

SYLLABUS COURSE DESCRIPTION

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| COURSE TITLE | Computer Networks |
| COURSE CODE | 76207 |
| SCIENTIFIC SECTOR | ING-INF/05 |
| DEGREE | Bachelor in Computer Science |
| SEMESTER | 1st |
| YEAR | 2nd |
| CREDITS | 6 |
| TOTAL LECTURING HOURS | 40 |
| TOTAL LAB HOURS | 20 |
| PREREQUISITES | Basic data structures and algorithms Basic computer programming skills (Java and/or Python) |
| COURSE PAGE | https://ole.unibz.it |
| SPECIFIC EDUCATIONAL OBJECTIVES | Type of course: "caratterizzante" Scientific area: „discipline informatiche" This course aims at providing a solid background in computer networks with special emphasis on the aspects of concurrency, coordination and agreement. Theory will be intertwined with discussions about how the notions introduced are exploited in practice, taking the Java framework as reference. This will allow to see in real contexts why distributed systems are important and how underlying issues can be addressed. |
| LECTURER | Antonio Liotta |
| SCIENTIFIC SECTOR OF THE LECTURER | ING-INF/05 |
| TEACHING LANGUAGE | English |
| OFFICE HOURS | Wednesdays 10:30-12:30, to be arranged beforehand by email Antonio.liotta@unibz.it Faculty of Computer Science, Piazza Domenicani 3 |
| TEACHING ASSISTANT | Michele Segata |

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| OFFICE HOURS | Monday 8-10, upon mail appointment, Faculty of Computer Science, Piazza Domenicani 3, POS 2.19 |
| LIST OF TOPICS COVERED | <ul style="list-style-type: none"> • Introduction to computer networks • ISO OSI reference model • Internet applications and application protocols (HTTP, SMTP, DNS) • Network protocols: TCP/IP , Ethernet • Sockets and RPCs • Failure robustness, security |
| TEACHING FORMAT | Frontal lectures, lab assignments, project work. |
| LEARNING OUTCOMES | <p>Knowledge and understanding</p> <ul style="list-style-type: none"> • know in detail the principles of computer networks and distributed systems; <p>Applying knowledge and understanding</p> <ul style="list-style-type: none"> • be able to plan and program in distributed programming environments; <p>Making judgments</p> <ul style="list-style-type: none"> • be able to collect useful data and to judge information systems and their applicability; <p>Communication skills</p> <ul style="list-style-type: none"> • be able to structure and write scientific documentation; <p>Ability to learn</p> <ul style="list-style-type: none"> • be able to learn cutting edge IT technologies and their strengths and limitations. |
| ASSESSMENT | Project work (70% of the final grade) and oral exam (30%) |
| ASSESSMENT LANGUAGE | English |
| EVALUATION CRITERIA AND CRITERIA FOR AWARDING MARKS | <p>Marks are distributed as follows:</p> <ul style="list-style-type: none"> • 70% for the project work, including lab reports and assignments (attending the lab is not required but is highly recommended); • 30% for the oral exam. <p>Evaluation criteria:</p> <ul style="list-style-type: none"> • Relevant for project work: clarity of presentation, ability to gain useful and novel insights from data, creativity, critical thinking, ability to adhere to reproducible research best practices; • Relevant for the oral exam: ability to employ (understand, recall and use) computer network concepts, and to solve practical networking problems. |
| REQUIRED READINGS | J. Kurose, K. Ross: "Computer Networking: A Top-Down Approach", 7th Edition, Pearson, 2017 |
| SUPPLEMENTARY READINGS | Distributed Systems: Principles and Paradigms, A.S. Tanenbaum, M. van Steen, 2016. |



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| | Andrew S. Tanenbaum, "Computer Networks", 2013 |
| SOFTWARE USED | Wireshark, Java, Python |