Syllabus EUCIP Core – OPERATE - 3.1

CATEGORY	TOPIC	REF.	ITEM
C.1 Computing Components and Architectures	C.1.1 Main Hardware	C.1.1.1	Identify the main central components of a computer system,vsuch as CPU, RAM, ROM, and describe their functions.
		C.1.1.2	Describe the interrelations between the main central components of a computer system.
		C.1.1.3	Identify the main types of peripheral units of a basic computer system, such as screen, keyboard and pointing devices, disks, network cards, printers, and describe their functions.
		C.1.1.4	Recognise the characteristics of different types of peripheral units and compare features and performance using appropriate parameters, such as capacity, speed, resolution, compatible standards.
	C.1.2 Computer Architectures	C.1.2.1	Identify, using diagrams, the architecture of a general purpose computer.
		C.1.2.4	Identify the range of computer systems available, such as handheld, laptop, desktop, multiprocessor servers, mainframes, and outline the main differences in their architectures.
C.2 Operating	C.2.1 Principles	C.2.1.1	Describe the functions of operating systems (OS) available for a general purpose computer.
		C.2.1.4	Describe how the resources of a computer are managed by software.
	C.2.2 Concurrent and Parallel Processes	C.2.2.1	Outline the reasons for concurrency inside an OS.
	C.2.3 Memory and Storage Management	C.2.3.1	Outline the purpose of virtual memory.
		C.2.3.4	Describe how the concept of memory hierarchy affects programming, such as separating working memory from files.
		C.2.3.5	Outline the functions of a file system.
	C.2.4 Security and Protection	C.2.4.1	Understand the need for protection and security (in terms of confidentiality, integrity and availability) in a computer system.
		C.2.4.2	Outline the types of protection mechanisms used in OS.
		C.2.4.3	Describe the threats associated with malware, such as backdoors, Trojan horses, computer viruses. Outline the main measures against such threats.
		C.2.4.4	Outline the differences between identification and authentication.
		C.2.4.5	Describe authentication techniques and define a "strong" authentication scheme.
		C.2.4.6	Outline the principles of access control.
		C.2.4.7	Outline the need for back-up and recovery.
C.3 Communications	C.3.1 Communication Principles	C.3.1.1	Distinguish between logical and physical network functionalities.
		C.3.1.2	Describe the principles of information transport defining the signal concept.
		C.3.1.3	Distinguish between analog and digital signals.
	C.3.2 Network Components and Architectures	C.3.2.1	List the components of a network, such as hosts, transmission media, apparatus, and describe their functions.
		C.3.2.2	Describe the characteristics of transmission media, such as twisted pair, coaxial cable, fiber optic, microwaves.
		C.3.2.3	Describe how the components of a network are connected to each other.
		C.3.2.4	Describe the function of interconnecting devices, such as hub, switch, router, repeater.
		C.3.2.5	Distinguish between the characteristics of LAN and WAN.
		C.3.2.9	Describe the function of a firewall and its importance in network security.
	C.3.3 Communication Protocols	C.3.3.1	Describe the ISO 7-layer reference model and list the services managed by each layer.
C.4 Network Services	C.4.1 Network Security Issues	C.4.1.1	Describe the various types of threats to regular network operations, such as denial of service attack, sniffing, port stealing.
		C.4.1.2	Define the concepts of spoofing and identity theft, and the related security threats.
	C.4.2 Cryptography	C.4.2.1	Describe the origin of cryptography and its applications in network security.
		C.4.2.2	Distinguish between secret key algorithms and public key algorithms.
		C.4.2.3	Describe how cryptography is used for protecting network communication by enhancing confidentiality (IPSec, SSH and SSL), by enforcing authentication (digital signature), and by creating a virtual private network (VPN).
	C.4.3 Domain Name System	C.4.3.1	Describe the domain name system (DNS) and its scope.
		C.4.3.2	Describe how Internet hosts are named.

		C.4.3.3	Describe the use and purpose of resource descriptors.
		C.4.3.4	Describe Internet Protocol (IP) addressing and how a domain name is translated into an IP address.
	C.4.4 The World Wide Web	C.4.4.1	Describe the World Wide Web (WWW) as a client/server application.
		C.4.4.2	Outline the role of a Web server.
		C.4.4.3	Outline the role of a Web client (browser).
		C.4.4.4	Outline the role and the functions of the hypertext transmission protocol (HTTP).
		C.4.4.5	Define and outline the purpose of a uniform resource locator (URL).
		C.4.4.6	Outline the purpose and use of the common gateway interface (CGI).
		C.4.4.7	Outline the concept of an applet.
		C.4.4.8	Understand how website content can be managed dynamically using a database.
		C.4.4.9	Outline the options available to host a website, such as running your own web server, sharing a server provided by a hosting provider, using a dedicated server provided by a hosting provider.
	C.4.5 Messaging	C.4.5.1	Compare the various electronic messaging systems, such as e-mail, SMS/MMS, instant messaging, community posts.
		C.4.5.2	Distinguish between e-mail and web-mail applications.
		C.4.5.3	Describe the roles and functions of e-mail clients, servers and gateways.
		C.4.5.4	Describe the simple mail transfer protocol (SMTP), the post office protocol version 3 (POP3), and the internet message access protocol (IMAP).
	C.4.6 Voice over Internet Protocol (VoIP)	C.4.6.1	Describe the concept of IP telephony.
		C.4.6.2	Describe the user and network requirements of VoIP.
	C.4.7 System Infrastructure Dimensioning	C.4.7.1	Describe the impact of data size and data type on network resources, such as resource requirements for music, images, motion pictures, combined audio-video transmission.
		C.4.7.2	Describe the characteristics of a server computer system that has to host a multimedia application.
C.5 Wireless and	C.5.1 Multimedia and Mobile Computing Components	C.5.1.1	Outline some mobile electronic devices, such as smartphones, PDA, GPS, wearable computing components.
		C.5.1.2	Outline the main multimedia input/output devices, such as scanners, digital cameras, microphones, screens, displays, speakers, headphones and understand their uses.
		C.5.1.3	Describe the major multimedia storage standards, such as CD-ROM, DVD, magneto-optical disk, flash memory, and distinguish between their technical characteristics.
	C.5.2 Principles of Wireless Communication	C.5.2.1	List technologies used for wireless communications and describe their functionality.
	C.5.3 Wireless Networks and Protocols	C.5.3.1	Describe the main components of a wireless LAN (WLAN) and outline their purpose.
		C.5.3.6	Outline the concept of Radio-Frequency Identification (RFID) and its uses, such as passport identification, product tracking, transportation payments, inventory systems.
C.6 Network	C.6.1 Principles of Network Management	C.6.1.1	Describe the main functions of a network management system.
C.7 Service Delivery	C.7.1 Customer Relationships and Service Level Agreements	C.7.1.1	Describe the service level management process and identify its benefits.
		C.7.1.2	List and describe the main elements of a Service Level Agreement (SLA), such as definition of services, performance measurement, problem management, IPR and confidential information, warranties, termination.
		C.7.1.3	Compare the uses and purposes of SLA, underpinning contracts and operational level agreements.
	C.7.2 Capacity and Contingency Planning	C.7.2.1	Describe capacity management and explain the importance of the three sub-processes of business, service, and component.
		C.7.2.2	Identify the purpose and main elements of a capacity plan.
		C.7.2.3	Outline the concepts of risk, threat and vulnerability and give examples of each in an IS context such as loss of service, data loss.
		C.7.2.4	List examples of risk reduction measures.
		C.7.2.5	Outline the purpose and main elements of a contingency/service continuity plan, such as fault tolerance, restart procedures, staffing, alternative resources, back up.
	C.7.3 Availability Management	C.7.3.1	Outline the purpose and benefits of availability management and define the concepts of availability, reliability, failure, recovery.
		C.7.3.2	Compare some of the commonly-used measures of availability, such as percentage availability, frequency of failure, mean time between failures,

			impact of failure.
	C.7.4 Service Desk	C.7.4.1	Outline the purpose of a service desk in a service support organisation.
		C.7.4.2	Identify the different types of service desk and describe the circumstances in which each is appropriate.
		C.7.4.3	Define the main elements of an incident management system.
	C.7.5 Change Management	C.7.5.1	Describe best practices in managing the configuration of an IT infrastructure.
		C.7.5.2	Describe best practices in IT change and release management.
		C.7.5.3	Define the purpose of a change request and the essential elements that it should contain.

Nota

I salti nella numerazione degli item (e in alcuni casi dei topic) derivano dal fatto che, per permettere un più agevole uso delle risorse esistenti basate sul Sylabus 3.0, si è mantenuta la numerazione di tale Syllabus.