



UNIVERSITÀ  
di **VERONA**

Master's degree programme in

**MEDICAL BIOINFORMATICS**

**LM-18**

Classe delle lauree magistrali in

Informatica

**DEGREE PROGRAMME**

**DESCRIPTION AND REGULATIONS**

**(ANNUAL FACT SHEET - SUA-CdS, B1 section)**

**ACADEMIC YEAR 2021/2022**

**COHORT 2021/22**

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## 1. GENERAL INFORMATION

1.	<b>DEGREE PROGRAMME WEB PAGE</b>	For further information on the learning objectives of the degree programme, career prospects for graduates, admissions, expected learning outcomes, study plan, university calendar, lecture timetable, and final examination, please see the degree programme <a href="#">web page</a> or the Annual Fact Sheet (SUA-CdS), which can be found on the same web page.
2.	<b>PROGRAMME DIRECTOR</b>	Prof. Rosalba Giugno
3.	<b>ADMINISTRATION</b>	<a href="#">Science and Engineering Teaching and Student Services Unit</a>
4.	<b>TEACHING STAFF, MODULES, AND OFFICE HOURS</b>	Lecturers will normally publish information about their teaching and research activities on their individual web pages, which you can access from the degree programme web page. From there you will also be able to access and explore the module web pages, where you will find an overview of each module. For office hours details and information, please check the individual web page of the relevant lecturer.
5.	<b>DURATION</b>	2 years
6.	<b>LOCATION</b>	Strada Le Grazie 15, 37134 Verona
7.	<b>DEPARTMENT</b>	Department of Computer Science
8.	<b>CURRICULUM</b>	Single curriculum
9.	<b>LANGUAGE</b>	English
10.	<b>ADMISSION METHODS</b>	No admission test required
11.	<b>ENTRY REQUIREMENTS</b>	A three-year Bachelor's degree ( <i>Laurea</i> ) or other qualification gained abroad and recognised as suitable.
12.	<b>SUBJECT REQUIREMENTS AND PERSONAL PREPARATION</b>	For information on the subject requirements that you need to meet in order to enrol, please see the relevant <a href="#">web page</a> .
13.	<b>ENROLMENT</b>	<a href="#">Enrolment</a>
14.	<b>SUPPORT FOR STUDENTS WITH DISABILITIES AND SLD/LEARNING DISABILITIES</b>	The University of Verona supports students with disabilities and Specific Learning Disorder (SLD)/learning disabilities from enrolment to graduation by providing them with the support they need to effectively participate in the educational activities of the University. For further information on these services, please go to the <i>Inclusion and Accessibility</i> service <a href="#">web page</a> .

15.	<b>CFU CREDITS</b>	<p>As a general rule, one CFU credit equates to 25 hours of learning time. Depending on the type of teaching activity the CFU/hour ratio will be as follows:</p> <ul style="list-style-type: none"> <li>lectures: 6 hours = 1 CFU;</li> <li>practicals/laboratory activities: 12 hours = 1 CFU;</li> <li>internship/professional traineeship: 25 hours = 1 CFU.</li> </ul>
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## 2. STUDY PLAN

16.	<b>SCHEDULED LEARNING AND TEACHING ACTIVITIES</b>	<p><i>Scheduled learning and teaching activities</i> include modules and other educational activities that are made available to students enrolled in the 2021/22 academic year throughout the two-year period.</p> <p>The 2021/22 cohort includes first-year Master's degree students enrolled in the 2021/22 academic year. By the term 'cohort' we mean all students enrolled in a given academic year.</p> <p>For further information please see the degree programme <a href="#">web page</a>.</p>
17.	<b>LEARNING AND TEACHING ACTIVITIES PROVIDED</b>	<p>Unlike <i>Scheduled learning and teaching activities</i>, <i>Learning and teaching activities provided</i> include all <a href="#">modules</a> made available to different cohorts of students in a given academic year.</p>

## 3. PROGRAMME REGULATIONS

18.	<b>ASSESSMENT METHODS</b>	<p>For each module, the training objectives, a programme description, textbooks and teaching material required, and the relevant examination methods shall be determined in advance, and made available on the <a href="#">web page</a> of each module.</p> <p>Examinations normally take place during specific exam sessions to be held at the end of each module, as established by the responsible lecturer. Interim tests may also be held throughout the programme, aimed at testing the student's understanding of the module contents: by the end of the module, these tests may be taken into account by the professor or lecturer for calculating the final mark.</p> <p>Assessment methods for this programme include written and/or oral exams. For each exam passed students are awarded a fixed number of CFU and a mark on a 30-point scale (minimum mark: 18/30). Students who achieve 30/30 may be awarded '<i>cum laude</i>' honours, to be granted by unanimous decision of the Graduation Committee. The number of exam rounds made available for each module every academic year is established by the School of Science and Engineering.</p>
19.	<b>PRIORITY MODULES</b>	<p>There are no priority modules ('<i>propedeuticit�</i>' in Italian), i.e. there is no specific order in which modules should be taken.</p>
20.	<b>REQUIREMENTS FOR ENROLMENT IN SUBSEQUENT YEARS</b>	<p>There are no requirements for enrolment in subsequent years ('<i>sbarramento</i>' in Italian).</p>

21.	<b>ELECTIVE MODULES AND ACTIVITIES (TYPE D)</b>	<p>12 CFU are awarded upon completion of elective modules and activities ('Type D') that students can take, choosing from the range of educational activities at Master's level provided by the University.</p> <p>With regard to CFU credits awarded upon completion of 'Type D' modules/activities chosen by the student:</p> <ul style="list-style-type: none"> <li>• if these are Master's degree modules taught at the University of Verona and included in class LM-18 or LM-32, the study plan is automatically approved;</li> <li>• otherwise, the student will need to submit to the Computer Science Teaching Committee a list of the educational activities that they wish to attend in order to acquire such credits. In this case, the Computer Science Teaching Committee will check that the included elective modules/activities meet the relevant requirements: the approval of the study plan by the Teaching Committee will be critical to the student's admission to the final examination (graduation). Please note: basic computer science exams will not be accepted as elective modules/activities.</li> </ul>
22.	<b>ADDITIONAL TRAINING ACTIVITIES (TYPE F), INTERNSHIPS, WORK PLACEMENT, ETC.</b>	<p>Upon completion of additional 'Type F' activities, students will be awarded 6 CFU credits, of which 3 CFU must be gained by passing language modules either in English (minimum C1 level) or other languages (minimum A2 level).</p> <p>3 CFU are to be gained at the student's choice, through internships and/or work placement, or other activities. Internships are aimed at providing students with a direct knowledge of those areas that are crucial to enable them to enter the job market, and to acquire advanced professional skills. Such activities may be carried out during lab practicals or seminars under the direct supervision of a lecturer, or in companies recognised by the University of Verona, as well as in public organisations, and public or private research laboratories, including the university labs managed by the area of Science and Engineering. Assessment methods concerning the awarding of CFU credits for internships or work placement, etc. are set out by the relevant university bodies, and made available on the University's website.</p>
23.	<b>SOFT SKILLS</b>	<p>The University's Teaching and Learning Center provides students with activities aimed at developing their soft skills both from a professional and personal point of view, including civic engagement activities. Please see the Teaching and Learning Center <a href="#">web page</a> for further information.</p>

24.	<b>HOW TO SUBMIT YOUR INDIVIDUAL STUDY PLAN</b>	<p>The study plan must be completed and submitted online. Through this procedure, the student can add the modules they would like to attend and take as part of their degree programme, subject to the relevant teaching regulations.</p> <p>For further information: <a href="#">Study Plans</a>.</p>
25.	<b>ATTENDANCE</b>	<p>Attendance is not mandatory.</p>
26.	<b>TUTORING FOR STUDENTS</b>	<p>The Department will assign each student a Tutor among the professors and lecturers of the School. The Tutor will provide the student with information on the administrative, logistical and teaching aspects of the School, as well as assistance in the choice of the training activities and support for any difficulties the student may encounter while at the University.</p>
27.	<b>TRANSFER FROM ANOTHER DEGREE PROGRAMME /FROM ANOTHER UNIVERSITY</b>	<p>Students may transfer to this degree programme from another degree programme taught at the University of Verona (<i>passaggio</i>, in Italian) or from another university (<i>trasferimento</i>).</p> <p>The Student Procedures Committee (<i>Commissione Pratiche Studenti</i>) is the body which validates the credits and marks gained in other degree programmes, either in Italy or abroad.</p> <p>Students intending to transfer from another degree programme or university must submit an application in order to ensure that they meet the relevant entry requirements. The transfer will be approved only once the University of Verona has obtained from the student's current institution detailed documentation of the modules/exams taken and the corresponding marks and CFU credits obtained.</p> <p>The Student Procedures Committee will issue a decision within 45 days of receipt of the request, and shall carry out the validation procedures based on the following criteria:</p> <ul style="list-style-type: none"> <li>• for activities included in a specific SSD (Scientific-disciplinary Sector), or area of interest, the acquired credits will be assessed on a case-by-case basis, taking into account the content of each activity and the achievement of the learning objectives of the degree programme. If credits are missing, the Student Procedures Committee shall identify the most appropriate additional activities necessary to enable the student to achieve the credits required, in relation to one or more active modules that are part of the degree programme. Modules for which less than 40% of the total module CFU credits have been earned during the previous academic experience cannot be supplemented with additional activities. In such a case, the entire module must be retaken;</li> <li>• for activities not included in a specific SSD, the Student Procedures Committee will assess, on a case-by-case basis, the content of the training activities and consistency with the objectives of the degree programme. In this way, the Committee will be able to identify the credits that may be approved and validated as corresponding to the modules that are part of the degree programme;</li> <li>• if a particular training activity/module includes several activities with different marks, the final evaluation will be based on the weighted average of the marks, rounded up to the nearest whole number.</li> </ul> <p>Based on the above criteria and procedures, the Student Procedures Committee will determine the student's year of enrolment. These procedures</p>

		also apply to students wishing to change curriculum or type of degree programme.
28.	<b>RECOGNITION OF PRIOR LEARNING</b>	<p>Recognition of prior learning is the evaluation of a degree, or previous university experience, through the partial or total recognition of credits, depending on the degree of consistency between the applicant's past experience and the programme they are applying for.</p> <p>Rules for transfer from another degree programme/university also apply to students applying for recognition of prior learning. Based on the above criteria and procedures, the Student Procedures Committee will determine the student's year of enrolment.</p>
29.	<b>PART-TIME STUDY</b>	<p>Students who, due to work, family or health reasons, feel that they can devote only part of their time to study, may study on a part-time basis. Please note: choosing to study on a part-time basis will not change the normal duration of the degree programme for pension purposes. Graduation certificates for part-time students will include both the legal duration of the programme – i.e. the standard duration of a degree programme – and the agreed duration of the programme as a 'Part-time' student. Students who choose to study on a part-time basis can benefit from special conditions concerning the duration of their chosen degree programme and the amount of the relevant tuition fees. Specifically, they will have the opportunity to earn their degree over a period of time that is twice the normal duration of the programme, without being considered 'fuori corso' (i.e. attending beyond the normal duration of the programme).</p>
30.	<b>FINAL EXAMINATION</b>	<p>Upon completion of the Master's degree dissertation, students are awarded 24 CFU, which equates to no more than 4-5 months of full-time work. The dissertation must be written and presented in English, also using multimedia tools such as presentations and videos.</p> <p><b>Goals</b></p> <p>The primary goal of a dissertation is to develop an original study that may include an application project or a theoretical topic related to specific design issues, or a critical review of the most recent developments in a given field of study. During the preparation of the dissertation, under the guidance of the Supervisor and co-supervisors (if any), the student is expected to conduct an in-depth study of the chosen topic, while gaining the ability to summarise and creatively apply the knowledge acquired. The dissertation should focus on topics of bioinformatics and medical informatics, or closely related areas of study. The work shall consist in the written presentation of activities that may be structured as follows: - design and development of applications or systems; - critical analysis of contributions from the scientific literature; - original research contributions.</p> <p>The dissertation may be written either in English or in Italian, and can be presented either in English or in Italian, also relying on multimedia tools such as presentations and videos. Should the dissertation be written in Italian, the work will need to include an abstract in English.</p> <p><b>Assessment methods and examination procedures</b></p> <p>The final examination consists in writing a Master's degree dissertation, which will engage the student in a work of research, formalisation, design or development, thus contributing to complete their technical and scientific training. Each dissertation can be either internal or external, depending on whether it is carried out at the University of Verona or in collaboration with another institution. For each dissertation a Supervisor, one or more co-supervisors (optional) and</p>



an Examiner will be appointed. The Examiner is appointed by the Computer Science Teaching Committee at least 20 days before the presentation of the dissertation, once the student's eligibility to take the Master's degree examination has been verified. With regard to the legal aspects related to the dissertation and its scientific outcomes (e.g. intellectual property of research outcomes) please refer to the relevant legislation and the University Regulations.

### **Evaluation of the dissertation**

The Supervisor, the co-supervisor/s (if any) and the Examiner will evaluate the dissertation based on the following criteria: 1) level of in-depth analysis carried out, in relation to the most recent developments in the areas related to information technology, with a focus on medical and biological applications; 2) scientific and/or technological outcomes of the dissertation; 3) student's critical thinking; 4) student's experimental and/or formal development; 5) student's ability to carry out independent work (this point will not be assessed by the Examiner); 6) value of the methodologies used; 7) accuracy in planning and writing the dissertation.

### **Graduation mark**

The graduation mark (based on a 110-point scale) is a whole value between 66/110 and 110/110 and is calculated by adding together the following elements (then rounding the result to the nearest whole number, e.g. 93.50 => 94; 86.49 => 86):

- 1) the average of the marks gained in the modules, weighted according to CFU, converted to a 110-point scale;
- 2) evaluation of the dissertation and the oral presentation during the final examination, based on the following methods:
  - a) each of the points 1-7 listed above will be assigned a coefficient between 0 and 1 (fractional coefficient with one decimal place);
  - b) the quality of the presentation will be assessed by awarding a coefficient between 0 and 1 (fractional coefficient with one decimal place);
  - c) the sum of the points resulting from (a) and (b).

The Graduation Committee may award one extra point in the following cases: *cum laude* honours obtained in the exams taken during the degree programme; participation in internships officially recognised by the University; elective modules; and the achievement of the degree in a time that is shorter than the normal duration of the degree programme. If the final score is 110/110, the Graduation Committee may award *cum laude* honours by unanimous decision.

### **External dissertations**

An external dissertation is a work carried out in collaboration with an institution/body other than the University of Verona. In this case, the topic of the dissertation must be agreed in advance with a Supervisor from the University of Verona. In addition, the student must indicate at least one co-supervisor belonging to the external institution/body, who will support the student during the work on the dissertation. The Supervisor and the co-supervisors must be indicated in the online graduation application. The insurance aspects relating to the student's stay at the external institution are regulated by the regulations in force at the University of Verona. If the

dissertation involves a period of training at the external institution/body, then it is necessary that the University of Verona enters into a specific agreement with such institution/body. The scientific outcomes of the dissertation will be available to all parties involved. In particular, the contents and results of the dissertation are to be considered public. For all matters not strictly scientific (e.g. agreements, insurance) the resolution of the Academic Senate of 12 January 1999 shall be taken as a reference.

### **Supervisor, co-supervisors, examiners**

The dissertation presentation is introduced by the Supervisor. Professors belonging to the Master's degree programme in Medical Bioinformatics, the Department of Computer Science, and any associated departments may be appointed as Supervisors, as well as any lecturers from the University of Verona whose area of interest is included in the Scientific-disciplinary Sectors (SSD) ING/INF/05 and INF/01. In addition to those who have the above requirements to be appointed as Supervisor, the following individuals may be appointed as co-supervisors: researchers working in external research institutes, research grant holders, post-doctoral fellowship holders, PhD students, technical staff of the Department, external experts appointed by an Italian University, corporate officers who have a remarkable experience in the field relevant to the topic of the dissertation. Examiners may be appointed among professors of the University of Verona, working in the Scientific-disciplinary Sectors (SSD) included in the educational offer of the Master's degree programme in Medical Bioinformatics, and experts in the specific field of the dissertation topic.

### **Procedures and deadlines**

The student who is about to complete their studies must identify a dissertation topic, proposed or approved by a Supervisor or co-supervisor/s (if any). When the work is nearing completion, the student must submit to the Teaching and Student Services Unit the graduation application, which must contain the title of the dissertation (even provisional), the name of the Supervisor, co-supervisor/s (only for external dissertations) and Examiner. Subsequently, on dates established by the Teaching and Student Services Unit, and in any case no later than 20 days before the graduation, the student must submit the graduation application form with the final title of the dissertation, which must be signed by the Supervisor. These documents must be delivered in accordance with the terms established by the Teaching and Student Services Unit.

The student will need to:

- i) upload a copy of their dissertation on ESSE3;
- ii) send a copy of their dissertation in PDF format to their Examiner.

In order to be admitted to the final examination, the student must have acquired the CFU in the SSD (Scientific-Disciplinary Sectors) set out in the Master's degree regulations and teaching plan, and be up to date with the payment of their tuition fees. The Teaching and Student Services Unit of the Master's degree programme will invite all the Supervisors and co-supervisors involved, providing them with information about the date and time of the final examination.

### **Graduation Committee**

The Graduation Committee shall include five members, of which at least four are professors in the Master's degree programme in Medical Bioinformatics. Based on the number of graduates, the Computer Science Teaching

		<p>Committee will identify the most appropriate organisational methods for administering the examination, and it shall make available the calendar of tests at least one week before the examination itself. The procedures and deadlines for the submission of the graduation application are established by the Computer Science Teaching Committee and by the relevant offices.</p>
31.	<p><b>FURTHER INFORMATION</b></p>	<p>Lectures may be held either in Italian or in English.</p> <p><b>Teaching Committee</b>  The degree programme is managed by the Computer Science Teaching Committee (Collegio Didattico di Informatica – CD), which is part of the School of Science and Engineering. The Teaching Committee shall establish internal committees in order to perform specific tasks, in accordance with the Statute and the university regulations. Such committees deal with administrative procedures, and shall issue preliminary opinions on the decisions by the Computer Science Teaching Committee. The Teaching Committee shall appoint the Director of the degree programme (Programme Director) and the Quality Assurance Board.</p> <p><a href="#">Academic Calendar</a></p> <p><b>Foreign qualifications and study abroad</b>  The Student Procedures Committee (<i>Commissione Pratiche Studenti</i>) deals with the recognition of credits and qualifications gained abroad by the student, and corresponding marks. After a specific assessment, the committee will determine the student's year of enrolment. The recognition of credits obtained by students enrolled in the Master's Degree programme in Computer Science and Engineering during periods of study abroad, as part of international mobility programmes of which the University of Verona is part, is subject to evaluation by the Student Procedures Committee, in accordance with the relevant Regulations of the School of Science and Engineering.</p>

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