

**1. Module Name:**

Introduction to Computer Science

**2. Short Name (German):**

EINF

**3. Curriculum:**

MD (Documentation and Computer Science in Medicine), B.Sc.

**4. Semester :**

1

**5. Format:**

Lecture, Lab

**6. Semester Hours:**

9

**7. Learning Outcomes:**

After successful completion, students can

- describe and assess methods for data representation and conversion
- discuss the fundamental principles of computer architecture
- formalise algorithms
- demonstrate knowledge of the fundamental principles and formal specifications of programming languages
- demonstrate knowledge of the notation and principles of the Java programming language
- solve programming problems of low and medium complexity in Java notation without use of subsidiary systems while observing given style and design guidelines
- professionally communicate programming language concepts and problem solutions to their peers

**8. Contents:**

History Of Data Processing  
 Data Representation  
 Algorithms  
 Formal Languages / Programming Languages  
 Stepping Into Java  
 Control Structures  
 Procedural Abstraction  
 Data encapsulation  
 Arrays  
 Assignment, Identity, Equality  
 Recursive Data Structures  
 Inheritance And Polymorphy  
 Exceptions

**9. Prerequisites:**

General secondary education

**10. Language:**

German

**11. Evaluation:**

Written exam, lab assignments, presentations in class

**12. ECTS-credits:**

9

**13. Teacher(s):**

Kratzer

Appendix 8

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The framework for qualifications of the European Higher Education Area

	Outcomes	ECTS Credits
Short cycle (within or linked to the first cycle) Qualification	<p><i>Qualifications that signify completion of the higher education short cycle (within or linked to the first cycle) are awarded to students who:</i></p> <ul style="list-style-type: none"> <li>&gt; have demonstrated knowledge and understanding in a field of study that builds upon general secondary education<sup>64</sup> and is typically at a level supported by advanced textbooks; such knowledge provides an underpinning for a field of work or vocation, personal development, and further studies to complete the first cycle;</li> <li>&gt; can apply their knowledge and understanding in occupational contexts;</li> <li>&gt; have the ability to identify and use data to formulate responses to well-defined concrete and abstract problems;</li> <li>&gt; can communicate about their understanding, skills and activities, with peers, supervisors and clients;</li> <li>&gt; have the learning skills to undertake further studies with some autonomy.</li> </ul>	approximately 120 ECTS credits

<sup>64</sup> General secondary education also includes vocational education with a sufficiently general component.

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First cycle qualification	<p><i>Qualifications that signify completion of the first cycle are awarded to students who:</i></p> <ul style="list-style-type: none"> <li>&gt; have demonstrated knowledge and understanding in a field of study that builds upon their general secondary education<sup>27</sup>, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by knowledge of the forefront of their field of study;</li> <li>&gt; can apply their knowledge and understanding in a manner that indicates a professional<sup>65</sup> approach to their work or vocation, and have competences<sup>66</sup> typically demonstrated through devising and sustaining arguments and solving problems within their field of study;</li> <li>&gt; have the ability to gather and interpret relevant data (usually within their field of study) to inform judgements that include reflection on relevant social, scientific or ethical issues;</li> </ul>	typically include 180-240 ECTS credits
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<sup>65</sup> The word 'professional' is used in the descriptors in its broadest sense, relating to those attributes relevant to undertaking work or a vocation and that involves the application of some aspects of advanced learning. It is not used with regard to those specific requirements relating to regulated professions. The latter may be identified with the profile / specification.

<sup>66</sup> The word 'competence' is used in the descriptors in its broadest sense, allowing for gradation of abilities or skills. It is not used in the narrower sense identified solely on the basis of a 'yes/no' assessment.

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	<ul style="list-style-type: none"> <li>&gt; can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences;</li> <li>&gt; have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy.</li> </ul>	
Second cycle qualification	<p><i>Qualifications that signify completion of the <b>second cycle</b> are awarded to students who:</i></p> <ul style="list-style-type: none"> <li>&gt; have demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with the first cycle, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research<sup>67</sup> context;</li> </ul>	normally carry 90-120 ECTS credits - the minimum requirements should amount to 60 ECTS credits at the second cycle level

<sup>67</sup> The word 'research' is used to cover a wide variety of activities, with the context often related to a field of study; the term is used here to represent a careful study or investigation based on a systematic understanding and critical awareness of knowledge. The word is used in an inclusive way to accommodate the range of activities that support original and innovative work in the whole range of academic, professional and technological fields, including the humanities, and traditional, performing, and other creative arts. It is not used in any limited or restricted sense, or relating solely to a traditional 'scientific method'.

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	<ul style="list-style-type: none"> <li>&gt; can apply their knowledge and understanding, and problem solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study;</li> <li>&gt; have the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgements;</li> <li>&gt; can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously;</li> <li>&gt; have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous.</li> </ul>	
Third cycle qualification	<p><i>Qualifications that signify completion of the <b>third cycle</b> are awarded to students who:</i></p> <ul style="list-style-type: none"> <li>&gt; have demonstrated a systematic understanding of a field of study and mastery of the skills and methods of research associated with that field;</li> </ul>	Not specified

# Euro-Inf Learning outcomes Bachelor (Level 6)

## Technological, Methodological and Transferable Skills – First Cycle Degree

Graduates having completed a First Cycle degree should have demonstrated the following capabilities:

- the ability to combine theory and practice to solve informatics tasks
- undertaking literature searches, and use of data bases and other sources of information
- the ability to design and conduct appropriate experiments, and interpretation of data and conclusions
- understanding of the state of the art technologies relevant to the informatics specialisation and of their application
- awareness of the impact of informatics solutions in a societal and environmental context
- commitment to professional ethics, responsibilities and norms of informatics practice
- recognition of the need for, and engagement in life-long learning

Methodological  
Technological  
Transferable

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# Euro-Inf Learning Outcomes Master (Level 7)

## Technological, Methodological and Transferable Skills – Second Cycle

Graduates having completed a Second Cycle degree should have demonstrated the following capabilities:

- integration of knowledge from different disciplines, and handling complexity
- comprehensive understanding of applicable techniques and methods for a particular specialisation, and of their limits
- awareness of the limits of today's knowledge and knowledge understanding practical application of the state-of-the-art technology
- respective knowledge and understanding of informatics to create information models, complex systems and processes
- ability to contribute to the further development of informatics

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