

ANNEX 2 - COURSE DESCRIPTION

Course title	English I				
Course code	NETW 0101				
Course type	Compulsory, Theoretical				
Level					
Year/ Semester	1st Year, 1st Semester				
Teacher's name					
ECTS	3	Lectures /week	3	Laboratories / week	0
Course Purpose and Objectives	<p>In this course the students will acquire the necessary knowledge and skills to be able to:</p> <ul style="list-style-type: none"> Follow the technical instructions of the equipment and facilities they are handling using English textbooks and Provide satisfactory and effective technical support to clients and executives of an organization for the use of IT equipment in English. <p>Note: The above will be enriched and further developed with the course "English II"</p>				
Learning Outcomes	<p>At the end of the course, the students will be able to:</p> <ul style="list-style-type: none"> Provide satisfactory and effective technical support to customers and executives of an organization for the use of communications equipment. Provide satisfactory and effective technical support to customers and executives of an organization for the use of computer network equipment. Provide satisfactory and effective technical support to English speaking, customers and executives of an organization for the use of 				

	<p>information technology systems equipment.</p> <ul style="list-style-type: none"> • Observe the technical instructions of the supervising engineers, communicating in Greek and English. • Maintain the technical instructions of the machines and facilities they manage, using manuals in Greek and English. 		
Prerequisites		Required	
Course Content	<p>Grammar (2 hours per week):</p> <p>Introduction to the English language. Word order, sentence structure, and meaning. Affirmative and negative statements. Quantifiers (many, much, some, several, etc.). Suffixes (-ful, -ity, -ly). Plural forms (regular and irregular).</p> <p>Verb Tenses: Present tenses, past tenses, present perfect and future tenses. Irregular verbs. Passives</p> <p>Modals and related verbs.</p> <p>Conditionals: Types of conditionals, modal verbs in conditionals, and expression of wishes.</p> <p>Verbs followed by gerunds and/or infinitives</p> <p>Phrasal Verbs . Separable/inseparable phrasal verbs. Phrasal verbs with preposition.</p> <p>Relative clauses and relative pronouns. Combining sentences.</p> <p>Nouns, pronouns and articles: Countable and uncountable nouns, pronouns, determiners, possessive nouns, compound nouns, and articles.</p> <p>Adjectives and adverbs: Comparing, adverbs of degree and time adverbs.</p> <p>Prepositions: prepositions of place, verbs + preposition, adjective + preposition, noun + preposition.</p> <p>Vocabulary (1 hour per week):</p> <p>Readings and discussions aiming to enrich students' vocabulary (colour, shape, size, place, position, location, means, quantifiers, time, reason, frequency, people, jobs, places to visit, festivals/celebrations, disasters/accidents, eating habits, sports/hobbies, environment, education, entertainment, transport, crime, etc)</p>		

Teaching Methodology				
Bibliography	<ul style="list-style-type: none"> D. Bolton, N. Goodey, “English Grammar in Steps: English Grammar Presented, Explained and Practiced in Context”, Richmond Publications, 1996. P. Emmerson, “Business Grammar Builder”, MacMillan, 2006 			
Assessment		Participation in class	10%	
		Continuous/Formative assessment (home work)	20%	
		Mid-term examination	30%	
		Final examination	40%	
Language	English			

ANNEX 2 - COURSE DESCRIPTION

Course title	Maths				
Course code	NETW 0102				
Course type	Compulsory, Theoretical				
Level					
Year/ Semester	1st Year, 1st Semester				
Teacher's name					
ECTS	3	Lectures / week	3	Laboratories / week	0
Course Purpose and Objectives	<p>Students are expected at the end of the course to acquire the necessary scientific knowledge and skills to be able to:</p> <ul style="list-style-type: none">• Perform mathematical calculations using analytical and numerical methods necessary for the technical tasks they will ask for and for the budget costing• Perform statistical calculations necessary for data processing and technical measurements• Describe the basic characteristics of electronic communications systems based on mathematical models				
Learning Outcomes	<p>At the end of the course, the students will be able to:</p> <ul style="list-style-type: none">• Apply the mathematical calculations, using analytical and numerical methods, necessary for the technical parts and for the budget calculations.• Perform statistical calculations necessary for the data processing and measurement techniques.				
Prerequisites	None	Required	None		
Course Content	Fractions. The rule of three. Exercises for practise, based on the weekly theory module.				

	<p>Solving linear equations. Exercises for practise, based on the weekly theory module.</p> <p>Solving a system 2x2. Exercises for practice, based on the weekly theory module.</p> <p>Solving quadratic equations using the discriminant. Root sorting. Exercises for practice, based on the weekly theory module.</p> <p>Similarity I: Thales theorem and other triangles theory. Properties of parallel lines. Exercises for practice, based on the weekly theory module.</p> <p>Similarity II: Similar figures and how to manufacture these figures. Exercises for practise, based on the weekly theory module.</p> <p>Trigonometry I: Definition of the trigonometric numbers and to understand how to use the trigonometrical circle. Exercises for practice, based on the weekly theory module.</p> <p>Trigonometry II: Solving rectangular triangles. Relationship between trigonometric numbers of complementary angles. Exercises for practice, based on the weekly theory module.</p> <p>Methods of integration and derivatives. Exercises for practice, based on the weekly theory module.</p>									
Teaching Methodology										
Bibliography	<ul style="list-style-type: none">Davison, R., Croft, T. "Mathematics for Engineers". United Kingdom: Pearson Education, 2020. ISBN: 9781292253695									
Assessment		<table><tr><td>Class Attendance</td><td>10%</td></tr><tr><td>Class Participation and coursework (homework and project)</td><td>20%</td></tr><tr><td>Midterm</td><td>30%</td></tr><tr><td>Final Examination</td><td>40%</td></tr></table>	Class Attendance	10%	Class Participation and coursework (homework and project)	20%	Midterm	30%	Final Examination	40%
Class Attendance	10%									
Class Participation and coursework (homework and project)	20%									
Midterm	30%									
Final Examination	40%									
Language	Greek									

ΠΑΡΑΡΤΗΜΑ 2 - ΠΕΡΙΓΡΑΦΗ ΜΑΘΗΜΑΤΟΣ

Course title	Δίκτυα Υπολογιστών I				
Course code	NETW 0103				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	1st Year, 1st Semester				
Teacher's name					
ECTS	6	Lectures /week	3	Laboratories / week	2
Course Purpose and Objectives	<p>Students, are expected at the end of the course, to acquire the necessary scientific knowledge and skills to be able to:</p> <ul style="list-style-type: none"> • Use and configure communication / connection / application / management / security protocols of the computer architectural model • Manage addresses of a home network and a small business network; • Record requirements, design and implement a wired local computer network. 				
Learning Outcomes	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Describe and compare different types of computer networks according to topology / scale / physical interface / data transmission technology. • Describe the basic principles of the layered model of network architecture. • Describe, implement and configure communication / connection / application / management / security protocols of the computer architectural model. Manage addresses of a small home network and small business network. • Identify and configure basic devices of a wired / wireless computer network. 				

	<ul style="list-style-type: none"> • Describe and apply installation instructions of the installation of structured cabling • Record requirements, plan and implement wired / wireless local computer network. • Use software tools and / or laboratory instruments to perform tasks related to installation, control, management, network status verification and protocol analysis and maintenance of network devices. 		
Prerequisites		Required	
Course Content	<p>Theory:</p> <p>Introduction to Computer Networks :</p> <p>1. Introduction to concepts: Data and Networks.</p> <ul style="list-style-type: none"> • Definition of a Network. • Using Computer Networks in today's times, how they have changed our lives. • Advantages of using networks. • Common local and network applications. • Types and features of mainframe, server, stand-alone server, workstation, workstation, mobile devices) • Definition of the basic devices of a network. <p>2. Classification of Networks, depending on:</p> <ul style="list-style-type: none"> • their topology: <ul style="list-style-type: none"> o star networks o Bus networks o ring networks o distributed networks (mesh) tree topology • their scale: <ul style="list-style-type: none"> o Local networks (LAN) metropolitan networks (MAN) o wide area networks (WAN) • their physical interface: <ul style="list-style-type: none"> o wired networks o wireless networks 		

- data transmission technology:

- ο Broadcast networks
- ο Point-to-point networks

Network Design Principles:

- Data transfer:

- ο simplex
 - half-duplex
- ο full duplex

- Network Architectures:

- ο circuit-switching, packet-switching,

- Service Orientation

- ο Connection-oriented services (connection-less service)

Network Reference Models :

1. Protocol hierarchies

2. Meaning of protocol and layer in the network.

- Need for a layered network architecture.

- Protocols stack - Encapsulation / decapsulation.

3. The OSI Reference Model

- Summary and description of the key features and functions of each layer.

4. The TCP / IP Reference Model

- Summary and description of the key features and functions of each layer.

5. Evaluation / Comparison of OSI and TCP / IP Reference Layer Models

Connection to the Network :

- Description of roles of computing devices on a network (client-server, peer-to-peer model).

- Share resources (files, printers) between computing devices.

- Network topologies (logical and physical topologies).

- Principles of communication (source, destination, channel).

- Physical transmission problems (distance, attenuation, noise).

- Need for communication protocols (message format and size, encoding, encapsulation, timing).

- Message templates (unicast, multicast, broadcast).

- Local network communication - common communication protocol (example: Ethernet protocol), need to standardize communication protocols, physical addresses (source identification, local network destination).

- Basic features of a local area network, need for hierarchical design (access, distribution, core).

- Need for logical network addresses.

- Targets - access level attributes.

- Describe features of a repeater / hub and switch within a local Ethernet

network.

- Broadcast domains.
- Distribution level - Reasons for extending a network.
- Features of a router.
- The concept of the default gateway, routing table, and ARP table (Address Resolution Protocol).
- Definition of the term "Local Area Network - LAN".

Network addressing :

- Purpose of an IP address.
- Description of the structure of an IP address - Network address and Host address.
- Description of the subnet mask.
- IP Address Classes.
- CIDR notation
- Public and private IP addresses.
- Single, multiple and broadcast addresses (unicast, multicast, broadcast).
- Static / dynamic IP assignment.
- DHCP protocol.
- Manage addresses of a small home network and a small business network.
- Use the Network Address Translation (NAT) service.

Laboratory:

- Identification various types of computing devices.
- Identification of components and peripheral devices.
- Common security practices dealing with computing devices.
- Installation, verification and upgrading of components and peripheral devices.
- PC Preparation for Network Connection, Purpose of various computer variables (computer description, full computer name, computer workgroup).

Structured Cabling (recognition / description / familiarization):

- Necessity and benefits
 - o Scalability
 - o Standardization
 - o Ease of designing
 - o Ease of supporting
 - o Ease of maintenance and management
 - o Flexible wiring
- Standards (eg EIA / TIA-568-B or A)
- Familiarization of various parts of structured cabling:
 - o Entrance facility
 - o Equipment room
 - o Backbone cabling

- o Telecommunication closet
- o Horizontal cabling
- o Work-area (end user)
- Distributors (requirements / design / implementation)
 - o rack
 - o Central, floor intermediate
 - o Distribution components (box, patch panels, patch cord)
- Network devices (identification / description)
 - o Repeater / Concentrator (hub)
 - o Switch and Router

Structured Cabling :

- Core cabling (requirements / design / application)
 - o Internal trunk network
 - o External trunk network
- Horizontal wiring (requirements / design / application)
 - o Connection cable, sockets, terminal connectors, line tracks.
- Work Station (requirements / design / implementation)
 - o Cables, fasteners
- Cables - types of (identification / design / application)
 - o Twisted pair cables - features and performance, categorization, color codes (UTP, STP, FTP, SFTP, SSTP)
 - o Coaxial cable
 - o Fiber optic cables (multimode / single mode)
- Identification of small, medium and large size computer networks.
- Performing simple tasks for sharing resources.
- Preparing a PC to join a network (ipconfig command).
- Use the "Wireshark" software to identify the destination source on a local area network (logical, physical addresses).

Structured Cabling :

- Network devices (requirements / design / installation)
 - o Repeater / Concentrator (hub)
 - o Switch
 - o Router
- Wiring quality control:
 - o Basic testing
 - ☐ Cable speed, attenuation, interference
- Installation instructions for structured cabling:
 - o Termination
 - o Installation
 - o Selection of suitable materials (terminals, patch cords, etc)
 - o Maximum permissible length
 - o Marking of cables and termination points
 - o Correct grounding
 - o Avoiding exposure to high temperatures
 - o Avoidance of proximity with high current cables

	<p>ο Certification of installed wiring. Design, implementation and verification of a simple local area network (number and type of end-user devices, applications, data sharing and services, bandwidth requirements, etc).</p> <ul style="list-style-type: none"> • configuration of static / dynamic IP address (eg, through Windows TCP / IP Properties). • Configuration and verification of the DHCP protocol in the GUI mode of a router interface. • Familiarization with the NAT service. • Using the "Wireshark" software to identify the source and destination address (logical, physical addresses). <p>Structured Cabling:</p> <ul style="list-style-type: none"> • Requirements / Design of a Local Area Network connected to the internet <p>ο Familiarization, correct use of network devices (eg concentrator, switch, router)</p> <p>ο Familiarization with different types of cables.</p> <p>ο Familiarization with wiring tools.</p> <p>Cable termination.</p>		
Teaching Methodology			
Bibliography	<ul style="list-style-type: none"> • F.J. Kurose, W.K. Ross, "Computer Networking: A Top-Down Approach", Addison-Wesley, 6th Ed., 2012, ISBN 0-13-285620-4 • A.S. Tanenbaum, D.J. Wetherall, Computer Networks, 5th Ed. Prentice Hall, New Jersey, 2010 • Computer Networking: The Complete Guide. United States: Murphy & Moore Publishing. 2022, ISBN: 9781639871254 • Ν. Γραμμένος, «Τεχνικός Δικτύων Υπολογιστών», Εκδόσεις ΚΛΕΙΔΑΡΙΘΜΟΣ, ISBN : 978-960-461-289-5. • Κ. Αρβανίτης, Γ. Κολυβάς, Σ. Ούτσιος, «Τεχνολογία Δικτύων Επικοινωνιών», Παιδαγωγικό Ινστιτούτο, Υπουργείο Εθνικής Παιδείας και Θρησκευμάτων, Ελλάδα. • CICSO CCNA Routing and Switching course, CISCO Networking Academy, 2013. 		
Assessment		Participation in class	10%

	Continuous/Formative assessment (home work)	20%	
	Mid-term examination	30%	
	Final exam	40%	
Language	Greek		

ANNEX 2 - COURSE DESCRIPTION

Course title	Electronics I				
Course code	NETW 0104				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	1st Year, 1st Semester				
Teacher's name					
ECTS	5	Lectures /week	3	Laboratories / week	2
Course Purpose and Objectives	<p>Students, are expected at the end of the course, to acquire the necessary scientific knowledge and skills to be able to:</p> <ul style="list-style-type: none"> • Use the appropriate theorems and circuit diagrams to do fundamental calculations regarding the installations and operation of electronic circuits and • Implement electronic circuits like Switches, Amplifiers and Stabilizers. 				
Learning Outcomes	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Recognize the electric and electronic components which are used in computer and communications circuit system technologies. • Describe the basic principles of the electrical and electronic engineering and use the appropriate theorems and circuit diagrams so as to do fundamental calculations regarding the installations and the operation of the computer and communications circuit system technologies. • Handle tools and use laboratory instruments to implement works regarding the installation, the inspection and the maintenance of computer and communication systems materials. 				
Prerequisites		Required			

Course Content

Theory:

Introduction to electronics: Atomic structure, semiconductors, free electrons and holes, semiconductors type P and type N. PN junction, PN junction bias. Relevant English terminology.

PN junction diode: Junction bias, V-I characteristic curve. Practical diode models. Clipping circuits with diodes. Relevant English terminology.

Rectification: Half wave, full wave rectification with two diodes, bridge rectifier. Smoothing filters. Voltage doublers. Relevant English terminology.

Bipolar transistor: PNP and NPN construction, bias, operation and basic parameters. Basic connections and characteristic curves. Relevant English terminology.

Electronic switches: DC operation analysis of bipolar transistor, bipolar transistor as a switch. Input circuits with diodes. Implementation of digital TTL NOT and NAND gates. Relevant English terminology.

Voltage amplifier: AC operation analysis of bipolar transistor, operating point and load line. Common emitter voltage amplifier. Biasing circuits. Relevant English terminology.

Amplifiers: Common collector amplifier. Darlington amplifier. Multistage amplifiers. Amplifier coupling. Relevant English terminology.

Field Effect Transistor JFET and MOSFET: Construction, operation, parameters and characteristic curves. Applications as a switch and as an amplifier. Relevant English terminology.

Specialised diodes and transistors and applications: Light emitting diode, photodiode, phototransistor, and optocoupler. Relevant English terminology.

Voltage stabilization: Zener diode, voltage stabilising circuits with zener diode, transistor and operational amplifier. Relevant English terminology.

Laboratory:

Introduction to the equipment and the laboratory instruments. Introduction to design and simulation programs (e.g. Electronics Workbench, NI Multisim).

Diode characteristic curve and clipping circuits.

Operation of rectification circuits.

Experimental verification of bipolar transistor characteristic curves.

Experimental verification of transistor operation as a switch and of the digital NAND gate.

	<p>Experimental verification of bipolar transistor voltage amplifier operation.</p> <p>Experimental verification of bipolar transistor two stage voltage amplifier operation.</p> <p>Experimental verification of JFET transistor characteristic curves and of JFET voltage amplifier.</p> <p>Experimental verification of photodiode, phototransistor and optocoupler circuit operation.</p> <p>Experimental verification of voltage stabilising circuit operation with zener and with voltage regulator 7805.</p>		
Teaching Methodology			
Bibliography	<ul style="list-style-type: none"> Κ.Α.Καρύμπακα, " Γενική Ηλεκτρονική Τόμος Α", Θεσσαλονίκη, 2001 Buchla, David, and Floyd, Thomas L.. Electronics Fundamentals: Circuits, Devices and Applications. U.K., Pearson Education Limited, 2013. Henderson, John. Electronic Devices: Concepts and Applications. Ηνωμένο Βασίλειο, Prentice Hall PTR, 2019. Electronics, B' Class, Cyprus Ministry of Education, Sport and Youth, Cyprus 		
Assessment	Participation in class	10%	
	Continuous/Formative assessment (home work)	20%	
	Mid-term examination	30%	
	Final exam	40%	
Language	Greek		

ANNEX 2 - COURSE DESCRIPTION

Course title	Electrical Engineering				
Course code	NETW 0105				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	1st Year, 1st Semester				
Teacher's name					
ECTS	5	Lectures /week	3	Laboratories / week	2
Course Purpose and Objectives	<p>Students are expected at the end of the course to acquire the necessary technical knowledge and skills to be able to:</p> <p>Carry out tasks related to the installation, control, operation and maintenance of the information and communication technology systems, following the relevant principles and theorems and according to the regulations of the EAC, the Electromechanical Service and the IEE.</p>				
Learning Outcomes	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Recognize electrical and electronic components that are used in information and communication technology systems circuits. • Describe the basic principles of electricity and electronics and employ appropriate theorems and circuit diagrams to make basic calculations concerning the installation and operation of information and communication technology systems circuits. • Describe the basic principles of analogue and digital communications, and use appropriate theorems and circuit diagrams to make basic calculations concerning the installation and operation of information and communication technology systems. 				

	<ul style="list-style-type: none"> Handle tools and use laboratory instruments to carry out tasks related to the installation, control, and maintenance of information technology and communications technology 		
Prerequisites		Required	
Course Content	<p>Theory:</p> <p>Introduction to electricity: Atom structure, electric charge, conductive and non-conductive materials. Basic electrical quantities (voltage, resistance and current), units of measurement and prefixes. Related English Terminology.</p> <p>Electric Power supply Sources: Primary and secondary electrical cells. Capacity and internal battery resistance. Connection of electric sources in series and parallel. Related English Terminology.</p> <p>Electric DC circuits: Ohms Law. Power and energy. Resistors connected in series and parallel. Equivalent resistance of a composite resistor circuit. Related English Terminology.</p> <p>Kirchhoff s Laws: Voltage Divider rule and Current divider rule</p> <p>Analysis of Complex resistor circuits: Examples using only one DC voltage source</p> <p>Circuits with two or more sources: The Mesh-Current Method and the Node Voltage Method. Superposition Theorem. Introduction to Thevenin and Norton theorems. Related English Terminology.</p> <p>Examples of complex circuits analysis with two or more sources.</p> <p>Ηλεκτρομαγνητισμός. Μαγνητικό πεδίο και μαγνητικές γραμμές, μαγνητική ροή και πυκνότητα ροής. Δυνάμεις σε ηλεκτροφόρο αγωγό. Σχετική αγγλική ορολογία.</p> <p>Electromagnetism: Magnetic field and magnetic lines, magnetic flux and magnetic flux density. Force on a current carrying conductor. Related English Terminology.</p> <p>Electrical Coils: Coil construction, inductance, Self-inductance and coils applications . Related English Terminology.</p> <hr/> <p>Electric field and capacitors: Construction of capacitors and calculation of their capacity. Charging / discharging of a capacitor during transient phenomena.</p>		

	<p>Related English Terminology.</p> <p>Alternating current. Time-varying waveforms. AC current quantities . AC power sources. Related English Terminology.</p> <p>Vector and complex representation of alternate quantities. AC circuits with capacitors and coils. Related English Terminology.</p> <p>Power, energy and power factor. Efficiency of electrical appliances and of electric power consumption. Related English Terminology.</p> <p>Laboratory:</p> <p>Introduction to laboratory equipment and instruments. Protection and security rules and measures.</p> <p>Electrical Measurements. Analogue and digital multimeters. Accuracy of measurements. Measurement of voltage, current and resistance in simple electrical circuits (one source and one resistor). Measurement of voltage, current and resistance in composite circuits (one source and two to three resistors). Related English Terminology.</p> <p>Resistance color codes. Potentiometers and rheostats. Analysis of circuits with series and parallel resistances. Related English Terminology.</p> <p>Experimental verification of Ohm's law. Short circuits and protection devices.</p> <p>Experimental verification of Kirchhoff's Laws. Voltage divider and current divider</p> <p>Battery capacity and internal resistance. Sources connections (in series and parallel). Maximum power transfer Law.</p> <p>Magnetic field of current carrying conductors and coils. Electromagnets</p> <p>Measurements of coils characteristics.</p> <p>Charging and discharging of capacitors. Capacitors Connection.</p> <p>Oscilloscope and Signal Generator. Measurement of waveforms characteristics</p> <p>Oscilloscope measurements on alternating current circuits with capacitors and coils.</p> <p>Measuring inductive and capacitive resistance in relation to frequency and power factor calculation</p>
Teaching Methodology	

Bibliography	<ul style="list-style-type: none"> Gross, Charles A., and Roppel, Thaddeus A.. Fundamentals of Electrical Engineering. Ηνωμένο Βασίλειο, CRC Press, 2012. Αλέξανδρος Αλεξανδρής, <i>ΗΛΕΚΤΡΟΤΕΧΝΙΑ & ΗΛΕΚΤΡΟΝΙΚΗ ΤΕΧΝΟΛΟΓΙΑ Εργαστηριακές Ασκήσεις</i>, εκδόσεις ΙΩΝ, Zeng, Gengsheng Lawrence, and Zeng, Megan. Electric Circuits: A Concise, Conceptual Tutorial. Γερμανία, Springer International Publishing, 2021. ΚΑΝΕΛΛΟΠΟΥΛΟΥ – ΒΑΖΟΥΡΑ – ΛΙΒΙΕΡΑΤΟΥ, Ηλεκτρικά Κυκλώματα, εκδόσεις Παπασωτηρίου 			
Assessment		Participation in class	10%	
		Continuous/Formative assessment (home work)	20%	
		Mid-term examination	30%	
		Final exam	40%	
Language	Greek			

ANNEX 2 - COURSE DESCRIPTION

Course title	Introduction to computer and new technologies				
Course code	NETW 0106				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	1st Year, 1st Semester				
Teacher's name					
ECTS	4	Lectures /week	2	Laboratories / week	2
Course Purpose and Objectives	<p>Students, are expected at the end of the course to acquire the necessary technical knowledge and skills to be able to:</p> <ul style="list-style-type: none"> • Recognize the various basic parts of the Computer in terms of hardware and software and be able to understand their basic function. • Perform basic configuration tasks of the operating system (Windows / Linux). • Use efficiently office products (Word Processing, Excel and Power point Software) 				
Learning Outcomes	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Identify the basic parts of a Computer. Will be able to distinguish the technical differences between them and select the appropriate hardware components based on specific requirements. • Use the PC for simple tasks and perform basic operating system tasks (Windows / Linux). • Use a Word Processing software to create technical documents with the correct formatting. • Use a spreadsheet program for automated execution of complex computations. 				

	<ul style="list-style-type: none"> • Uses a presentation program for the preparation of technical presentations. • Recognize the basic principles of IoT, cloud computing and 3D - printing • Recognize the structure and requirements of Data Centers 		
Prerequisites		Required	
Course Content	<p>Theory / Laboratory: Basic characteristics of a PC both hardware and software. Description of all parts of a PC such as the processor, memory (primary and secondary) and units of measurement. Hardware recognition of all parts of a PC. Introduction to computer operating system, desktop, and web browsing. Searching for information with search engines. Changing of desktop variable settings, management and compression of files. Introduction to Word Processing application software Word processing and paragraph formatting. Margins and shading. Finding and replacing text. Format pages and styles. Creating sections. Correcting text using a spell checker. Using headers and footers. Inserting and formatting columns. Using footnotes and creating table of contents. Inserting links into text and creating references. Introduction to worksheets. Using a workbook. Use of cells and data input. Data processing and worksheets. Introduction to formula for data processing. Introduction to graphs using worksheets. Selection and formatting of a graph. Copying graphs within the workbook and other applications. Data input, formatting, and processing using formula and numeric operations. Creating and formatting complex graphics. Import data from other files (CSV, TSF) for processing. Introduction to presentation software. Creating and developing a presentation. Transparency format, color choice and layout. Using a master slide. Importing and formatting text and graphics or images. Transparency, text and paragraph formatting. Insertion of a table. Introduction and formatting of graphics and graphs. Adding motion and effects to the presentation. Adding Transparency Effects. Running a slideshow with timer. Usage and connectivity of applications for data communication in the form of a technical report, using graphs and creation of a presentation. Electronic delivery and data communication.</p> <p>Introduction to new technologies: Internet of Things</p>		

	<ol style="list-style-type: none"> 1. Definition 2. The story of IoT 3. Why is Internet of Things Important? 4. Advantages of IoT 5. Data Streams 6. Using sensors 7. Integration of data 8. Who uses the IoT (operating segments) <ol style="list-style-type: none"> 8.1 Healthcare 8.2 Industrial production 8.3 Retailing 8.4 Telecommunications 8.5 Transports 8.6 Energy 9. Basic principles of IoT 10. Introduction to Arduino IoT Cloud <p>Cloud Computing</p> <ol style="list-style-type: none"> 1. Why "cloud" and not another word? 2. Simple explanation for "cloud computing" with a simple example. 3. Advantages of cloud computing. 4. Disadvantages of cloud computing. 5. The term "service" in cloud computing. <ol style="list-style-type: none"> 5.1 Software as a Service (SAS) 5.2 Platform as a Service (PasS) 5.3 Storage as a service (StaaS) 5.4 Hardware as Service (HaaS) 5.5 Database as a Service (DaaS) 5.6 Companies that provide cloud computing. 6. Cloud Os and Cloud Applications. 7. Core Cloud Computing Application Models <ol style="list-style-type: none"> 7.1 Public Cloud 7.2 Private Cloud 8. The term "Virtualization" in cloud computing. <p>Data Centers</p> <ol style="list-style-type: none"> 1. Consolidation 2. Architecture and design 3. Energy consumption and efficiency 4. Security Requirements 5. Management and monitoring of the data center infrastructure
Teaching Methodology	

Bibliography	<ul style="list-style-type: none">• J. Cox, J. Lambert, C. Frye, Ελληνικό Office Professional 2010 Βήμα Βήμα, Εκδόσεις Κλειδάριθμος, 2011.• J. Cox, J. Lambert, Ελληνικό Microsoft Word 2010 Βήμα Βήμα, Εκδόσεις Κλειδάριθμος, 2011.• Δ. Καρολίδης, Microsoft Office Excel 2010, Εκδόσεις Άβακας, 2011.• Χ. Γουλτίδης, Παρουσιάσεις PowerPoint 2010, Εκδόσεις Κλειδάριθμος, 2013.• Microsoft Productivity Tools for Beginners: Ms Word, Ms Excel & Ms PowerPoint (3 in 1 eBooks). N.p., Advanced Micro Systems Sdn Bhd, 2023.• Nagaraj, Ambika. Introduction to Sensors in IoT and Cloud Computing Applications. Singapore, Bentham Science Publishers, 2021.										
Assessment		<table><tr><td>Participation in class</td><td>10%</td></tr><tr><td>Continuous/Formative assessment (home work)</td><td>20%</td></tr><tr><td>Mid-term examination</td><td>30%</td></tr><tr><td>Final exam</td><td>40%</td></tr></table>	Participation in class	10%	Continuous/Formative assessment (home work)	20%	Mid-term examination	30%	Final exam	40%	
Participation in class	10%										
Continuous/Formative assessment (home work)	20%										
Mid-term examination	30%										
Final exam	40%										
Language	Greek										

ANNEX 2 - COURSE DESCRIPTION

Course title	English II				
Course code	NETW 0201				
Course type	Compulsory, Theoretical				
Level					
Year / Semester	1st Year, 2nd Semester				
Teacher's name					
ECTS	3	Lectures / week	3	Laboratories / week	0
Course Purpose and Objectives	<p>In this course students will acquire the necessary knowledge and skills to be able to:</p> <ul style="list-style-type: none"> Follow the technical instructions of the equipment and facilities they are handling using English textbooks and <p>Provide satisfactory and effective technical support to clients and executives of an organization for the use of IT systems equipment in English.</p>				
Learning outcomes	<p>At the end of the course, the students will be able to:</p> <ul style="list-style-type: none"> Provide satisfactory and effective technical support to customers and executives of an organization for the use of communications equipment. Provide satisfactory and effective technical support to customers and executives of an organization for the use of computer network equipment. Provide satisfactory and effective technical support to customers and executives of an organization for the use of IT systems equipment. Observe the technical instructions of the supervising engineers, 				

	<p>communicating in Greek and English.</p> <ul style="list-style-type: none"> • Maintain the technical instructions of the machines and facilities they manage, using manuals in Greek and English. • Comply with good communication rules. 		
Prerequisites		Required	NETW 0101 English I
Course content	<p>Reading Comprehension: Extracting information from text (technical manuals, or articles in technology related journals and magazines).</p> <p>Paraphrasing: What is paraphrasing, when to use it, and techniques of paraphrasing a text. Quoting and referring to sources. Using articles in technology related journals.</p> <p>Summarizing: Techniques of summarizing a text. Using examples from technical manuals, or text from articles from technology related journals.</p> <p>Arguments: Developing and presenting an argument, an idea or an opinion. Expressing certainty and doubt. Supporting or arguing against an argument, an idea or an opinion.</p> <p>Essay writing: Essay organization and planning. Writing paragraphs, introduction and conclusions. Emphasis on technology related issues.</p> <p>Technical report writing styles: Use of the active and passive voice. Convert a document from active voice to passive voice, and vice-versa. Use examples from articles in technology related journals.</p> <p>Technical report writing: Describing processes, developments and changes. Expressing reasons and explanations / cause and effect. Describing a sequence of events / time relations. Describing the operation of a system such as a machine or a computer program. Writing a manual or documentation providing instructions and guidelines on how to use a machine.</p> <p>Business correspondence: Writing internal/external or informal/formal memoranda and notes. Requesting information on specifications, pricing, insurance, etc. Asking for/ refusing/giving permission. Making offers. Expressing complaints on faulty products.</p> <p>Curriculum Vitae (CV): Writing a CV. Job applications and cover letters.</p>		

Teaching Methodology				
Bibliography	<ul style="list-style-type: none">• Smith-Worthington, Darlene, and Jefferson, Sue. Technical Writing for Success, 4th. Ηνωμένες Πολιτείες, Cengage Learning, 2018.• Lewis, S. D., et al. <i>Writing skills for technical students</i> (3rd ed.). Englewood Cliffs, NJ: Prentice Hall.1991• Vanalstyne, J. S. <i>Professional and technical writing strategies</i> (2nd ed.). Englewood Cliffs, NJ: Prentice Hal, 1990• Technology related journals and magazines (printed or electronic)			
Assessment		Participation in class	10%	
		Continuous/ Formative Assessment (Homework)	20%	
		Mid-term examination	30%	
		Final examination	40%	
Language	English			

2 - COURSE DESCRIPTION

Course title	Communications I				
Course code	NETW 0202				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	1st Year, 2nd Semester				
Teacher's name					
ECTS	4	Lectures / week	2	Laboratories / week	2
Course Purpose and Objectives	<p>Students, are expected at the end of the course, to acquire the necessary knowledge and skills to be able to:</p> <ul style="list-style-type: none"> • Separate the various signals and identify, observe and analyze their characteristics and install and set up signal antennas. 				
Learning Outcomes	<p>Students, are expected at the end of the course, to be able to:</p> <ul style="list-style-type: none"> • Use mathematical calculations using analytical or arithmetic methods necessary for the technical tasks they perform and for their cost budget. • Identify electrical and electronic components that are used in information and communication technology systems circuits. • Describe and analyze the basic principles and characteristics of the electronic communications systems. • Describe the basic laws of the propagation of the telecommunication signal (voice, image and data). • Justify the necessity and describe the various ways of modulation and demodulation of analog signals. 				

	<ul style="list-style-type: none"> Identify and compare the various wired telecommunication signal transmissions media, and install appropriate adaptors to different types of cables. Describe and compare the various wireless transmission media of telecommunication signals, and describe the different types of antennas. 		
Prerequisites		Required	
Course Content	<p>Theory:</p> <p>Introduction to communications: Model and key parts of a communications system. Historical evolution of communications. Related English Terminology</p> <p>Signals: Audio and electrical signals. Periodic and non-periodic signals. Time and spectral presentation of signals. Frequency bands and spectral classification of signals. Related English Terminology.</p> <p>Signal Analysis: Composite Periodic Signals. Signal Harmonics and Fourier series. Related English Terminology.</p> <p>Signal losses and noise: Logarithmic units, decibel (dB) and level unit (dBm). Gain and attenuation of power. Sources and types of noise. Signal to Noise ratio (S / N ratio). Related English Terminology.</p> <p>Electrical Filters: Types, characteristics and applications of electrical filters. Realization of passive filters. Reference to electronic filters (analogue and digital). Related English Terminology.</p> <p>Electromagnetic Waves: Electromagnetic wave characteristics. Wavelength, polarization and propagation of electromagnetic wave. Electromagnetic spectrum and frequency bands in communications. Related English Terminology.</p> <p>FM and PM signal Modulation: Mathematical FM and PM modulation analysis. Frequency Spectrum FM. Related English Terminology.</p> <p>Multiplexing: Need for multiplexing in communications. Time division Multiplexing (TDM) and Frequency Division Multiplexing (FDM) methods. Comparison and examples of TDM and FDM methods. Related English Terminology.</p> <p>Wired transmission media and waveguides: Frequency bandwidth and media transmission speed. Cables of copper conductors (parallel, twisted, and coaxial). Optical fiber. Waveguides. Related English</p>		

	<p>Terminology.</p> <p>Transmission Lines: Equivalent transmission line circuit with distributed elements, characteristic resistance of the transmission line. Reflected and stationary waves. Termination and adaptation of the transmission lines . Related English Terminology.</p> <p>Antennas: Dipole operation principle. Antennas classification (tuned / untuned, symmetrical / non symmetrical). Antenna characteristics (natural resonant frequency, active height, input resistance and radiation, efficiency, directionality, and gain). Antenna types (dipole, Yagi, parabolic, and ferrite). Related English Terminology</p> <p>Laboratory:</p> <p>Introduction to laboratory equipment and instruments. Protection and safety measures.</p> <p>Amplitude and level Measurement using high frequency voltmeter. Frequency measurement using frequency meter. Spectrum Analyzer.</p> <p>Time and spectral signal analysis. Measurement of amplitude, frequency and phase shift with oscilloscope.</p> <p>Frequency measurement with Lissajous shapes.</p> <p>Experimental verification of passive filters operation. Frequency Response of an LC circuit.</p> <p>Instruments for measuring the intensity of electromagnetic waves. (Field Strength Meter)</p> <p>Observation of an Amplitude modulated signal and measurement of the modulation index on the oscilloscope.</p> <p>Observation of a Frequency Modulated signal on the oscilloscope</p> <p>Cable Types and cable adaptors. Cable preparation and cable connections.</p> <p>Connections, terminations and fitting of metal conductors</p> <p>Installation and adjustments of YAGI TV antenna.</p>
Teaching Methodology	
Bibliography	<ul style="list-style-type: none"> Michael Yang, Sung-Moon. Modern Digital Radio Communication Signals and Systems. Γερμανία, Springer International Publishing, 2018. ISBN: 9783319715681 Κωνσταντίνου, Εισαγωγή στις τηλεπικοινωνίες, Εκδόσεις:

	ΠΑΠΑΣΩΤΗΡΙΟΥ		
	<ul style="list-style-type: none">Π. Κωπτής, Διαμόρφωση, Μετάδοση Σημάτων, Εκδόσεις: ΤζιόλαΑναλογικές και Ψηφιακές Επικοινωνίες, Hwei Hsu, εκδ. ΤζιόλαΗΑΥΚΙΝ, Συστήματα Επικοινωνίας, Εκδόσεις: ΠΑΠΑΣΩΤΗΡΙΟΥΠ. Χριστίδης, Τεχνολογία Ηλεκτρονικών Επικοινωνιών Γ' Τάξης, Υπουργείο Παιδείας και Πολιτισμού Κύπρου		
Assessment		Participation in class	10%
		Continuous/Formative assessment (home work)	20%
		Mid-term examination	30%
		Final examination	40%
Language	Greek		

ANNEX2 – COURSE DESCRIPTION

Course Title	Computer Networks II				
Course Code	NETW 0203				
Course Type	Compulsory, Theoretical and Practical Labs				
Level					
Year / Semester	1 st Year / 2 nd Semester				
Teacher's name					
ECTS	6	Lectures / Week	2	Laboratories / Week	3
Course Purpose and Objectives	<p>During the course students will acquire the technical skills and knowledge to become able to:</p> <ul style="list-style-type: none"> • Design and upgrade Computer Networks • Organize a Technical Support / Provider Service Center • Run wireless link systems. 				
Learning Outcomes	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Describe, implement and format communications / connection / application / management / security protocols of the computer architectural model. • Identify and implement devices for the connectivity of the Internet Service Provider. • Recognize the role of an Internet service provider's network technicians. • Design the upgrading of a computer network by gathering requirements, choosing and planning, executing and evaluating. • Identify and modify the key devices of a wired / wireless computer network • Describe and apply structured cabling installation instructions. • Record requirements, design and implement wired / wireless local computer network. • Use software tools and / or laboratory instruments to perform tasks related to installation, control, management, network status verification and protocol analysis, security and maintenance of computer hardware. 				

	<ul style="list-style-type: none"> Provides satisfactory and effective technical support to customers and executives of an organization with the use of computer network equipment. 		
Prerequisites		Required	NETW 0103 Computer Networks I
Course Content	<p>Theory</p> <p>Network Services :</p> <ul style="list-style-type: none"> Client / server model. Client / server model protocols. <ul style="list-style-type: none"> Application layer protocols (HTTP, FTP, Telnet, DHCP, DNS, SMTP, POP3). Their key features. Transport Layer Protocols (TCP, UDP). <ul style="list-style-type: none"> TCP: Connected-oriented services, Connection establishment, Confidence with Confirmations, Re-transmissions, Series Number, Flow Control. Examples of applications. UDP: Non-Linked, Simple Protocol Services. Examples of applications. Network Layer Protocol (IP). Its key features. Using the port number - categorization. Concept of 'reception' and 'host pair'. <p>Internet and its use - Internet connection :</p> <ul style="list-style-type: none"> Internet concept and Internet Service Provider (ISP). Internet use by businesses. Service levels offered by the Provider (e.g., connection speed, e-mail, content filtering, crawling, coke). Point of Presence (POP), Internet Exchange Point (IXP) hierarchical structure. Sending information - Network Protocol (IP) Significance on the Internet, IP data packet. Connectivity provider: <ul style="list-style-type: none"> DSLAM, cable modem termination system (CMTS), modems, wireless bridging devices, DSL / DSL multiplexer / demultiplexer. Border gateway routers Uninterruptible Power Supplies. Expandability for future growth. Devices with expansion slots. Roles and tasks within a Provider: On-site e-Government, Customer Service, Design and Provision, Network Management Center (NOC), Helpdesk Role and features of Network Provider Center (NOC), Network Devices in NOC. The concept of "cloud". Physical requirements between the local network and the Provider network. 		

ISP Help Desk :

- Organization:
 - o Level 1 - provide direct support
 - o Level 2 - handling scalable calls
 - o Level 3 - on-site visits
- Role of a Provider's Network Techniques:
 - o Network connectivity issues.
 - o Using diagnostic tools to identify and resolve problems.
 - o Identifying and solving problems on the spot.
 - o Installation and configuration of new equipment.
- Interaction with clients: incident management, interpersonal skills
- Using OSI layers as a guide to serial diagnosis of problems (Repeat the features / protocols / technologies of each layer of the OSI model).
 - o Use of layers to define, locate / isolate, solve a problem.
- Creation and use of documents: Collection of information and writing, documentation of the analysis.
- Procedures in the customer area:
 - o Examination of job order with the client, current status of the identified problems, permission to start work.
 - o Work in dangerous places, in strange places, around electricity, Heavy equipment

Network Upgrade Design:

- Recording the existing network: Carrying out a study of the site, Investigation and recording of the physical layout of the premises.
 - o Number of users and equipment types, Current Internet connection, Application requirements, Existing infrastructures, Physical layout.
- Design information: Planned growth, New services required, Safety requirements, Expected reliability, Budget limitations.
- Record details:
 - o Physical and logical topologies.
 - o Understanding the relationship between the devices and the network, regardless of the physical wiring arrangement (star networks, distributed-mesh networks, etc.).
 - o Record information about the current network in a short inventory.
- Design of network upgrade: Collection of requirements, Selection and Design, Execution, Operation, Evaluation.
- Wiring: User workspaces, Telecommunication room, Backbone area, Distribution area.
- Structured wiring (repeat): Wiring options (STP, UTP, coaxial, optical fibers), patch cables, Horizontal wiring, Vertical wiring, cable management, cable marking.
 - o Crossover, Straight-through, Serial, Console (rollover) cables.
- Use of appropriate devices:
 - o LAN switches provide connectivity within local networks.
 - o Routers interconnect local networks and need networking in a wide area.

- Factors for selecting a router: type of connection, available features, cost.

Wireless Linking Services :

- Brief description of wireless technologies with comparison (eg, predicted connection speed, cost).
- Benefits and limitations of the wireless link.
- Wireless local area networks (WLAN).
 - o Standards
 - o Features (frequency, connection speed, cost).
 - o Wireless Local Area Network Devices.
- Wireless local area network infrastructure (ad hoc).
 - o Importance of SSID, BSS, ESS.
- Wireless channels.
- "Multiple Access with Carrier Listening and Collision Loss" method - CSMA / CA.
- Wireless local area network security issues.
 - o Access restriction (physical address filtering)
 - o Wireless client certification
 - o Encryption on a wireless network

Laboratory:

- Using the "Wireshark" software to understand / analyze the protocols being taught.
- Familiarizing with the client / server model using applications and their corresponding application protocols (eg FTP, Telnet, and so on).

- Initial Set Up of Integrated Services Router (ISR).
- Use of network tools for ping - traceroute.

Structured Cabling - repeat (12 periods):

- Requirements / Design / Local Area Network Application.
 - o Familiarization, correct use of network devices (eg concentrator, switch, router)
 - o Familiarity with different types of cables.
 - o Familiarity with wiring tools.
- Terminating cables.

- Technical Support / Service Center Troubleshooting Scenarios (e.g., email issues, client configuration, client connectivity).

- Identification of basic network devices.
- Recognition and Implementation of structured cabling.
- Implement an existing network upgrade script.

- Identification of basic devices of a wireless local area network (e.g., an

	<p>access point).</p> <ul style="list-style-type: none"> • Wireless access point settings. • Configuring a wireless client. <p>Designing and installing a simple wireless local area network.</p>		
Teaching Methodology			
Bibliography	<ul style="list-style-type: none"> • F.J. Kurose, W.K. Ross, "Computer Networking: A Top-Down Approach", Addison-Wesley, 6th Ed., 2012, ISBN 0-13-285620-4. • Computer Networking: The Complete Guide. United States: Murphy & Moore Publishing. 2022, ISBN: 9781639871254 • Ελληνική Μετάφραση: «Δικτύωση Υπολογιστών», Εκδόσεις Γκιούρδα, 2004. • Ν. Γραμμένος, «Τεχνικός Δικτύων Υπολογιστών», Εκδόσεις ΚΛΕΙΔΑΡΙΘΜΟΣ, ISBN : 978-960-461-289-5. • Κ. Αρβανίτης, Γ. Κολυβάς, Σ. Ούτσιος, «Τεχνολογία Δικτύων Επικοινωνιών», Παιδαγωγικό Ινστιτούτο, Υπουργείο Εθνικής Παιδείας και Θρησκευμάτων, Ελλάδα. • CICSO CCNA Routing and Switching course, CISCO Networking Academy, 2013. 		
Assessment	Participation in class	10%	
	Continuous/Formative assessment (home work)	20%	
	Mid-term examination	30%	
	Final examination	40%	
Language	Greek		

ANNEX 2 – COURSE DESCRIPTION

Course Title	Computer Architecture				
Course Code	NETW 0204				
Course Type	Compulsory, Theoretical and Practical Labs				
Level					
Year / Semester	1 st Year / 2 nd Semester				
Teacher's name					
ECTS	6	Lectures / Week	3	Laboratories / Week	2
Course Purpose and Objectives	<p>The course will enable the students to acquire the necessary knowledge and skills to:</p> <ul style="list-style-type: none"> • Assemble a computer system using its basic modules, such as the motherboard, e-processor, memory, hard drive, power supply, etc., as well as the necessary peripherals, and install the required software; and Identify failures in computer systems due to malfunctions of the hardware or software and restore them. 				
Learning Outcome	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Explain the operation of various parts of the computer and its basic peripheral units. • Use the necessary knowledge and skills to assemble a computer using its basic modules, such as motherboard, processor, memory, hard drive, power supply, etc., and installs the necessary software • Use the necessary knowledge and skills to install the required software (operating system, system software, and application software) on a computer • Identify malfunctions in computer systems due to hardware malfunctions, and use the required tools and methodologies to restore them. • Provide satisfactory and effective technical support to customers and 				

	executives of an organization for the use of information technology systems equipment.		
Prerequisites		Required	
Course Content	<p>Theory:</p> <p>Introduction to PC architecture: Key features and historical background of computer evolution. Related English Terminology. Organization and basic operation of a typical computer. The role of the Central Processing Unit, Memory and Channels. Execution cycle of a command. Using English Terminology. Central Processing Unit (CPU): Key parts and operation of the CPU. Historical evolution of microprocessors and their key features. Using English Terminology.</p> <p>Computer main memory: semiconductor memory categories (ROM, EPROM, Flash, SRAM, and DRAM), manufacturing, operating principles, features, and their applications on computers. Related English Terminology. DRAM Random Access Memory Technologies: EDO, SDRAM, RDRAM, etc.). Memory cards SIMM, DIMM, and DDR. Related English Terminology. Memory hierarchy: Cache memory, need for cache memory and the principle of locality. Ways of organizing cached memory (direct match, correlation). Multilevel Cache Hierarchy. Related English Terminology.</p> <p>Input / Output Interface (I / O): I / O device types and characteristics. How to access I / O devices: Interrupt and direct access to memory (DMA). Related English Terminology.</p> <p>Buses and channels: bus types, templates and protocols. Modern and asynchronous buses. Description of the ISA, PCI, SATA, SCSI, and USB bus architectures. Using English Terminology.</p> <p>Types and principles of storage devices: magnetic disks, optical disks, USB drives, RAID disks and memory sticks. Using English Terminology.</p> <p>Monitors and Multimedia: Types, features, and principle of display and video projector. Graphics cards and sound cards. Formats of audio, video and video files. Using English Terminology.</p> <p>Printers and scanners: Features and principles of different types. Multifunction machines, mice and tablets. Related English Terminology. Modern parallel processing architectures: Multiprocessor systems, multiprocessors, blades and clusters. Using English Terminology.</p>		

	<p>Symptoms of common hardware failures due to a malfunction of the power supply, processor, motherboard, memory, hard drive, or graphics card. Locate and repair common hardware and software malfunctions.</p> <p>Laboratory:</p> <p>Introduction to laboratory equipment, tools and instruments. Disassembling and assembling Desktop PCs. Practising on old PCs, which may not work, for skills development purposes. The power supply to the PC. Function description, cable color recognition, and trend control.</p> <p>Motherboards. Motherboard identification, key identification: CPU location, memory location, power connection, arteries and channels. Desktop PC Assembly. Inserting power adapter, motherboard (CPU and memory), hard drive, CD drive, Starting the PC for the first time. BIOS setup settings. Recognition of sound signals when starting the PC. Formatting hard disk and installing the operating system. Installing new hardware (eg graphics card, second hard drive, etc.), and setup mode.</p> <p>Hardware and software maintenance. Diagnostic tools and hard disk maintenance tools. Security and anti-virus tools. Setting up display mode: Screen resolution and colors, multiple screens and projector connection. Installing, maintaining, and controlling printer operation. Laptop computer maintenance and upgrading. Changing battery, hard drive, memory, and screen.</p> <p>Symptoms of common hardware failures due to a malfunction of the power supply, processor, motherboard, memory, hard drive, or graphics card. Locating and repairing common hardware and software malfunctions.</p>
Teaching Methodology	
Bibliography	<ul style="list-style-type: none"> • Dumas II, Joseph D.. Computer Architecture: Fundamentals and Principles of Computer Design. Ηνωμένο Βασίλειο, CRC Press, 2018. ISBN: 9781420057959 • Andrew S. Tanenbaum, Η αρχιτεκτονική των υπολογιστών, 2003 ISBN 960-209-403-6 • W. Stallings, Οργάνωση και Αρχιτεκτονική Υπολογιστών 6η ΕΚΔΟΣΗ, εκδ. ΤΖΙΟΛΑ

Assessment		Participation in class	10%	
		Continuous/Formative assessment (home work)	20%	
		Mid-term examination	30%	
		Final examination	40%	
Language	Greek			

ANNEX 2 - COURSE DESCRIPTION

Course title	Digital Electronics				
Course code	NETW 0205				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	1st Year, 2nd Semester				
Teacher's name					
ECTS	6	Lectures /week	3	Laboratories / week	2
Course Purpose and Objectives	<p>Students, are expected at the end of the course, to acquire the necessary knowledge and skills to be able to:</p> <p>Use appropriate theorems and circuit diagrams to make calculations related to the installation and operation of information and communication technology systems and implement digital electronic circuits using integrated circuits</p>				
Learning Outcomes	<p>At the end of the course students will be able to:</p> <ul style="list-style-type: none"> Recognize the electrical and electronic components used in information and communication technology systems circuits. Describe the basic principles of the science of electronics and Electrical Engineering and employ appropriate theorems and circuit diagrams to make basic calculations concerning the installation and operation of information and communication technology systems circuits Describe the basic principles of analogue and digital communications, and use appropriate theorems and circuit diagrams to make basic calculations related to the installation and operation of information and communication technology systems circuits. 				

Prerequisites		Required	
Course Content	<p>Theory:</p> <p>Arithmetic systems: decimal, binary, octal, and hexadecimal. Converting numbers from one system to another. Binary Codes (BCD, GRAY, ASCII etc.)</p> <p>Introduction to digital electronics. Basic logic gates: function, truth tables, symbols. Charts of simple digital circuits. Conversion between circuit, logical function, and truth table. Related English Terminology</p> <p>Boolean Algebra. Laws and theorems. Venn Charts. Logical functions Simplification using Boolean Algebra</p> <p>Logical functions Canonical form: The Sum of the minterms, and the Product of the maxterms. Composition of logical circuits using only NAND or NOR gates. Related English Terminology.</p> <p>Arithmetic operations in the binary system. Supplements. Logical circuit of the full adder. Parallel adder and parallel subtractor. Related English Terminology.</p> <p>Coders and Decoders. Multiplexers and Demultiplexers. Applications. Related English Terminology.</p> <p>Introduction to Sequential Circuits. Asynchronous and synchronous Flip-Flops (SR, JK, D and T). Flip-Flop with Preset and Clear (preset and clear) asynchronous Inputs. Truth tables and time diagrams . Related English Terminology.</p> <p>Asynchronous counters. Binary counters (up, down, and bidirectional). N state Counters. Frequency dividers. Counter Applications. Related English Terminology.</p> <p>Registers: serial input serial output, SISO, parallel input serial output, PISO, serial input parallel output, SIPO and parallel input parallel output, PIPO Registers applications. Related English Terminology.</p> <p>Laboratory:</p> <p>Introduction to laboratory equipment of digital electronics (power supply, breadboard, logical switches, LED indicators, pulse generator). Implementation of logical gates using switches.</p>		

	<p>Verification of logical gate function, using integrated circuits</p> <p>Implementation of simple combinational circuits in bread-boards, and verification of their truth table. Confirmation of Boolean laws using logical gates and logical circuits using switches.</p> <p>Implementation of combinational circuits using only NAND or NOR gates and verification of their truth table.</p> <p>Implementation of a full adder circuit using gates and verification of its truth table. Implement a parallel 4-bit adder using integrated circuits or a simulation program</p> <p>Verification of the operation of encoders, decoders, and multiplexers using integrated circuits (74138, 74147 and 74152).</p> <p>Implementing the SR latch using NAND gates, and verification of its truth table. Verification of the operation of Flip-flop JK and D, using ICs such as 7476 and 7474.</p> <p>Verification of the counter function using ICs such as 7490 and 74163.</p> <p>Verification of a register operation using integrated circuits (eg 7491, 7495 and 74165).</p>
Teaching Methodology	
Bibliography	<ul style="list-style-type: none"> • Floyd Thomas, Ψηφιακά Ηλεκτρονικά, Εκδ. ΙΟΝ, 2007 • Πογαρίδης Δημήτρης, Σχεδίαση Ψηφιακών Συστημάτων, Εκδ. ΙΟΝ, 2004 • Muret, Pierre. Fundamentals of Electronics 2: Continuous-time Signals and Systems. Ηνωμένο Βασίλειο, Wiley, 2018. ISBN: 9781786301826 • Τεχνολογία Ψηφιακών Ηλεκτρονικών Β' Τάξης, Υπουργείο Παιδείας και Πολιτισμού Κύπρου • Τεχνολογία Ψηφιακών Ηλεκτρονικών Γ' Τάξης, Υπουργείο Παιδείας και Πολιτισμού Κύπρου

Assessment	Participation in class	10%	
	Continuous/Formative assessment (home work)	20%	
	Mid-term examination	30%	
	Final examination	40%	
Language	Greek		

ANNEX 2 – COURSE DESCRIPTION

Course Title	Introduction to Programming				
Course Code	NETW 0206				
Course Type	Compulsory, Theoretical / Laboratory				
Level					
Year / Semester	1 st Year / 2 nd Semester				
Teacher's name					
ECTS	3	Lectures / Week	1	Laboratories / Week	2
Course Purpose and Objectives	Students will acquire the necessary scientific knowledge and skills to become able to: <ul style="list-style-type: none">• State and formulate a problem.• Detect and distinguish the components of a problem.• Analyze a simple problem in a sequence of steps.• Create an algorithm to solve a problem.• Describe the pseudocode algorithm.• Encode the algorithm in a suitable high level programming language environment.• Solve simple problems in a programming environment.• Make basic Arduino projects				
Learning Outcomes	At the end of the course, the student will be able to: <ul style="list-style-type: none">• Clarify and fully understand a problem.• Identify the desired results.• Create a simple algorithm.• Create an executable code from the algorithm.• Be able to make basic Arduino projects				
Prerequisites		Required			
Course Content	Theory <ul style="list-style-type: none">• Defining and understanding the problem<ul style="list-style-type: none">○ Wording and understanding of the problem○ Analysis of the problem				

Defining requirements

• Algorithms

- Importance of algorithms
- Methodologies for designing algorithms
- Development of algorithms
- Algorithm control

• Implementation in a programming environment

- Concept of structured programming.
- Introduction to C++
- Data types
- Stable and variable
- Input and exit commands
- Sequence, check-repeat selection structure
- Tables
- Procedures

• Functions

- Checking and debugging a program
- Categories of errors
- Step by step execution of the program

Laboratory:

• Solving simple problems in a structured programming language

environment. To implement the above examples include the following:

- Simple flow control and flow control with many possibilities (if-then, if ... then ... else ...).
- Flashback. Give simple retrospectives from Physics, Mathematics, Electronics, etc.
- Repeat. Fixed number of reps (for ...).
- Repeat under condition

• Examples and simple exercises using functions.

• Work that includes as much structured programming as possible, such as commands:

- Input-Output.
- Repeats.
- Procedures.
- If-then etc.

• The papers will be discussed and applied in the classroom in three phases:

- Input-Output.
- Repeats.
- Procedures.
- If-then etc.

• Arduino Development board

- Arduino board and sensors and programming through Arduino language

Teaching Methodology				
Bibliography	<ul style="list-style-type: none"> • C++ από τη θεωρία στην εφαρμογή, Γ.Σ. Τσελίκης, ISBN 978-618-00-1174-6 • ThomasH. Cormen, CharlesE. Leiserson, RonaldL. Rivest, CliffordStein “Εισαγωγή στους αλγόριθμους” Εκδότης: Πανεπιστημιακές Εκδόσεις Κρήτης • Cyganek, Boguslaw. Introduction to Programming with C++ for Engineers. Ηνωμένο Βασίλειο, Wiley, 2021. ISBN: 9781119431107 			
Assessment		Participation in class	10%	
		Continuous/Formative assessment (home work)	20%	
		Mid-term examination	30%	
		Participation in class	10%	
Language	Greek			

ANNEX 2 - COURSE DESCRIPTION

Course title	Operating Systems I				
Course code	NETW 0301				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	2nd Year, 3rd Semester				
Teacher's name					
ECTS	4	Lectures / week	2	Laboratories / week	2
Course Purpose and Objectives	<p>Students are expected at the end of the course to acquire the necessary knowledge and skills to be able to:</p> <ul style="list-style-type: none"> • Manage services, Processes, and devices in PC systems • Configure and Manage network settings, Windows Firewall, and Remote Access. • Create accounts and groups for users with various features and permissions. 				
Learning Outcomes	<p>At the end of the course, the student will be able to:</p> <p>Use utilities software tools to perform tasks that finalize the installation, manage and maintain software for information and communication technology systems.</p> <p>Be able to describe and support the basic principles of software deployment, installation and maintenance.</p> <p>Be able to Explain the necessity of, and describe the operating principles of the operating system.</p> <p>Demonstrate the knowledge and skills required to use and support the WINDOWS operating system</p>				

	<p>Have the necessary knowledge and skills to install the required software (operating system, system software, and application software) on a computer.</p> <p>Detecte malfunctions in hardware and software systems, and use the tools and procedures required to restore them.</p> <p>Provide effective and satisfactory technical support to customers and executives of an organization for the use of information technology systems equipment.</p>		
Prerequisites		Required	
Course Content	<p>Theory:</p> <p>Basic concepts, specifications, and features of the Operating Systems (OS).</p> <p>A brief look at the evolution of Operating Systems and Windows.</p> <p>Key Features of Windows' advantages and disadvantages</p> <p>Navigation on Windows OS using the graphical user interface (GUI) and commands.</p> <p>Installation, Upgrading, and migration to the new version of Windows 10. Brief specifications of Computer necessary to install and apply Windows. Using Windows Upgrade Advisor to support devices for upgrading to the new version of Windows. Differences between Windows Versions. Preparing to install (dual-boot).</p> <p>Preparing to migrate from previous versions of Windows to Windows 10. Using Easy Migration Tool and Windows Anytime Upgrade in Windows 10.</p> <p>Creating a Windows 10 system image and preparing a standard PC. Installing Windows 10 from image standard PC to other PCs without using DVD. Preparing tools and commands to upgrade over a network</p> <p>Introduction to Windows graphical user interface. Management of the GUI, properties, addition of a new language, management of keyboard and other devices, and installation of drivers. Using Task Scheduler tools.</p> <p>Installing and uninstalling programs in windows 10. Using tools for proper configuration of the OS operation and avoiding PC viruses. Updating Windows with the latest OS updates. Using the tools (Backup, Restore) to store data in other storage units. System protection Program before upgrading.</p>		

Introduction to Processes and Services in Windows. Management of individual programs and startup in compatibility mode. Managing the PC through the administration console for access to services, device management, and event viewer. Using Task Manager.

Network configuration and management, brief introduction to TCP / IP protocols. Configuring Network settings in Windows and managing network settings with IPv4 and IPv6. Introduction to Windows Firewall, settings and management. Remote Access and Remote Assistance.

Introduction to user and group management. Adding and managing accounts/profiles. Creating and managing User profile and configuring user quota. Providing services to each user such as access to a printer (sharing).

Introduction to using commands in Windows. Basic commands for file and folder management, startup services and processes, network management, diagnostic commands (scandisk, defragmentation).

Windows Security configuration for windows OS. Understanding the security risk and using security tactics to minimize risk .

Laboratory:

Import password (or login) and navigation on Windows OS.

Installing Windows OS.

Using User State Migration Tool (USMT) to migrate from previous versions of Windows to Windows 10.

Creating Windows 10 system image, installation and management.

Managing, changing and configuring the GUI and using tools for managing the process.

Practical training in the use of tools for the degraded operation of PC and OS.

Practical training in service management, process management, and devices.

Practical training in managing, changing and configuring network settings, Windows Firewall, and remote access.

Practical training in creating accounts and groups with various characteristics and limitations.

	<p>Practicing the use of commands in Windows.</p> <p>Simple exercises to safeguard the system.</p>		
Teaching Methodology			
Bibliography	<ul style="list-style-type: none"> • J. Preppernau, Βήμα Βήμα Windows 10, Εκδόσεις Κλειδάριθμος, 2009. • Π. Φράγκου, Συνοπτικός Οδηγός για τα Windows 10, Εκδόσεις Γκιούρδας, 2009. • J. Joyce, Ελληνικά Windows 10 Με Μια Ματιά, Εκδόσεις Κλειδάριθμος, 2010. • AN INTRODUCTION TO OPERATING SYSTEMS: CONCEPTS AND PRACTICE (GNU/LINUX AND WINDOWS), FIFTH EDITION. N.p., PHI Learning Pvt. Ltd., 2019. ISBN: 9789387472884 		
Assessment	Participation in class	10%	
	Continuous/Formative assessment (home work)	20%	
	Mid-term examination	30%	
	Final examination	40%	
Language	Greek		

ANNEX 2 - COURSE DESCRIPTION

Course title	Communications II				
Course code	NETW 0302				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	2nd Year, 3rd Semester				
Teacher's name					
ECTS	5	Lectures / week	3	Laboratories / week	2
Course Purpose and Objectives	<p>Students will acquire the necessary scientific knowledge and skills to be able to:</p> <p>Implement basic and complementary services of ISDN, DSL (Broadband Services and Technology) and Cellular Telephony and manage the functions of the above systems.</p>				
Learning Outcomes	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Perform mathematical calculations using analytical or numerical methods necessary for the technical work to be performed and for their cost budget • Recognize electrical and electronic components that are used in information and communication technology systems • Describe and analyze the basic principles and characteristics of electronic communications systems • Describe the basic propagation laws of the telecommunication signal (voice, image and data). 				

	<ul style="list-style-type: none"> Justify the necessity and describe the various ways of digitizing analog signals, as well as the various ways of coding and modulating digital signals. Identify and compare the various wired media for telecommunication signal transmission, and install links to the different types of cables. Describe and compare various communication broadband services and technologies Provide satisfactory and effective technical support to customers and executives of an organization for the use of communications equipment. 		
Prerequisites		Required	NETW 0202 Communications I
Course Content	<p>Introduction to digital communications: Advantages of digital transmission. Sampling and digitization of analog signals. Related English Terminology.</p> <p>Analog Signal Digitization: Analog signal conversion to digital. Impact of bit number (quantization error / quantization noise). Effect of sampling rate (sampling rate theorem - Nyquist). Related English Terminology.</p> <p>Pulse Code Modulation (PCM): Pulse Code Modulation bandwidth. Applications in telephony and CDs. Differential Pulse Code Modulation (DPCM) and Adaptive Differential Pulse Code Modulation (ADPCM). Related English Terminology.</p> <p>Coding of digital signals: Coding necessity (frequency spectrum and synchronization). On-Off Keying, NRZ, Bipolar NRZ, Manchester, and extended line codes (4B3T etc). Related English Terminology.</p> <p>Digital Modulation of Digital Signals: Frequency spectrum of digital signals and the need for modulation. Basic formats of digital modulation: Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), and Phase Shift keying (PSK). Advanced types of modulation (BPSK, QPSK, and QAM). Related English Terminology.</p>		

	<p>Telephony: Voice characteristics. Telephone devices, Number selection systems (pulses and frequencies). Analogue telephone device. Telephone call centers and telephone call center networks. Related English terminology.</p> <p>Broadband Services and DSL Technology: DSL Bandwidth. XDSL (ADSL, HDSL, and VDSL) technologies. Related English Terminology.</p> <p>Cellular Telephony: Topology, cellular network structure and Cellular telephony management functions. The GSM and 4G system. Related English Terminology.</p> <p>Laboratory :</p> <ul style="list-style-type: none"> • Analog signal conversion to digital • Frequency spectrum of digital singals and modelation • Installation of Telephone systems and telephone networks 		
Teaching Methodology			
Bibliography	<ul style="list-style-type: none"> • Κωνσταντίνου, Εισαγωγή στις τηλεπικοινωνίες, Εκδόσεις: ΠΑΠΑΣΩΤΗΡΙΟΥ • Michael Yang, Sung-Moon. Modern Digital Radio Communication Signals and Systems. Γερμανία, Springer International Publishing, 2018. ISBN: 9783319715681 • Π. Χριστίδης, Τεχνολογία Ηλεκτρονικών Επικοινωνιών Γ' Τάξης, Υπουργείο Παιδείας και Πολιτισμού Κύπρου • Αναλογικές και Ψηφιακές Επικοινωνίες, Hwei Hsu, εκδ. Τζιόλα 		
Assessment	Participation in class	10%	
	Continuous/Formative assessment (home work)	20%	
	Mid-term examination	30%	
	Final examination	40%	

ANNEX 2 – COURSE DESCRIPTION

Course title	Computer Networks III				
Course code	NETW 0303				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	2nd Year, 3rd Semester				
Teacher's name					
ECTS	7	Lectures / week	3	Laboratories / Week	3
Course Purpose and Objectives	<p>Students will acquire the necessary knowledge and skills to become able to:</p> <ul style="list-style-type: none"> • Design and implement a wired / wireless computer network and • Use software tools and / or instruments to perform tasks related to installation, control, management, network status verification and protocol analysis, security and maintenance of computer network hardware based on CISCO IOS software. 				
Learning Outcomes	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Describe, implement and format communications / logging / application / management / security protocols of the computer network architecture model. • Manage addresses in a small home network and small business network. • Identify and implement basic routing principles in computer networks. • Identify and modify key devices of a wired / wireless computer network • Record requirements, design and implement wired / wireless local computer network. • Use software tools and / or laboratory instruments to perform tasks related to installation, control, management, network status verification and protocol analysis, security and maintenance of computer network hardware. 				
Prerequisites		Required	NETW 0203 Computer Networks II		

Course Content

Theory

- Repetition of a basic IP addressing structure on a local network: IP addresses identify network and computer devices, IP address format, Hierarchical structure - network and computer octets, IP Address Classes.
- Private address space reserved for private networks: Private IP addresses cannot be routed to the Internet; Consumer networking devices give private IP addresses via DHCP.
- Subnets: Role of the subnet mask.
- Create subnetworks using IP Address Classes.
- Independent of C-Class Routing (CIDR) classes.
- CIDR subnetting: variable length subnet masks (VLSM) - subframe addressing of various sizes, fixed length subnet masks (FLSM).
- Communication between subnetworks:
 - Each subnet is a separate network.
 - It is necessary to use a router to communicate with each other.
 - Each router interface is the default network gateway for each subnet.
- Translation of Network Addresses (NAT), Port Translation Function (PAT): purpose, mode of operation, importance / necessity.
 - Issues: Additional workload to support IP address and port translations, careful network planning and equipment selection, precise setup.
- Temporary solutions to address IP address depletion: subnetting, private IP addresses and NAT.
- Improvements suggested by IPv6 usage: More address space and better space management, easier management, support to advanced network capabilities, DHCPv6
- Address IPv6 notation: 128 bits, 32 hexadecimal digits, three-part hierarchy: global prefix, subnet, and ID (ID) interface.

Configuring Network Devices :

- Integrated Services Router Initial (ISR) setup: combines routing connectivity, local network, security, voice, and broadband connectivity features.
- Tools and equipment required for configuration.
- CISCO IOS software:
 - Three steps of the boot process: Power-on self-test (POST), Detect and load Cisco IOS, Locate a setup boot file, or enter setup mode.
 - Verifying and troubleshooting the boot process.
- Command Line Interface (CLI): text-based
- Security Device Manager (SDM): web-based GUI
- Basic router ISR setting via SDM.
- Set up an ISR router via CLI.
- CLI access levels.
- CLI help features: command completion, error markers, command history, and so on.
- Initial router configuration.
- Customer plant equipment - CPE: Types of customer connections over a WAN:

point-to-point, Circuit-switched, Packet-switched.

- Factors that affect WAN connection type selection (bandwidth, cost, coke).
- Connecting CPE to an ISP Provider:
rhythm, CSU / DSU
- Switch configuration.

Routing :

- Conversion and Routing Concepts:
 - Network / Shifter Environment - Configuration and implementation.
 - Virtual Local Area (VLAN) partitioning - VLAN design and application.
 - Router mode / configuration.
 - Routing between VLANs.
 - Layer 3 switching
- Routing Tables: Definition, Path Concept, Static Assignment, or Dynamic - Concept of Routing Protocols.
- One path components: destination, subnet mask, default gateway, route cost, or metric.
- Details of a routing table: Directly linked routes, Static routes, Dynamic routes, Predetermined route.
- Meaning of static and dynamic path configuration.
- Distinctive vector routing algorithm characteristics.
- Examples of routing internals based on the distance vector algorithm: RIP - Routing Information Protocol and EIGRP - Enhanced Interior Gateway Routing Protocol.
- Link state routing algorithm characteristics.
- Example of internal routing protocol based on the link state algorithm: OSPF - Open Shortest Path First, OSPF configuration in areas
- Routing Protocol Selection Criteria: Ease of Management, Configuration and Efficiency.
- External routing protocols.
 - Separation of the Internet into stand-alone systems - explanation, association of DP with Provider.
- Separation between internal and external routing protocols.
- "Border Router" concept.
- Example of a routing protocol based on the distance vector algorithm: BGP - Border Gateway Protocol.
- Use Access Control Lists (ACLs): standard, extended IPv4 ACLs, IPv6 ACLs.

Laboratory:

- Create subnetworks from a given network.
- Assign / Apply IP addresses and subnet mask.
- NAT configuration.

	<ul style="list-style-type: none"> • Tools and equipment needed to configure devices. • CISCO IOS software: <ul style="list-style-type: none"> ◦ The boot process (commands: show version, dir flash :, boot flash :) • CISCO CLI and SDM. • CISCO CLI commands (e.g. show commands). • Using Cisco IOS CLI to run an initial / basic configuration of the router. <ul style="list-style-type: none"> ◦ Configuring serial and Ethernet interfaces on a router. ◦ Configure a default route for the router. • Configure a Cisco router to act as a DHCP server. • Set up static NAT on a Cisco router to allow Internet access for an internal server. • Backup and restoration of configuration files using TFTP server. • Logging and saving the configuration file from a terminal. • Setting NAT via SDM. • CISCO Switch Configuration: <ul style="list-style-type: none"> ◦ Connecting the appropriate cables to the switch. ◦ Turning on the switch and starting POST. • Setting up a CISCO switch using Cisco IOS CLI: Assigning an IP address to the default virtual local network management interface - VLAN1. Connecting the standalone local network switch to the router, Verifying connection, Configuring port security to prevent unauthorized use, Cutting unused ports. <ul style="list-style-type: none"> • Identifying / Affiliating with a routing table with the command "netstat -r". • Using the "Wireshark" software to understand / analyze the protocols taught. • Understanding RIP protocol and routing RIP implementation on an ISR router. • Understanding OSPF protocol and OSPF implementation routing to ISR router. • Creating areas for OSPF routing. • Simple protocol BGP configuration. • Implementing VLAN on a network.
Teaching Methodology	
Bibliography	<ul style="list-style-type: none"> • Computer Networking: The Complete Guide. United States: Murphy & Moore Publishing. 2022, ISBN: 9781639871254 • F.J. Kurose, W.K. Ross, "Computer Networking: A Top-Down Approach", Addison-Wesley, 6th Ed., 2012, ISBN 0-13-285620-4. • A.S. Tanenbaum, D.J. Wetherall, «Δίκτυα Υπολογιστών», (Μετάφραση: Φ. Σκουλαρίκης, Γ. Ξυλωμένος), 5η Έκδοση, Εκδόσεις

	<p>ΚΛΕΙΔΑΡΙΘΜΟΣ, 2011.</p> <ul style="list-style-type: none">• Ν. Γραμμένος, «Τεχνικός Δικτύων Υπολογιστών», Εκδόσεις ΚΛΕΙΔΑΡΙΘΜΟΣ, ISBN : 978-960-461-289-5.• Κ. Αρβανίτης, Γ. Κολυβάς, Σ. Ούτσιος, «Τεχνολογία Δικτύων Επικοινωνιών», Παιδαγωγικό Ινστιτούτο, Υπουργείο Εθνικής Παιδείας και Θρησκευμάτων, Ελλάδα.• CISCO CCNA Routing and Switching course, CISCO Networking Academy, 2013.			
Assessment		Participation in class	10%	
		Continuous/Formative assessment (home work)	20%	
		Mid-term examination	30%	
		Final examination	40%	
Language	Greek			

ANNEX 2 - COURSE DESCRIPTION

Course title	Network Management				
Course code	NETW 0304				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	2nd Year, 3rd Semester				
Teacher's name					
ECTS	6	Lectures / week	3	Laboratories / week	2
Course Purpose and Objectives	<p>Students are expected to acquire the necessary knowledge and skills to be able to:</p> <ul style="list-style-type: none"> • Use and configure communication protocols / management protocols / network security protocols; and Perform tasks related to installation, control, management, verification of network connectivity and protocol analysis using packet capturing software 				
Learning Outcomes	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Describe, use and configure communication protocols / management protocols / network security protocols using the seven layer model architecture. • Describe the process of troubleshooting, collecting information, detecting physical problems, isolating connectivity issues and • Perform computer network documentation . • Use software tools and / or laboratory instruments to perform tasks related to installation, control, management, verification of network connectivity and protocol analysis using packet capturing software . 				

Prerequisites		Required	
Course Content	<p>Theory:</p> <p>(T + L) Computer Management :</p> <ul style="list-style-type: none"> • User Management • Management of user groups • Management of security policies (users and groups) • Printer Management • Management of printing jobs • User profiles <p>(T) Network and Systems Management :</p> <ul style="list-style-type: none"> • Network management categories: <ul style="list-style-type: none"> o Network performance management o Error management o Cost management o Security Management • System management model: <ul style="list-style-type: none"> o Information Issues o Functional Sides o OSI Communication Issues o Organizational Sides <p>(T) Troubleshooting Networks I :</p> <ul style="list-style-type: none"> • Description of the troubleshooting process, Collecting information. • Detection of physical problems • Isolation of connectivity issues. • Importance of documentation. • Interactions with the help desk center. <p>(T + L) Troubleshooting Networks II :</p> <ul style="list-style-type: none"> • Methodologies: <ul style="list-style-type: none"> o Effective troubleshooting with reference to the OSI or TCP / IP layers. o Troubleshooting approaches: Top-to-bottom, bottom-up o Useful network diagrams: Physical topology of the network, Logical topology of the network. <p>Tools - Software:</p> <ul style="list-style-type: none"> o Documentation and reporting tools. o Management system tools. o Protocol analysis programs. <p>• Tools - Materials:</p> <ul style="list-style-type: none"> o Cable testers. o Digital multimeters. 		

Portable network analyzers.

- Troubleshooting Layer 1 and Layer 2 issues.
 - o Possible problems (e.g. loss of connection, poor network performance, loose or incorrect cable termination, damaged interface or cable,
 - o Possible problems on Layer 2: Possible diagnosis from network analysis programs.
 - o Troubleshoot local network connectivity problems on switches: Check LEDs, cable verification, configuration, and duplex settings.
- Troubleshooting Layer 3 issues.

- o Avoiding problems by defining a correct range of computer / needs addresses and proper planning.
- o Possible problems due to wrong design and configuration of IP addressing: overlapping subnetworks, subnet mask errors, insufficient number of addresses available through DHCP.
- o Probable problems due to DHCP and NAT operation.
- o Common routing issues: Incorrect static route entry, Incorrect routing protocols, Faults / Errors at the lower OSI layers.
- o Routing table entries.

- Troubleshooting Layer 4 and above issues.
 - o Use of tools and utilities to verify connectivity on local and remote networks.

(T) Management Standards (6 periods):

- SNMP management
- Command types of the SNMP protocol
- Management Information Base (MIB)
- MIB II, RMON, RMON2

Laboratory:

(T + L) Computer Management :

- User Management
- Management of user groups
- Management of security policies (users and groups)
- Printer Management
- Management of printing jobs
- User profiles

(L)

- Use of Network and System Management tools (e.g. HP free tools and / or 60-day trial tools)

Using the "Wireshark" software to understand / analyze network packets

(E)

(4 periods)

- Physical problem detection using: ipconfig, ping, netstat, traceroute /

tracert, nslookup.

- Use of Network and System Management tools (eg HP free tools and / or 60-day trial tools)

Using the "Wireshark" software to understand / analyze network management packets

(T + L) Troubleshooting Networks II (12 + 8 periods):

- Methodologies:

- o Effective troubleshooting with reference to the OSI or TCP / IP layers.
- o Troubleshooting approaches: Top-to-bottom, bottom-up
- o Useful network diagrams: Physical topology of the network, Logical topology of the network.

Tools - Software:

- o Documentation and reporting tools.
- o Management system tools.
- o Protocol analysis programs.

- Tools - Materials:

- o Cable testers.
- o Digital multimeters.
- o Portable network analyzers.

Troubleshooting Layer 1 and Layer 2 issues.

- o Possible problems (e.g. loss of connection, poor network performance, loose or incorrect cable termination, damaged interface or cable,
- o Possible problems on Layer 2: Possible diagnosis from network analysis programs.
- o Troubleshoot local network connectivity problems on switches: Check LEDs, cable verification, configuration, and duplex settings.

Troubleshooting Layer 3 issues.

- o Avoiding problems by defining a correct range of computer / needs addresses and proper planning.
- o Possible problems due to wrong design and configuration of IP addressing: overlapping subnetworks, subnet mask errors, insufficient number of addresses available through DHCP.
- o Probable problems due to DHCP and NAT operation.
- o Common routing issues: Incorrect static route entry, Incorrect routing protocols, Faults / Errors at the lower OSI layers.
- o Routing table entries.

- Troubleshooting Layer 4 and above issues.

- o Use of tools and utilities to verify connectivity on local and remote networks.

Further information about laboratories:

- Use CISCO IOS CLI "show" commands to verify network status (e.g. show interfaces, show ip interfaces, display ip interface, show ip route, show

	<p>running config, and so on).</p> <ul style="list-style-type: none"> • Using ping, telnet, ssh commands / programs to verify connectivity of local and remote hosts. • Use of Network Management tools (eg HP free tools and / or 60-day trial tools) <p>Using the "Wireshark" software for verification of protocol functions. (E)</p> <ul style="list-style-type: none"> • Use of Network Management tools (e.g. HP free tools and / or 60-day trial tools) <p>Using the 'Wireshark' software for protocol analysis.</p>		
Teaching Methodology			
Bibliography	<ul style="list-style-type: none"> • F.J. Kurose, W.K. Ross, "Computer Networking: A Top-Down Approach", Addison-Wesley, 6th Ed., 2012, ISBN 0-13-285620-4. Ελληνική Μετάφραση: «Δικτύωση Υπολογιστών», Εκδόσεις Γκιούρδα, 2004. • A.S. Tanenbaum, D.J. Wetherall, «Δίκτυα Υπολογιστών», (Μετάφραση: Φ. Σκουλαρίκης, Γ. Ξυλωμένος), 5η Έκδοση, Εκδόσεις ΚΛΕΙΔΑΡΙΘΜΟΣ, 2011. • Ν. Γραμμένος, «Τεχνικός Δικτύων Υπολογιστών», Εκδόσεις ΚΛΕΙΔΑΡΙΘΜΟΣ, ISBN : 978-960-461-289-5. • Κ. Αρβανίτης, Γ. Κολυβάς, Σ. Ούτσιος, «Τεχνολογία Δικτύων Επικοινωνιών», Παιδαγωγικό Ινστιτούτο, Υπουργείο Εθνικής Παιδείας και Θρησκευμάτων, Ελλάδα. • Θ. Τσιλιγκιρίδης, Γ. Αλεξίου, Χ. Μπούρας, Χ. Μαμαλούκας, Π. Αγγελόπουλος, «Μετάδοση Δεδομένων & Δίκτυα Υπολογιστών I & II», Παιδαγωγικό Ινστιτούτο, Υπουργείο Εθνικής Παιδείας και Θρησκευμάτων, Ελλάδα, 2000. • CICSO CCNA Routing and Switching course, CISCO Networking Academy, 2013. 		
Assessment		Participation in class	10%

		Continuous/Formative assessment (home work)	20%	
		Mid-term examination	30%	
		Final examination	40%	
Language	Greek			

ANNEX 2 - COURSE DESCRIPTION

Course title	Electronics II				
Course code	NETW 0305				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	2nd Year, 3rd Semester				
Teacher's name					
ECTS	5	Lectures / week	3	Laboratories / week	2
Course Purpose and Objectives	<p>Students will acquire the necessary scientific knowledge and skills to be able to:</p> <ul style="list-style-type: none"> Use appropriate theorems and circuit diagrams to make calculations related to the installation and operation of electronic circuits and implement electronic circuits such as Comparators and Summing Amplifiers using Operational Amplifiers and High Frequency Amplifiers 				
Learning Outcomes	<p>At the end of the course student will be able to:</p> <ul style="list-style-type: none"> Recognize electrical and electronic components, used in information and communication technology systems circuits. Describe the basic principles of electronics and Electrical Engineering and employ appropriate theorems and circuit diagrams to make basic calculations concerning the installation and operation of information and communication technology systems circuits. Handle tools and use laboratory instruments to perform tasks related to the installation, control, and maintenance of information and communications technology. 				

Prerequisites		Required	NETW 0104 Electronics I
Course Content	<p>Theory:</p> <p>Operational Amplifier: Differential Amplifier. Features and operation of an OpAmp . Open and Closed loop OpAmp circuits. Bandwidth and gain / bandwidth product. Related English Terminology.</p> <p>Operational Amplifier Applications: Voltage Comparator. Related English Terminology.</p> <p>Operational Amplifier Applications: Summing Amplifier. Related English Terminology</p> <p>Operational Amplifier Applications: Analogue to Digital and Digital to Analogue signal conversion circuits using Operational Amplifier. Related English Terminology.</p> <p>High Frequency Amplifiers: Radio Frequency Amplifiers, Intermediate Frequency Amplifiers, Tuned Amplifiers. Related English Terminology.</p> <p>Sinusoidal Oscillators: Tuned LC circuit and oscillator operating principle. Oscillator circuits using transistors (Colpits, Hartley, and Clapp). Crystal oscillators.</p> <p>Multivibrators: Astable Multivibrator. Monostable Multivibrator. Two stable states Multivibrator (Flip Flop). Circuits and applications using the integrated circuit 555</p> <p>Laboratory:</p> <p>Experimental verification of the function of an operational amplifier and the closed loop operational amplifier circuit.</p> <p>Experimental verification of the comparator circuit operation using operational amplifier.</p> <p>Experimental verification of the summing amplifier circuit operation using operational amplifier.</p> <p>Experimental verification of the operation of an A / D signal conversion circuit operation using operational amplifier.</p> <p>Experimental verification of the operation of high frequency amplifier circuits</p> <p>Experimental verification of oscillator circuits operation</p> <p>Experimental verification of multivibrator Circuits operation</p> <p>Applications and circuits using the IC 555</p>		

Teaching Methodology				
Bibliography	<ul style="list-style-type: none">• Κ.Α.Καρύμπακα, " Γενική Ηλεκτρονική Τόμος Α", Θεσσαλονίκη, 2001• Ηλεκτρονικά Β' Τάξης, Υπουργείο Παιδείας και Πολιτισμού Κύπρου• Εργαστηριακές Ασκήσεις Ηλεκτρονικών Β' Τάξης, Υπουργείο Παιδείας και Πολιτισμού Κύπρου• Digital Electronics. N.p., Sree kamalamani Publications , 2018. ISBN: 9789385449055			
Assessment		Participation in class	10%	
		Continuous/Formative assessment (home work)	20%	
		Mid-term examination	30%	
		Final examination	40%	
Language	Greek			

ANNEX 2 – COURSE DESCRIPTION

Course title	Operating Systems II				
Course code	NETW 0401				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	2nd Year, 4th Semester				
Teacher's name					
ECTS	5	Lectures / Week	2	Laboratories / Week	3
Course Purpose and Objectives	<ul style="list-style-type: none"> Students will acquire the necessary knowledge and skills, in order to be able to: Manage services, Processes, and Devices in PC Systems Design, install and manage LINUX-based networks. 				
Learning Outcomes	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> Use software tools to handle tasks related to the installation, management, and maintenance of software for information and communication technology systems. Describe the basic principles of software deployment, deployment, and maintenance. Explain the necessities and describe the operating principles of the operating system Demonstrate the knowledge and skills required to use and manage the LINUX operating system Use the necessary knowledge and skills to install the required software (operating system, system software, and application software) on a computer. Identify malfunctions in computer systems due to software malfunctions, and use the tools and methodologies required to restore them. Provide satisfactory and effective technical support to customers and executives of an organization for the use of information technology systems equipment. 				

Prerequisites		Required	NETW 0301 Operating Systems I
Course Content	<p>Theory:</p> <p>Basic concepts, properties, and featured Operating Systems (OS).</p> <p>A brief look at the evolution of OS and the history of Linux. Explanation of the GPL / GNU license.</p> <p>Basic features of Linux, advantages and disadvantages. Navigating Linux OS using the graphical environment and commands.</p> <p>Introduction to various versions of Linux, latest versions of the OS and the kernel. Design and creation of hard disk partitioning based on installation needs. Options for installing 2 OS (Windows - Linux). Minimum specifications.</p> <p>Linux File System, description and importance of master folders, and the structure of the OS.</p> <p>The boot loader GRUB.</p> <p>Introduction to Linux shell, definition and advantages of introducing commands. Different types of shell.</p> <p>Use shells, find commands, and man pages.</p> <p>Basic commands for properties, information, and file readings from the shell. Special characters and meta-characters. Accessing and changing of environmental variables. Viewing and executing previous commands. Useful practices for shortening and executing multiple commands at the same time (multitasking).</p> <p>Using commands and forwarding results to other commands. Special characters for command redirection, piping. Useful file display programs. Running command via another command (xargs).</p> <p>Managing and editing text within files. Finding text through files and using regular expressions. Using filters and short introduction to text editor vi.</p> <p>Investigation of the file system, finding system files with commands. Changing permissions.</p> <p>Laboratory:</p> <p>Entering code and navigating OS Linux.</p> <p>Install Linux OS.</p> <p>Basic commands for managing folders and files. Using environment</p>		

	<p>variables. Commands to find information and display files. Using environment variables.</p> <p>Practicing the use of forwarded commands to manage text and files.</p> <p>Practising the use of commands to manage, find and edit text with regular expressions. Practice in using commands for file system and process management. Introduction to the graphical user interface (GUI) X (X Window, KDE or GNOME). Management and attributes. Exploring the file system in a graphical environment, differences with other OSs. Editing files and folders in a graphical environment. Editing text and saving. Using the synaptic package manager and installing applications. Enabling the remote access system.</p> <p>Practical exercises in creating accounts and groups with various characteristics and limitations. Practical exercises in network management with OS Linux. Simple exercises to safeguard the system.</p>		
Teaching Methodology			
Bibliography	<ul style="list-style-type: none">• AN INTRODUCTION TO OPERATING SYSTEMS : CONCEPTS AND PRACTICE (GNU/LINUX AND WINDOWS), FIFTH EDITION. N.p., PHI Learning Pvt. Ltd., 2019. ISBN: 9789387472884• Χ. Α. Κουτρούμπα, Ο Επίσημος Οδηγός UBUNTU, Εκδόσεις Γκιούρδας Μ., 2011.• Μ. Welsh, Ο Οδηγός του Linux, Εκδόσεις Κλειδάριθμος, 2011.		
Assessment		Participation in class	10%
		Continuous/Formative assessment (home work)	20%
		Mid-term examination	30%
		Final examination	40%
Language	Greek		

ANNEX 2 – COURSE DESCRIPTION

Course title	Telecommunications				
Course code	NETW 0402				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	2nd Year, 4th Semester				
Teacher's name					
ECTS	5	Lectures / Week	2	Laboratories / Week	3
Course Purpose and Objectives	<p>Students will acquire the necessary knowledge and skills to be able to:</p> <p>Perform a complete telephone and telecommunication design, based on CYTA regulations. Perform a satellite antenna installation design and an Internet telephony systems design, control and manage the above installations.</p>				
Learning Outcomes	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Describe and analyze the basic principles and characteristics of electronic communications systems. • Describe the basic laws of propagation of the telecommunication signal (voice, image and data). • Describe the operation of basic transmitters and receivers • Describe the characteristics and operation of fixed and mobile telephony systems • Describe the features and function of analog and digital TV systems. • Provide satisfactory and effective technical support to customers and 				

	executives of an organization for the use of communications equipment.		
Prerequisites		Required	
Course Content	<p>Theory:</p> <p>Basic TV principles: Television cameras. Color TV and color TV systems (NTSC, PAL and SECAM), coding and decoding. Related English Terminology.</p> <p>TV transmitters and receivers: Modulation and transmission of the composite Video signal. TV bands and channels. Related English Terminology.</p> <p>Cable and Satellite TV: Cable TV (CATV) and signal transmission via modem. Satellite TV, satellite reception systems, and frequency bands. Related English Terminology.</p> <p>Digital television: Benefits of digital television, Digital TV services (bidirectional TV, video on demand, data transmission and Internet services). Related English Terminology.</p> <p>Satellite communication systems: Satellite communication system, microwave frequency bands. Satellite space stations, satellite orbits and subsystems of the space station. Satellite ground stations and subsystems of the ground satellite station. Parameters of satellite links. Related English Terminology.</p> <p>Laboratory:</p> <p>Introduction to the telephone installations. Materials, components, terminology, and telephone installation structure.</p> <p>CYTA regulations and technical specifications.</p> <p>Preparation of a telephone installation design.</p> <p>Telephone installation design submission, procedures for approval and implementation of the telephone installation.</p> <p>Satellite antenna installation software.</p> <p>Telephone centers and Internet telephony systems (VoIP).</p>		

Teaching Methodology			
Bibliography	<ul style="list-style-type: none"> Κωνσταντίνου, Εισαγωγή στις τηλεπικοινωνίες, Εκδόσεις: ΠΑΠΑΣΩΤΗΡΙΟΥ Π. Χριστίδης, Τεχνολογία Ηλεκτρονικών Επικοινωνιών Β' Τάξης, Υπουργείο Παιδείας και Πολιτισμού Κύπρου Π. Χριστίδης, Τεχνολογία Ηλεκτρονικών Επικοινωνιών Γ' Τάξης, Υπουργείο Παιδείας και Πολιτισμού Κύπρου Αναλογικές και Ψηφιακές Επικοινωνίες, Hwei Hsu, εκδ. Τζιόλα Pearce, J. Gordon. Telecommunications Switching. Ηνωμένες Πολιτείες, Springer US, 2013. ISBN: 9781489922151 		
Assessment	Participation in class	10%	
	Continuous/Formative assessment (home work)	20%	
	Mid-term examination	30%	
	Final examination	40%	
Language	Greek		

ANNEX 2 – COURSE DESCRIPTION

Course title	Project Work and Practical Exercise				
Course code	NETW 0403				
Course type	Compulsory, Laboratory				
Level					
Year/ Semester	2nd Year, 4th Semester				
Teacher's name					
ECTS	8	Lectures / Week	0	Laboratories / Week	7
Course Purpose and Objectives	<p>Students are expected to acquire the necessary knowledge and skills to be able to:</p> <p>Design, analyze, construct, install, maintain, upgrade, and monitor the operation of networks, including telecommunication and computing systems.</p>				
Learning Outcomes	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> • Assemble, in collaboration with the supervising engineer, parts of engineering studies for the design, construction, upgrading and maintenance of computer networks and telecommunication systems. • In collaboration with the supervising engineer, students apply basic knowledge and skills related to the design, analysis, construction, installation, maintenance, upgrade, and supervision of the operation of network, telecommunication and computer systems . • In collaboration with the supervising engineer, students carry out specific professional knowledge and skills related to the design, analysis, construction, installation, maintenance, upgrading and 				

	<p>supervision of the operation of telecommunication systems</p> <ul style="list-style-type: none"> In cooperation with the supervising engineer, students apply specific knowledge and skills related to the design, analysis, construction, installation, maintenance, upgrading and supervision of the operation of computer systems. Comply with the regulations and directives required by national and international legislation related to information and communication technologies. 		
Prerequisites		Required	NETW 0303 Computer Networks III
Course Content	<p>The project exercise includes a comprehensive computer networking exercise. The student is asked to design a medium-sized company network and then create that network in the Cisco packet tracer. During the exercise the student configures the network devices according to the specifications mentioned in the exercise using in the majority all the modules of the course theory Networks I, II and III as well as all the network tools that have been taught to solve various problems for the proper functionality of the project.</p>		
Teaching Methodology			
Bibliography	<ul style="list-style-type: none"> The Bibliography from all modules of the course. 		
Assessment	Participation in class	10%	
	Mid term evaluation to the project	40%	
	Final evaluation to the project	50%	
Language	Greek		

ANNEX 2 – COURSE DESCRIPTION

Course title	NETWORK SECURITY				
Course code	NETW 0404				
Course type	Compulsory, Theoretical / Laboratory				
Level					
Year/ Semester	2nd Year, 4th Semester				
Teacher's name					
ECTS	7	Lectures / Week	3	Laboratories / Week	3
Course Purpose and Objectives	Students will acquire the necessary knowledge and skills to become able to: <ul style="list-style-type: none">Identify key security issues in PCs and networksApply and configure programs / security devices and recovery of computer networks.				
Learning Outcomes	At the end of the course, the student will be able to: <ul style="list-style-type: none">Describe, implement and format communications / connection / application / management / security protocols of the computer architectural model.Identify key security issues, describe key security principles, implement and modify computer network security programs / devices.Use software tools and / or laboratory instruments to perform tasks related to installation, control, management, network status verification and protocol analysis, security and maintenance of computer hardware.Recognize the conflicting relationship of high network performance with network security requirements.				
Prerequisites		Required			
Course Content	Theory:				

Information Security (6 periods):

- Authenticity
- Integrity
- Confidentiality
- Denial of identity
- Validity
- Terminology explanation

Basic Network Security :

- Description of high risk (external, internal).
- Threats to access networks.
 - Phishing
- Infringement / Attack Methods.
 - a virus, worms, trojan horses.
 - Attacks on passwords
 - Network monitoring
 - Masquerade
 - Attacks at the application level
 - Denial of service attacks, brute force attack.
 - spyware, adware, popups, spam,
- Setting a security policy.
- Security procedures.
 - Firewall
 - anti-spam filtering
 - virus detector
 - anti-spyware
 - software upgrades
- Using the firewall to protect against attacks.

Security Techniques :

- Symmetric encryption
- Asymmetric encryption
- Digital signatures

Security Technologies :

- One-time passwords and passwords for user authentication
- Identification / Analysis of security technologies (following paradigms):
 - SSL / SSH / SOCS
 - Radius / Tacacs
 - PAP / CHAP
 - Single sign on
 - Kerberos
 - IPSec (IP security)
 - Firewall
 - WPA, WEP

	<p>Disaster Avoidance :</p> <ul style="list-style-type: none"> • Recovery - Disaster recovery • Continuity Plan • Backup Copy of Information <p>Laboratory:</p> <ul style="list-style-type: none"> • Using Network Security Tools (e.g. HP free tools and / or 60-day trial tools) Using the "Wireshark" software to understand / analyze network security modes • Installing / Configuring security programs / devices (e.g. antivirus scanner, spy scanner, firewall). • Using Network Security Tools (e.g. HP free tools and / or 60-day trial tools) Using the "Wireshark" software to understand / analyze network security modes • Use Network Security Tools (e.g. HP free tools and / or 60-day trial tools) Using the "Wireshark" software to understand / analyze network security modes • Installation / Configuration of safety devices (e.g. protection area). • Using Network Security Tools (e.g. HP free tools and / or 60-day trial tools) Using the "Wireshark" software to understand / analyze systems security <p>Use recovery tools and keeping a backup of information</p>
Teaching Methodology	
Bibliography	<ul style="list-style-type: none"> • The "Essence" of Network Security: An End-to-End Panorama. Germany, Springer Nature Singapore, 2020. ISBN: 9789811593178 • F.J. Kurose, W.K. Ross, "Computer Networking: A Top-Down Approach", Addison-Wesley, 6th Ed., 2012, ISBN 0-13-285620-4. Ελληνική Μετάφραση: «Δικτύωση Υπολογιστών», Εκδόσεις Γκιούρδα, 2004. • A.S. Tanenbaum, D.J. Wetherall, «Δίκτυα Υπολογιστών», (Μετάφραση: Φ. Σκουλαρίκης, Γ. Ξυλωμένος), 5η Έκδοση, Εκδόσεις ΚΛΕΙΔΑΡΙΘΜΟΣ, 2011.

	<ul style="list-style-type: none">• Ν. Γραμμένος, «Τεχνικός Δικτύων Υπολογιστών», Εκδόσεις ΚΛΕΙΔΑΡΙΘΜΟΣ, ISBN : 978-960-461-289-5.• Κ. Αρβανίτης, Γ. Κολυβάς, Σ. Ούτσιος, «Τεχνολογία Δικτύων Επικοινωνιών», Παιδαγωγικό Ινστιτούτο, Υπουργείο Εθνικής Παιδείας και Θρησκευμάτων, Ελλάδα.• CICSO CCNA Routing and Switching course, CISCO Networking Academy, 2013.			
Assessment		Participation in class	10%	
		Continuous/Formative assessment (home work)	20%	
		Mid-term examination	30%	
		Final examination	40%	
Language	Greek			

ANNEX 2 – COURSE DESCRIPTION

Course title	Legislation - Regulations - Ethics of the profession				
Course code	NETW 0405				
Course type	Compulsory, Theoretical				
Level					
Year/ Semester	2nd Year, 4th Semester				
Teacher's name					
ECTS	2	Lectures / Week	2	Laboratories / Week	0
Course Purpose and Objectives	<p>Students will acquire the necessary knowledge to become able to:</p> <ul style="list-style-type: none"> • Follow national and international regulations relating to the professional activities of the engineer of computer and communications networks and apply good communication rules. 				
Learning Outcomes	<p>At the end of the course, the students will be able to:</p> <ul style="list-style-type: none"> • Comply with national and international regulations relating to the professional activities of the engineer of computer and communications networks. • Follow and apply the technical instructions of the supervising engineer, communicating in Greek and English. • Read and understand the technical instructions of the devices and tools they manage, using manuals in Greek and English. • • Comply with good communication rules. 				
Prerequisites		Required			
Course Content	<p>Organizations, bodies, services, professional associations and chambers related to the profession of the technician of computer networks and communication at:</p> <ul style="list-style-type: none"> • National level 				

	<ul style="list-style-type: none"> • European level • International level <p>Legislation and instructions related to the profession of the technician of computer networks and communication at:</p> <ul style="list-style-type: none"> • National level • European level • International level <ul style="list-style-type: none"> • (Note For specific regulations – e.g. CYTA regulations, a general reference will be made, the relevant articles of these regulations will be developed in the corresponding courses – e.g. Telecommunications). <p>Qualifications Framework, Qualification Certification, Professional Licenses, and Certificates of Private Organizations Related to the Occupation of Communications and Networks Technician at:</p> <ul style="list-style-type: none"> • National level • European level • International level <p>(Note For specific regulations – e.g. CYTA regulations, a general reference will be made, the relevant articles of these regulations will be developed in the corresponding courses - eg Telecommunications).</p> <p>Commercial and Labor Law:</p> <p>Basic rules of commercial and labor law, labor safety legislation. Labor Inspectorate. Prevention of accidents, responsibilities and sanctions. Individual and collective labor law. Resolving Engineer Disputes.</p> <p>Professional Ethics:</p> <p>Intellectual Property, Foundations of Intellectual Property, Copyrights, Patents, and Commercial Secrets. Software piracy. Professional and Ethical Responsibilities, codes of ethics and professional ethics.</p> <p>Creation of Technical Documents and Professional Correspondence:</p> <p>Official and unofficial correspondence. Letters of information, instructions, quotations, technical features and specifications. Letters of complaint.</p> <p>Letters of bidding, terms of delivery and terms of payment.</p> <p>Preparation of a CV and cover letter.</p>
Teaching Methodology	

Bibliography	<ul style="list-style-type: none"> Websites, Journals, Conference papers, essays and several material around Ethics of the profession 			
Assessment		Participation in class	10%	
		Continuous/Formative assessment (home work)	20%	
		Mid-term examination	30%	
		Final examination	40%	
Language	Greek			