Syllabus

Course Description

Course Title	Computer Networks
Course Code	76207
Course Title Additional	
Scientific-Disciplinary Sector	IINF-05/A
Language	Italian
Degree Course	Bachelor in Computer Science
Other Degree Courses (Loaned)	
Lecturers	dr. Florian Hofer, Florian.Hofer@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/37220
Teaching Assistant	
Semester	First semester
Course Year/s	3
CP	6
Teaching Hours	40
Lab Hours	20
Individual Study Hours	90
Planned Office Hours	
Contents Summary	– 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
Course Topics	This course aims at providing a solid background in computer networks. 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.
Keywords	Internet, TCP/IP, Networks, Protocols
Recommended Prerequisites	The course requires basic knowledge of data structures and algorithms, as well as foundational Java programming skills.
Propaedeutic Courses	
Teaching Format	The course includes frontal lectures and lab exercises.
Mandatory Attendance	Not compulsory, but recommended
Specific Educational Objectives and Learning Outcomes	Knowledge and Understanding – D1.11 Know in detail the principles of computer networks and distributed systems – D1.12 Know in detail the internet fundamental principles and the methodologies for their design and development. Applying knowledge and understanding – D2.9 Be able to plan and program in distributed programming environments and in digital networks. Ability to make judgments – D3.1 Be able to collect and interpret useful data and to judge information systems and their applicability. – D3.2 Be able to work autonomously according to the own level of knowledge and understanding. Communication skills – D4.1 Be able to use one of the three languages English, Italian and German, and be able to use technical terms and communication appropriately. – D4.2 Be able to use modern communication systems, even at a distance. Learning skills – D5.1 Have developed learning capabilities to pursue further studies with a high degree of autonomy. – D5.3 Be able to follow the fast technological evolution and to learn cutting edge IT technologies and innovative aspects of last generation information systems.
Specific Educational Objectives and Learning Outcomes (additional info.)	
Assessment	The assessment consists of an oral exam (D1.11, D1.12, D4.1, D5.1, D5.3) and lab reports, which contain practical excercises

	(D1.11, D1.12, D2.9, D4.1, D4.2) and project work (D2.9, D3.1, D3.2, D4.2, D5.1).
Evaluation Criteria	Marks are distributed as follows: 30% for the lab reports and 70% for the oral exam. Attending the lab is not mandatory but is recommended, as it can help improve the oral exam grade. The final grade is calculated as a weighted average of the lab reports (30%) and the oral exam (70%). However, the lab report marks are considered only if they are higher than the oral exam grade. The 30% weight for the lab reports applies only if three assignments are submitted; if fewer assignments are delivered, the weight is adjusted proportionally.
Required Readings	James Kurose and Keith Ross. Computer Networking: A Top-Down Approach. Pearson, Boston Munich, 7th edition, April 2016. ISBN 978-0-13-359414-0.
Supplementary Readings	Andrew Tanenbaum and David Wetherall. Computer Networks. Pearson, Boston, 5th edition, September 2010. ISBN 978-0-13-212695-3. Andrew S. Tanenbaum and Maarten van Steen. Distributed Systems: Principles and Paradigms. CreateSpace Independent Publishing Platform, The Netherlands?, 2nd edition, February 2016. ISBN 978-1-5302-8175-6
Further Information	Software used: Wireshark (https://www.wireshark.org) Java (https://openjdk.org) *nix tools (*sh, *ssh, iproute2, dig, tracepath..)
Sustainable Development Goals (SDGs)	Decent work and economic growth, Responsible consumption and production, Industry, innovation and infrastructure