. Le opportunità di studio all'estero sono rese note agli studenti attraverso appositi bandi di selezione, a cura dell'Ateneo. Allo studente che abbia svolto attività formative all'estero per almeno 30 CFU potranno essere riconosciuti 3CFU aggiuntivi.

Art. 7 Prova Finale

L'esame di Laurea Magistrale consiste nella stesura e nella discussione in lingua inglese di una tesi elaborata in modo originale dallo studente sotto la guida di uno o più relatori (anche esterni) e il controllo di un correlatore. Il CCS predispone un regolamento specifico per l'attività di tesi e per la prova finale.

Indirizzo	Anno	Cod_ins	Nome_ins	Nome_ins EN	CFU	SSD	Tipologia	Ambito	Lingua	Obiettivi formativi	Ore did. assistita	Ore studio
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	1	80158	HUMAN COMPUTER INTERACTION	HUMAN COMPUTER INTERACTION	6	ING-INF/05	A SCELTA	A Scelta dello Studente	Inglese	Il corso fornisce allo studente le basi per il progetto e lo sviluppo delle interfacce software tra l'utente e la macchina. Lo studente acquisirà competenze riguardo ai meccanismi percettivi, cognitivi ed emotivi, al ciclo di sviluppo e alle metodologie per la progettazione delle interfacce utente, alle tecniche per lo sviluppo e alle metodologie per la valutazione dell'usabilità delle interfacce." "il corso e' di norma in lingua italiana con materiali didattici in inglese. In presenza di studenti non di lingua italiana, il corso sara' in lingua inglese: in questo caso i docenti prevedono la possibilità di fornire, su richiesta e in ore aggiuntive, supporto didattico specifico a studenti di lingua italiana con difficoltà con la lingua inglese	48	102
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	1	84391	SOFTWARE TECHNOLOGIES FOR HUMAN COMPUTER INTERACTION	SOFTWARE TECHNOLOGIES FOR HUMAN COMPUTER INTERACTION	6	INF/01	A SCELTA	A Scelta dello Studente	Italiano (Inglese a richiesta)	L'insegnamento introduce i concetti della Human-Computer Interaction che consentono di progettare sistemi efficaci per i bisogni degli utenti sia dal punto di vista della semplicità di interazione che della naturalezza della fruizione (aspetti fondamentali in ambito biomedico). Sono presentate tecniche di: programmazione e computer vision per la realizzazione di sistemi di interazione avanzati; valutazione dell'interazione (progettazione di sessioni sperimentali e analisi dei dati).	48	102
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	1	86798	MACHINE LEARNING AND DATA ANALYSIS	MACHINE LEARNING AND DATA ANALYSIS	6	ING-INF/05	CARATTERIZZANTI	Discipline Informatiche	Inglese	Students will be provided with advanced skills related to data analysis. Students will learn insights on data mining methodologies andspecific applications of these methodologies to particular data organizations.	48	102
SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	1	86798	MACHINE LEARNING AND DATA ANALYSIS	MACHINE LEARNING AND DATA ANALYSIS	6	ING-INF/05	CARATTERIZZANTI	Discipline Informatiche	Inglese	Students will be provided with advanced skills related to data analysis. Students will learn insights on data mining methodologies andspecific applications of these methodologies to particular data organizations.	48	102

SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	1	86800	VIRTUALIZATION AND CLOUD COMPUTING	VIRTUALIZATION AND CLOUD COMPUTING	6	ING-INF/05	CARATTERIZZANTI	Discipline Informatiche			48	102
SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	1	86800	VIRTUALIZATION AND CLOUD COMPUTING	VIRTUALIZATION AND CLOUD COMPUTING	6	ING-INF/05	CARATTERIZZANTI	Discipline Informatiche			48	102
DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	1	90498	MACHINE LEARNING	MACHINE LEARNING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning how to use classical supervised and unsupervised machine learning algorithms by grasping the underlying computational and modeling issues.	56	169
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	1	90498	MACHINE LEARNING	MACHINE LEARNING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning how to use classical supervised and unsupervised machine learning algorithms by grasping the underlying computational and modeling issues.	56	169
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	1	90498	MACHINE LEARNING	MACHINE LEARNING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning how to use classical supervised and unsupervised machine learning algorithms by grasping the underlying computational and modeling issues.	56	169
DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	1	90520	DIGITAL SIGNAL & IMAGE PROCESSING	DIGITAL SIGNAL & IMAGE PROCESSING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Acquiring the basic tools for the analysis of signals in both the space and frequency domains, and learning the main image processing techniques for feature extraction, image segmentation, image registration, and image matching..	56	169
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	1	90520	DIGITAL SIGNAL & IMAGE PROCESSING	DIGITAL SIGNAL & IMAGE PROCESSING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Acquiring the basic tools for the analysis of signals in both the space and frequency domains, and learning the main image processing techniques for feature extraction, image segmentation, image registration, and image matching.	56	169

DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	1	90524	UBIQUITOUS COMPUTING	UBIQUITOUS COMPUTING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche		Learning methods, protocols, architectures, and platforms for the development of distributed and mobile applications for the Internet of Things, including machine to machine protocols, distributed algorithms for fault tolerance and replication, service oriented architectures platforms, embedded operating systems, real time and streaming data, geolocation, and collaborative framework.	56	169
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	1	90524	UBIQUITOUS COMPUTING	UBIQUITOUS COMPUTING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche		Learning methods, protocols, architectures, and platforms for the development of distributed and mobile applications for the Internet of Things, including machine to machine protocols, distributed algorithms for fault tolerance and replication, service oriented architectures platforms, embedded operating systems, real time and streaming data, geolocation, and collaborative framework.	56	169
SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	1	90524	UBIQUITOUS COMPUTING	UBIQUITOUS COMPUTING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche		Learning methods, protocols, architectures, and platforms for the development of distributed and mobile applications for the Internet of Things, including machine to machine protocols, distributed algorithms for fault tolerance and replication, service oriented architectures platforms, embedded operating systems, real time and streaming data, geolocation, and collaborative framework.	56	169
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	1	90528	COMPUTER GRAPHICS & AUGMENTED REALITY	COMPUTER GRAPHICS & AUGMENTED REALITY	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning the theoretical and methodological fundamentals of Computer Graphics as well as Virtual and Augmented reality and 3D Computer Vision.	56	169
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	1	90530	NETWORK ANALYSIS	NETWORK ANALYSIS	6	INF/01	AFFINI O INTEGRATIVE	Attività Formative Affini o Integrative	Inglese	Learning algorithms and techniques for large scale graph analytics, including centrality measures, connected components, graph clustering, graph properties for random, small-world, and scale free graphs, graph metrics for robustness and resiliency, and graph algorithms for reference problems.	48	102

SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	1	90530	NETWORK ANALYSIS	NETWORK ANALYSIS	6	INF/01	A SCELTA	A Scelta dello Studente	Inglese	Learning algorithms and techniques for large scale graph analytics, including centrality measures, connected components, graph clustering, graph properties for random, small-world, and scale free graphs, graph metrics for robustness and resiliency, and graph algorithms for reference problems.	40	110
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	1	90531	WELL-BEING TECHNOLOGIES	WELL-BEING TECHNOLOGIES	6	INF/01	AFFINI O INTEGRATIVE	Attività Formative Affini o Integrative	Inglese	Learning how to design positive computing systems for cognitive and physical wellness, disease prevention, and rehabilitation, by combining sensors, wearable devices and advanced methods for computational intelligence	40	110
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	1	101801	BUSINESS ANALYTICS PROJECT	BUSINESS ANALYTICS PROJECT	6	INF/01	A SCELTA	A Scelta dello Studente	Inglese	Learning the key elements of conceptual and notational tools for business modelling and the ability of approaching data mining as a process - including the business understanding, data understanding, exploratory data analysis, modeling, evaluation, and deployment phases -, and of employing a wide range of mining techniques for data analysis.	16	102
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	1	90532	SOFTWARE ENGINEERING FOR DATA ANALYTICS	SOFTWARE ENGINEERING FOR DATA ANALYTICS	6	INF/01	A SCELTA	A Scelta dello Studente	Inglese	Learning the fundamentals of architecting, designing, and validating massively scalable, highly available, large-scale software systems, with special emphasis on challenges posed by data intensive applications and Internet of Things.	48	102
DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	1	90533	COMPUTATIONAL NEUROENGINEERING	COMPUTATIONAL NEUROENGINEERING	6	ING-INF/06	A SCELTA	A Scelta dello Studente	Inglese	Learning computational techniques for the modeling of biological neural networks and understanding the brain and its function through a variety of theoretical constructs and computer science analogies.	48	102
SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	1	90538	DATA PROTECTION & PRIVACY	DATA PROTECTION & PRIVACY	9	ING-INF/05	CARATTERIZZANTI	Discipline Informatiche		Gli studenti apprenderanno le basi teoriche e pratiche dell'anonimizzazione di dati personali. In particolare, gli studenti studieranno le tecniche allo stato dell'arte per l'anonimizzazione di dati multidimensionali, grafi, serie di tempo, dati longitudinali e transazionali, oltre ad alcune basi legali sulla protezione dei dati personali.	72	153

DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	1	90539	COMPUTATIONAL VISION	COMPUTATIONAL VISION	6	INF/01	AFFINI O INTEGRATIVE	Attività Formative Affini o Integrative	Inglese	Learning how to represent image content adaptively by means of shallow or deep computational models and biologically-inspired hierarchical models, and how to tackle image classification and categorization problems.	40	110
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	1	90539	COMPUTATIONAL VISION	COMPUTATIONAL VISION	6	INF/01	AFFINI O INTEGRATIVE	Attività Formative Affini o Integrative	Inglese	Learning how to represent image content adaptively by means of shallow or deep computational models and biologically-inspired hierarchical models, and how to tackle image classification and categorization problems.	40	110
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	1	90542	COMPUTER GAMES	COMPUTER GAMES	6	ING-INF/01	AFFINI O INTEGRATIVE	Attività Formative Affini o Integrative	Inglese	Learning to identify key issues in computer graphics for the design of serious games, virtual reality, simulation, and eduntainment applications.	40	110
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	1	90545	MULTIAGENTS SYSTEMS	MULTIAGENTS SYSTEMS	6	INF/01	A SCELTA	A Scelta dello Studente	Inglese	Getting acquainted with the concept of an agent and multiagent system, and learning how to design intelligent autonomous agents and how to deal with the main implementation issues.	32	118
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	1	90546	PRINCIPLES AND PARADIGMS OF PROGRAMMING LANGUAGES	PRINCIPLES AND PARADIGMS OF PROGRAMMING LANGUAGES	6	INF/01	A SCELTA	A Scelta dello Studente	Inglese	Gaining a deeper and more critical knowledge of programming languages, through the learning of theoretical foundations and the comparison of different paradigms.	48	102
SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	1	90546	PRINCIPLES AND PARADIGMS OF PROGRAMMING LANGUAGES	PRINCIPLES AND PARADIGMS OF PROGRAMMING LANGUAGES	6	INF/01	A SCELTA	A Scelta dello Studente	Inglese	Gaining a deeper and more critical knowledge of programming languages, through the learning of theoretical foundations and the comparison of different paradigms.	48	102
DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	1	90549	ADDITIONAL USEFUL KNOWLEDGE	ADDITIONAL USEFUL KNOWLEDGE	3		ALTRE ATTIVITA'	Altre Conoscenze Utili per l'Inserimento Nel Mondo del Lavoro	Inglese		0	75
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	1	90549	ADDITIONAL USEFUL KNOWLEDGE	ADDITIONAL USEFUL KNOWLEDGE	3		ALTRE ATTIVITA'	Altre Conoscenze Utili per l'Inserimento Nel Mondo del Lavoro	Inglese		0	75
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	1	90549	ADDITIONAL USEFUL KNOWLEDGE	ADDITIONAL USEFUL KNOWLEDGE	3		ALTRE ATTIVITA'	Altre Conoscenze Utili per l'Inserimento Nel Mondo del Lavoro	Inglese		0	75
DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	1	90728	TOPICS IN COMPUTER SCIENCE	TOPICS IN COMPUTER SCIENCE	6	INF/01	A SCELTA	A Scelta dello Studente	Inglese	Students will learn and improve their knowledge on key concepts in computer science	8	142

DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	1	90728	TOPICS IN COMPUTER SCIENCE	TOPICS IN COMPUTER SCIENCE	6	INF/01	A SCELTA	A Scelta dello Studente	Inglese	Students will learn and improve their knowledge on key concepts in computer science	8	142
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	1	90728	TOPICS IN COMPUTER SCIENCE	TOPICS IN COMPUTER SCIENCE	6	INF/01	A SCELTA	A Scelta dello Studente	Inglese	Students will learn and improve their knowledge on key concepts in computer science	8	142
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	1	101798	DATA WAREHOUSING	DATA WAREHOUSING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning the theoretical, methodological, and technological fundamentals of data management and analysis in decision support systems, with a specific reference to data warehousing architectural and design issues, as well as key elements of data integration and governance, data quality and cleaning, ExtractionTransformation-Loading processes, conceptual, logical, and physical design of data warehouses, storage architectures and scalable parallel processing, use of data warehouses for business reporting and online analytical processing.	56	169
DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	1	101799	LARGE-SCALE COMPUTING	LARGE-SCALE COMPUTING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning the theoretical, methodological, and technological fundamentals of advanced data processing architectures, large-scale distributed environments, and data intensive programming including Docker, HDFS, Hadoop, Spark, and Cloud/IoT platforms.	56	169
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	1	101799	LARGE-SCALE COMPUTING	LARGE-SCALE COMPUTING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning the theoretical, methodological, and technological fundamentals of advanced data processing architectures, large-scale distributed environments, and data intensive programming including Docker, HDFS, Hadoop, Spark, and Cloud/IoT platforms.	56	169
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	1	101799	LARGE-SCALE COMPUTING	LARGE-SCALE COMPUTING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning the theoretical, methodological, and technological fundamentals of advanced data processing architectures, large-scale distributed environments, and data intensive programming including Docker, HDFS, Hadoop, Spark, and Cloud/IoT platforms.	56	169
DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	1	101803	SPEECH PROCESSING AND RECOGNITION	SPEECH PROCESSING AND RECOGNITION	6	INF/01	AFFINI O INTEGRATIVE	Attività Formative Affini o Integrative	Inglese	Learning how to process and represent speech signals, and the main software components of a speech recognition system.	40	110

DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	1	101804	ADVANCED MACHINE LEARNING	ADVANCED MACHINE LEARNING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning how to use advanced machine learning algorithms, including learning data representation (dictionaries and metric), deep learning, and learning in dynamic environment (online, active and reinforcement learning), by grasping the underlying computational and modeling issues.	56	169
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	1	101805	MOBILE DEVELOPMENT	MOBILE DEVELOPMENT	6	INF/01	AFFINI O INTEGRATIVE	Attività Formative Affini o Integrative	Inglese	Learning the design and development of mobile applications by using state of the practice IDEs, frameworks, languages, and technologies.	40	110
SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	1	101805	MOBILE DEVELOPMENT	MOBILE DEVELOPMENT	6	INF/01	AFFINI O INTEGRATIVE	Attività Formative Affini o Integrative	Inglese	Learning the design and development of mobile applications by using state of the practice IDEs, frameworks, languages, and technologies.	40	110
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	1	101806	IT PROJECT MANAGEMENT	IT PROJECT MANAGEMENT	6	INF/01	AFFINI O INTEGRATIVE	Attività Formative Affini o Integrative	Inglese	Learning the fundamental concepts, roles, and responsibilities of IT project management and develop skills for effective project management and leadership.	48	102
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	1	101807	SOFTWARE SYSTEMS DESIGN AND MODELLING	SOFTWARE SYSTEMS DESIGN AND MODELLING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning through practical experience the basic conceptual tools for the design and modelling of software systems, and acquiring communication skills and lifelong learning capabilities.	56	169
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	1	101808	FUNCTIONAL AND SECURITY TESTING TECHNIQUES	FUNCTIONAL AND SECURITY TESTING TECHNIQUES	6	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning the fundamentals in functional and security testing of software systems, with special emphasis on challenges posed by Web and Mobile applications, and getting acquainted with automated tools used to practice testing techniques.	40	110
SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	1	101808	FUNCTIONAL AND SECURITY TESTING TECHNIQUES	FUNCTIONAL AND SECURITY TESTING TECHNIQUES	6	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning the fundamentals in functional and security testing of software systems, with special emphasis on challenges posed by Web and Mobile applications, and getting acquainted with automated tools used to practice testing techniques.	40	110

SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	1	101812	DIGITAL FORENSICS	DIGITAL FORENSICS	6	INF/01	AFFINI O INTEGRATIVE	Attività Formative Affini o Integrative	Inglese	Learning how to conduct digital investigations, following the standard process involving identification, acquisition, storage, and analysis of digital evidence.	48	102
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	2	61884	ADVANCED DATA MANAGEMENT	ADVANCED DATA MANAGEMENT	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning the theoretical, methodological, and technological fundamentals of data management for advanced data processing architectures, with a specific reference to large-scale distributed environments, like key elements of NoSQL and stream-based systems as well as basic issues in parallel and distributed query processing, multi-query processing, and high-throughput transactional systems.	56	169
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	2	61884	ADVANCED DATA MANAGEMENT	ADVANCED DATA MANAGEMENT	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning the theoretical, methodological, and technological fundamentals of data management for advanced data processing architectures, with a specific reference to large-scale distributed environments, like key elements of NoSQL and stream-based systems as well as basic issues in parallel and distributed query processing, multi-query processing, and high-throughput transactional systems.	56	169
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	2	80412	GEOMETRIC MODELING	GEOMETRIC MODELING	6	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning theoretical foundations, techniques and methodologies for the representation and manipulation of curves, surfaces and solid objects in 3D. Computational techniques on geometric meshes, such as: object reconstruction; discrete differential geometry; smoothing; simplification; parametrization; deformation; geodesy.	40	110
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	2	84391	SOFTWARE TECHNOLOGIES FOR HUMAN COMPUTER INTERACTION	SOFTWARE TECHNOLOGIES FOR HUMAN COMPUTER INTERACTION	6	INF/01	A SCELTA	A Scelta dello Studente	Italiano (Inglese a richiesta)		48	102
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	2	90520	DIGITAL SIGNAL & IMAGE PROCESSING	DIGITAL SIGNAL & IMAGE PROCESSING	6	INF/01	A SCELTA	A Scelta dello Studente	Inglese	Acquiring the basic tools for the analysis of signals in both the space and frequency domains, and learning the main image processing techniques for feature extraction, image segmentation, image registration, and image matching.	48	102

DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	2	90529	DATA VISUALIZATION	DATA VISUALIZATION	6	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning principles, methods, and techniques for effective visual analysis of data, including techniques for visualizing both spatial and non-spatial data, principles from computer graphics and human perception.	40	110
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	2	90529	DATA VISUALIZATION	DATA VISUALIZATION	6	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning principles, methods, and techniques for effective visual analysis of data, including techniques for visualizing both spatial and non-spatial data, principles from computer graphics and human perception.	40	110
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	2	90529	DATA VISUALIZATION	DATA VISUALIZATION	6	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning principles, methods, and techniques for effective visual analysis of data, including techniques for visualizing both spatial and non-spatial data, principles from computer graphics and human perception.	40	110
DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	2	90535	HIGH PERFORMANCE COMPUTING	HIGH PERFORMANCE COMPUTING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning the main aspects of modern high-performance computing systems (pipeline/superscalar processors,shared-memory/message-passing multiprocessors, vector processors, GPUs) and basic programming skills for high-performance computing (cache optimization, OpenMP, MPI, OpenCL).	56	169
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	2	90535	HIGH PERFORMANCE COMPUTING	HIGH PERFORMANCE COMPUTING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning the main aspects of modern high-performance computing systems (pipeline/superscalar processors,shared-memory/message-passing multiprocessors, vector processors, GPUs) and basic programming skills for high-performance computing (cache optimization, OpenMP, MPI, OpenCL).	56	169
DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	2	90537	FINAL DISSERTATION	FINAL DISSERTATION	30		PROVA FINALE	Per la Prova Finale	Inglese		0	750
DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	2	90537	FINAL DISSERTATION	FINAL DISSERTATION	30		PROVA FINALE	Per la Prova Finale	Inglese		0	750

DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	2	90537	FINAL DISSERTATION	FINAL DISSERTATION	30		PROVA FINALE	Per la Prova Finale	Inglese		0	750
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	2	90537	FINAL DISSERTATION	FINAL DISSERTATION	30		PROVA FINALE	Per la Prova Finale	Inglese		0	750
SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	2	90537	FINAL DISSERTATION	FINAL DISSERTATION	30		PROVA FINALE	Per la Prova Finale	Inglese		0	750
DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	2	90538	DATA PROTECTION & PRIVACY	DATA PROTECTION & PRIVACY	6	ING-INF/05	A SCELTA	A Scelta dello Studente		Gli studenti apprenderanno le basi teoriche e pratiche dell'anonimizzazione di dati personali. In particolare, gli studenti studieranno le tecniche allo stato dell'arte per l'anonimizzazione di dati multidimensionali, grafi, serie di tempo, dati longitudinali e transazionali, oltre ad alcune basi legali sulla protezione dei dati personali	40	110
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	2	90538	DATA PROTECTION & PRIVACY	DATA PROTECTION & PRIVACY	6	ING-INF/05	CARATTERIZZANTI	Discipline Informatiche		Gli studenti apprenderanno le basi teoriche e pratiche dell'anonimizzazione di dati personali. In particolare, gli studenti studieranno le tecniche allo stato dell'arte per l'anonimizzazione di dati multidimensionali, grafi, serie di tempo, dati longitudinali e transazionali, oltre ad alcune basi legali sulla protezione dei dati personali	40	110
DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	2	90541	NATURAL LANGUAGE PROCESSING	NATURAL LANGUAGE PROCESSING	6	INF/01	CARATTERIZZANTI	Discipline Informatiche		Learning how to process and represent natural language, and the main software components of a system able to understand natural language. After the course students will be able to design and implement an ontology and to understand, present and discuss in a critical way the most challenging issues in ontology development and in Natural Language Processing	32	118
DATA SCIENCE & ENGINEERING - ARTIFICIAL INTELLIGENCE	2	90545	MULTIAGENTS SYSTEMS	MULTIAGENTS SYSTEMS	6	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Getting acquainted with the concept of an agent and multiagent system, and learning how to design intelligent autonomous agents and how to deal with the main implementation issues.	32	118

DATA SCIENCE & ENGINEERING - VISUAL COMPUTING	2	90545	MULTIAGENTS SYSTEMS	MULTIAGENTS SYSTEMS	6	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Getting acquainted with the concept of an agent and multiagent system, and learning how to design intelligent autonomous agents and how to deal with the main implementation issues.	32	118
DATA SCIENCE & ENGINEERING: DATA-CENTRIC COMPUTING	2	90545	MULTIAGENTS SYSTEMS	MULTIAGENTS SYSTEMS	6	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Getting acquainted with the concept of an agent and multiagent system, and learning how to design intelligent autonomous agents and how to deal with the main implementation issues.	40	110
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	2	90549	ADDITIONAL USEFUL KNOWLEDGE	ADDITIONAL USEFUL KNOWLEDGE	3		ALTRE ATTIVITA'	Altre Conoscenze Utili per l'Inserimento Nel Mondo del Lavoro	Inglese		0	75
SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	2	90549	ADDITIONAL USEFUL KNOWLEDGE	ADDITIONAL USEFUL KNOWLEDGE	3		ALTRE ATTIVITA'	Altre Conoscenze Utili per l'Inserimento Nel Mondo del Lavoro	Inglese		0	75
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	2	101809	DISTRIBUTED DEPENDABLE SYSTEMS	DISTRIBUTED DEPENDABLE SYSTEMS	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning how to design high quality distributed systems, ranging from classical client-server to peer-to-peer and blockchain-based systems, and applying classical mathematical tools to measure reliability, availability, and fault tolerance.	56	169
SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	2	101809	DISTRIBUTED DEPENDABLE SYSTEMS	DISTRIBUTED DEPENDABLE SYSTEMS	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Learning how to design high quality distributed systems, ranging from classical client-server to peer-to-peer and blockchain-based systems, and applying classical mathematical tools to measure reliability, availability, and fault tolerance.	56	169
SOFTWARE SECURITY & ENGINEERING - SOFTWARE ENGINEERING	2	101810	CAPSTONE PROJECT	CAPSTONE PROJECT	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Acquiring experience of a realistic team development effort that follows a given methodology and harnesses different technologies for the implementation of a specific product.	25	200
SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	2	101810	CAPSTONE PROJECT	CAPSTONE PROJECT	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Acquiring experience of a realistic team development effort that follows a given methodology and harnesses different technologies for the implementation of a specific product.	25	200
SOFTWARE SECURITY & ENGINEERING - SOFTWARE SECURITY	2	101811	BINARY ANALYSIS AND SECURE CODING	BINARY ANALYSIS AND SECURE CODING	9	INF/01	CARATTERIZZANTI	Discipline Informatiche	Inglese	Being able to write secure code, analyze the behavior and assess security properties of source and binary programs, pinpointing and fix their vulnerabilities or apply corrective counter-measures.	56	169