



Planeamento e Gestão de Redes

Arquitetura e Gestão de Redes e Sistemas

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Instance 2019/2020



Course Overview

- Context
- Objectives
- Outline
- Laboratory assignments
- Lectures Schedule & Help
- Grading
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- Mais Dúvidas?



Context

- Information and Communication Technologies (ICT) have played an important role in society for several years, in several aspects:
 - Networks and Communication Services have come to be equated, with similar importance, as other basic public services, such as water, sanitation, gas and electricity (commonly referred to as commodities);
 - Several essential services depend on ICT;
 - Expansion and vulnerabilities of *Internet of Things* (IoT).

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Context

- With the expansion of IoT, new Operation and Management problems arise:
 - IoT vulnerabilities in manufacturing environments, urgency in the provision of services, etc...



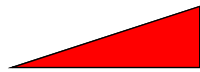
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Non-functional requirements

- In addition to functional requirements, non-functional requirements take on greater relevance, such as:
 - Performance
 - Availability
 - Reliability
 - Security
- Keywords:
 - Communication, Networks, IoT, Services, Servers, Planning, Management, Monitoring

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Objectives

- At the end of the course, students should acquire skills in Planning and Integrated Management of Network, Systems and Services infrastructures

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Outline

- Planning of medium / large networks and services
- Network Management Systems and Services Architectures
- Operation and Management of Networks, Systems and Services

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Outline



- Introduction to enterprise networks, medium and large
- Physical aspects and topologies
- Architecture of network elements
- Methodology of network design
- Analysis, Planning and Design:
 - Fundamental concepts;
 - Requirements analysis;
 - Flow analysis;
 - Logical design;
 - Physical infrastructure design;
 - Addressing and routing.
- Network and Service Management
 - Architecture and model of management
- Network and Services Management using SNMP
- Assessment of management platforms
- Other Management Models

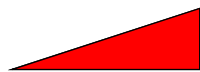
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Laboratory assignments

- Networks Laboratories (I320+I321)
- A workbench equipped with servers and network equipment, for each group
- Groups of 2 or 3 elements
- There will be one assignment per week (some assignments take longer than a week)
- As a conclusion of each assignment should be made a brief report, to be sent by e-mail within a week

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Lectures Schedule & Help

- Description of Course Unit in SIGARRA
- Lectures
 - Time: Thursday, 8:30 – 10:30
 - Room: B028
- Laboratories
 - Time: Thursday, 10:30 – 12:30
 - Room: I320+I321
- Help
 - Phone: 4233
 - e-mail to: joao.neves@fe.up.pt
 - Meetings: Wednesday, 14:30 – 17:30

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Grading

- A closed book examination
- Two evaluation questionnaires (maximum 30 min, overall assessment)
- Laboratory assignments:
 - Quality of work developed;
 - Results;
 - Report.
- Class Participation (evaluation of student participation will be based substantially on the quality of a student's comments)
- Students have to reach a minimum mark of 50% in the continuous assessment and in the exam

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Bibliography



- **McCabe, James D.**
Network Analysis, Architecture and Design
 Third Edition (The Morgan Kaufmann Series in Networking)
 ISBN: 978-0-12370-480-1
 eBook ISBN: 978-0-08054-875-3



- **Oppenheimer, Priscilla**
Top-Down Network Design
 3rd Ed., Cisco Press
 ISBN-13: 978-1-58720-283-4
 ISBN-10: 1-58720-283-2

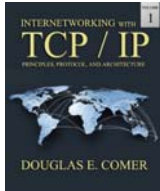


- **White, Russ and Donohue, Denise**
The Art of Network Architecture, Business-Driven Design
 Cisco Press
 ISBN-10: 1-58714-375-5
 ISBN-13: 978-1-58714-375-5

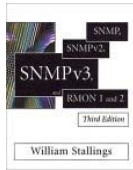
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Complementary Bibliography



- Comer, Douglas E.
Internetworking with TCP/IP (VOL I)
Pearson, 6th Ed.
ISBN-10: 0-13-608530-X
ISBN-13: 978-0-13608-530-0



- Stallings, William
SNMP, SNMPv2, SNMPv3 and RMON 1 and 2
Addison-Wesley Publishing Company, 3rd Ed.
ISBN-10: 0-20-148534-6
ISBN-13: 978-0-20148-534-9

<http://inescporto.pt/~jneves/feup/2019-2020/pgre+ags>

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Dúvidas...

- Ainda há alguma dúvida? ;-)

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