RESPONSE TO THE EXTERNAL EVALUATION COMMITTEE'S REPORT

"INFORMATION AND COMMUNICATION TECHNOLOGY (2 Years, Plus an Optional Foundation Year/120 ECTS, Diploma)"

CDA College would like to express its appreciation and gratitude to the External Evaluation Committee (EEC) of the methodical and very detailed report of our programme. During the visit on 4th March 2019, the College welcomed the EEC and provided every support and assistance to facilitate their work. The Council and the Academic Committee of CDA College at their meeting held on 11th March 2019, after a thorough discussion with the coordinator and the academic staff of the program of study, **have decided and have already fully implemented the suggestions raised by the EEC** so as to further strengthen the College's program of study and educational standards.

1. EFFECTIVENESS OF THE TEACHING WORK – AVAILABLE RESOURCES

1.1 Organization of teaching work

1.1.1 – 1.1.9 No Comments

1.1.10 Academic mentoring processes are transparent and effective and are also taken into consideration for the calculation of academic work load.

The College has further enhanced the academic mentoring processes of the College to be more transparent and effective and they are also taken into consideration when calculating the teaching staff work load which is included in the office hours of the academic staff. Here below are enhanced, transparent and effective academic mentoring processes:

- Advice, coach and guide
- Listening Actively
- Building Trust
- Determining Goals and Building Capacity
- Encouraging & Inspiring
- Advice on balancing teaching, research, service work and other responsibilities
- Training and inside information on the College
- Individual recognition and encouragement
- Informal feedback
- Knowledge of the informal and formal rules for advancement
- Knowledge of the procedures of the College
- Advice on scholarship
- A clear action plan for their career

1.1.11 – 1.1.12 No Comments

1.2 Teaching

1.2.1 – 1.2.4 No Comments

1.2.5 Educational activities which encourage students' active participation in the learning process are implemented.

CDA College has 45 accredited programs of study and applies a variety of educational activities promoting students' participation in the learning process. Besides the conventional educational activities such as: PowerPoint presentations, role playing and interviews, assignments, tests, quizzes, field trips, interactive board, problem base learning (PBL), flipped learning, some of the innovative educational activities applied are also the following:

1. **Facilitate independent, critical, and creative thinking**
   - **Case-based problem solving exercises** – these types of exercises help students develop analytical skills and learn how to apply academic theories to real-world problems.

   - **Debate** – this is another active learning technique that helps develop critical thinking and logical reasoning skills.

2. **Encourage effective collaboration**
   - **Small-group discussions**– there are many benefits to taking short think-pair-share breaks during a lecture.

   - **Peer instruction exercises**– one-minute paper reflections or speed problem solving questions, paired with peer to peer discussion, can be a very effective teaching strategy.

3. **Increase student investment, motivation, and performance**
   - **Brainstorm learning objectives** – Getting students involve in classroom activities increases their understanding and skill level rather than allowing them to rest comfortably with a surface knowledge.

   - **Incorporate active learning in the curriculum** and transform the classroom into an exciting, dynamic learning environment.

4. **Organize I.T maintenance events**
   - **Maintenance events** - Once per semester all CDA staff or students may bring their PCs/laptops to have them fixed / updated etc. by the ICT students under the supervision of the ICT lecturers.

1.2.6 No Comments

1.2.7 Teaching Material (books, manuals, journals, databases, teaching notes)

CDA College has fully equipped the library with updated editions and scientific journals, new electronic platforms, Databanks, Infotrack, upgraded VPN services for students and academic staff. Additionally, CDA College has four (4) libraries in Limassol, Nicosia, Larnaca and Pafos capitalizing on interlibrary loans. The students can immediately borrow books from one library to the other. Moreover, the library is regularly enriched with new editions of textbooks, magazines and e-databases. The new e-libraries EBSCO and Emerald has also many textbooks and scientific journals on all areas. Here below you can find the detailed numbers of books in the libraries. (A comprehensive booklet was given to EEC)

- The number of books in the Limassol library is: 3,660
- There are 550 books on the ICT sector.
- Most of the text books editions are from 2000 – 2019.
- Journals-Articles: 72, EBooks: 26, Databases: 25, General Information websites: 15, e-Libraries: 8.
- The total number of books in the other 3 libraries of the College (Nicosia, Larnaca and Pafos) is 6,200.
- The College is a member of electronic libraries and databases.
- College has an interlibrary loan service with the University of Cyprus, Cyprus University of Technology and several Data Banks.
- The library is using DEWEY a worldwide known library classification system for organizing the library collections,
- OpenAbekt a cloud base system for cataloguing, loading and searching of books.
- There are computers with Internet connection and searching software
- Easy access to books, periodicals, scientific journals and other reference material
- IFRS Foundation (International Financial Reporting Standards) so as to be-updated on the latest Accounting manuals and books.
- SearchBank databases through its Internet facilities, stock of videos,
- Connected with internet so that students will have free access.
- the library is regularly upgraded with new editions of textbooks, magazines and e-databases.
- CDA Library is also using e-libraries such EBSCO and Emerald and also students have VPN services through these e-learning platforms which they provided us with a lot of books, articles and researches on all programs.
- “Moodle” the e-platform of CDA College has all the tutors teaching notes updated and available to all the students.

1.3 Teaching Personnel

1.3.1 No Comments

1.3.2.2 Publications within the discipline.

Not applicable (N/A) for the particular 2-years program of study since it does not require any research activities or publications for the programs of study of 1, 2, 3 years' duration**.**

1.3.3 – 1.3.11 No Comments

2. THE PROGRAM OF STUDY AND HIGHER EDUCATION QUALIFICATIONS

2.1 Purpose and Objectives and learning outcomes of the Program of Study.

2.1.1 – 2.1.3 No Comments

2.1.4 The program's content, the methods of assessment, the teaching materials lead to the achievement of the program's purpose and objectives and learning outcomes.

The College has already incorporated all the suggestions raised by the EEC by revising the curriculum of the program of study with the addition of the following courses: (Appendix 8)

- Amend the syllabus of Introduction to Programming by incorporating Python (Appendix 1)
- Removed Discrete Mathematics, Calculus & Linear Algebra and Statistics and replaced with only one course Basic Mathematics and Statistics. (Appendix 2)
- Added a new course, Cloud Computing (Appendix 3)
- Renamed Visual Basic Programming to Visual Programming
- Added a new course, Introduction to Mobile Applications (Appendix 4)
- Added a new course, Database Design and Development (Appendix 5)

As a result, the revised structure fully achieves the program's purpose, objectives and learning outcomes.

2.1.5 – 2.1.7 No Comments

2.2 Structure and Content of the Program of Study.

2.2.1 – 2.2.6 No Comments

2.2.7 The number and the content of the program's courses are sufficient for the achievement of learning outcomes.

As it is mentioned on the previous criterion 2.1.4 above, the revision of the program and the introduction of some innovative courses have reinforced the program and now the courses are sufficient for the achievement of the learning outcomes. (See attachments 1-5)

2.2.8 The content of the program's courses reflects the latest achievements in science, arts, research and technology.

As it is mentioned on the previous criterion 2.1.4 above, the revision of the program and the introduction of some innovative courses, and the updating and enrichment of the content; the program now reflects the latest achievements in science, arts and technology. (See attachments 1-5)

2.2.9 No Comments

2.3 Quality Assurance of the Program of Study. No Comments

2.4 Management of the Program of Study

2.4.1 – 2.4.2 No Comments

2.4.3 It is ensured that the program's management and development process is an academic process which operates without any non-academic interventions.

As per the Organization and Academic committees of the College, it shows that the management and development is an academic task without any non-academic interventions as shown in the Academic Hierarchy and Committees at CDA College (See Application p.178). Furthermore, the College has also prepared all the official processes incorporated in the booklet given to EEC: The Formal Policies for the Development and the Management of current and new programs. (See Application p.311).

2.4.4 The academic hierarchy of the institution, (Rector, Vice-Rectors, Deans, Chair, and Coordinators) have the sole responsibility for academic excellence and the development of the programs of study.

There is an academic hierarchy at CDA College as per the Higher Tertiary Education Law as shown in the attachment of the College Academic Hierarchy and Committees which demonstrates that they have the sole responsibility for academic excellence and the development of the programs of study (See Application p.178). Additionally, the College has also established all the official processes incorporated in: The Formal Policies for the Development and the Management of current and new programs. (See Application p.311).

2.5 International Dimension of the Program of Study.

2.5.1 The program's collaborations with other institutions.

CDA College has already 25 international collaborations agreements with foreign universities through the ERASMUS + program. Moreover, CDA College promotes the cooperation with these academic institutions/universities and attracts visiting professors and students through the exchange programs. (See Application)

Foreign instructors and students visited CDA College:

- 120 foreign instructors visited CDA College the last 4 years
- 150 foreign students from 25 EU universities

CDA Instructors and Students visited foreign Universities:

- 23 CDA Instructors and
- 30 CDA Students

2.5.2 The program attracts visiting professors

Further to the criterion 2.5.1 above, the program attracts foreign professors and students visited CDA College:

- 120 foreign instructors visited CDA College the last 4 years
- 150 foreign students from 25 EU universities

Moreover, CDA College, in consultation with the lecturers of the program of study, will invite visiting professors on a regular basis on specialized subjects of the program. Some of them are:

- Charis Chiromeridis from The Department of Information Technology Services (DITS) a Government body responsible for matters concerning the promotion and application of Information Technology and e-Government in the Public Sector.
- Dr. Panayiotis Panayiotou from DotCY about technological advancements as they have clients in Russia and Middle East.
- Dr. Christos Makarounas from TEPAK - Interconnected Networks or Networks on Chip.
- Stella Komninou - Graphic Designer for the course Introduction to Multimedia
- George Georgiou - Web page Designer for the course E-Business
- Dr. Yiorgos Demetriou, Computer Science and Engineering, Frederick University

2.5.3 Students participate in exchange programs

Further to the criterion 2.5.1 above, the CDA Instructors and Students visited foreign Universities are:

- 23 CDA Instructors and
- 30 CDA Students

For the time being there is not much interest by the ICT lecturers and students to visit foreign universities. We continuously encourage them to take advantage of the exchange programs in the future.

2.5.4 The academic profile of the program of study is compatible with corresponding programs of study in Cyprus and internationally

The College has already incorporated all the suggested changes by the EEC such as the revised structure, the introduction of some innovative courses, the revision of the content of some courses and it will now definitely reflect the latest achievements in science, arts and technology. Through these applied changes the academic profile of the program of study is now compatible with corresponding programs in Cyprus and internationally.

2.6 Connection with the labor market and the society.

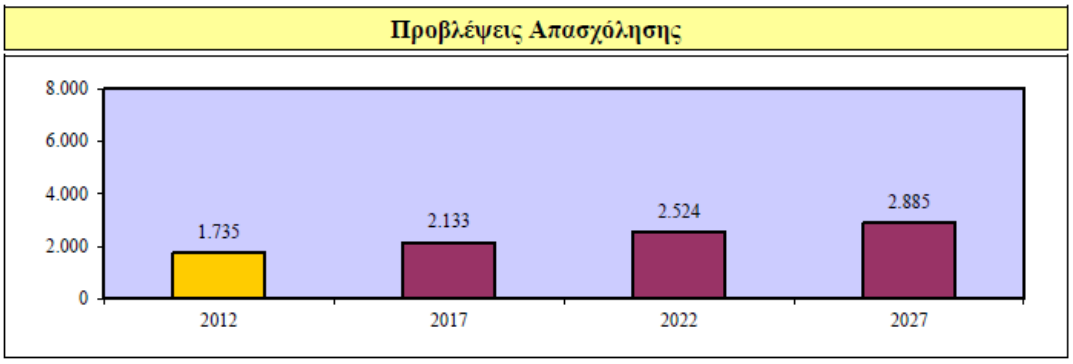
2.6.1 – 2.6.2 No Comments

2.6.3 Benefits for the society, deriving from the program are significant.

This two-year vocational program will offer the opportunity to people (students) who would like to acquire ICT qualifications and technical skills in two years and be able to join the professional sector. Additionally, the graduates of this program of study would be able to work in SME organizations as ICT technician, support officer, information system support, I.T sales professional. Additionally, if in the future the graduates would like to continue for further studies they will have more experience of the actual working field and be able to pursue further their studies.

Furthermore, this ICT middle level 2-year vocational program will benefit student as the research conducted by The Human Resource Development Authority of Cyprus (HRDA) (ΑνΑΔ) forecasts of employment needs in economic sectors and occupations in the Cyprus economy, covering the period 2017 – 2027. The findings showed that among the middle level occupations with the highest employment demand is also the Information and communication technology installers, servicers, and technicians (ICT 2 year-program), which shows that there is an increasing rate as it shows below where, in 2017 there was a need of 2,133 jobs, up to the year 2022 need of 2,524 and up to the year 2027 need of 2,885 jobs.

5.1.3.5. Τεχνικοί τεχνολογιών πληροφορίας και επικοινωνίας



3. RESEARCH WORK AND SYNERGIES WITH TEACHING

Not applicable (N/A) for the particular 2-year program of study since it does not require any research activities or publications for the programs of study of 1, 2, 3 years duration. Also, we would like to clarify that Dr. Pavlos Panayi published only one article on computer science not three, the extra articles ware copy/paste by mistake.

4. ADMINISTRATION SERVICES, STUDENT WELFARE AND SUPPORT OF TEACHING WORK

4.1 Administrative Mechanisms. No comment

4.2 Infrastructure / Support

4.2.1 – 4.2.5 No Comments

4.2.6 Teaching materials (books, manuals, scientific journals, databases) are updated regularly with the most recent publications.

As mentioned in criterion 1.2.7 above, the library at CDA College is fully equipped with updated regularly with recent editions and scientific journals, electronic platforms, Databanks, Infotrack, VPN services for students and academic staff. CDA College has four (4) libraries in Limassol, Nicosia, Larnaca and Pafos capitalizing on interlibrary loans. The students can immediately borrow books from one library to the other. Additionally, the library is regularly upgraded with new editions of textbooks, magazines and e-databases. Moreover, the students and academic staff can also search scientific articles, statistics on travel and tourism issues from our new e-libraries EBSCO and Emerald. (A comprehensive booklet given to EEC)

4.2.7 The teaching personnel are provided with training opportunities in teaching method, in adult education, and in new technologies on the basis of a structured learning framework.

The College continually encourages and supports the faculty staff to participate in training workshops and seminars. Additionally, once a year all faculty staff attends a seminar on adult education and learning the latest adult teaching strategies and techniques. (See Application and Attachments 6 & 7)

4.3 Financial Resources

4.3.1 No Comments

4.3.2 The allocation of financial resources as regards to academic matters, is the responsibility of the relevant academic departments.

As per the Organization and Academic committees of the College, it shows that the management and development and the allocation of financial resources is an academic task without any non-academic interventions as shown in the Academic Hierarchy and Committees at CDA College. (See Application). Furthermore, the College has also prepared all the official processes incorporated in the booklet given to EEC: The Formal Policies for the Development and the Management of current and future programs.

4.3.3 – 4.3.4 No Comments

5. DISTANCE LEARNING PROGRAMS (N/A). Not Applicable

6. DOCTORAL PROGRAMS OF STUDY (N/A). Not Applicable

FINAL REMARKS - SUGGESTIONS

Aς per the final remarks raised by the EEC, the ICT program of study **does not have significant weaknesses**. The Academic Committee and the Management of CDA College has seriously studied the report and suggestions of the EEC and **has fully implemented all the suggestions raised** so as to further enhance the educational quality and standards of the program of study.

A. Program and Syllabi Update

The College has already incorporated all the suggestions raised by the EEC by revising the curriculum of the program of study with the addition of the following courses: (Appendix 8)

- Amend the syllabus of Introduction to Programming by incorporating Python (Appendix 1)
- Removed Discrete Mathematics, Calculus & Linear Algebra and Statistics and replaced with only one course Basic Mathematics and Statistics. (Appendix 2)
- Added a new course Cloud Computing (Appendix 3)
- Renamed Visual Basic Programming to Visual Programming
- Added a new course Introduction to Mobile Applications (Appendix 4)
- Added a new course Database Design and Development (Appendix 5)

As a result, the revised structure with the introduction of some innovative courses and the revision of the content of some courses; now the program of study definitely reflects the latest achievements in science, arts and technology and fully achieve the program's purpose, objectives and learning outcomes.

B. Online Methods and Material

1. ICT Seminar

As per the suggestion of the EEC, CDA College has added a seminar each year, so as to enable students to read, communicate and present a technical topic. Addition of an innovative seminar on new technologies such as e-commerce. (Appendix 6)

The purpose of the seminar:

- Students to be able to read, communicate and present a technical topic
- to design, implement and manage the security policy of the website and the data being transferred.
- Choose electronic payment systems supported by the website.
- Supervise the website development team.
- Inform and manage the site.
- Evaluate the function of the site and select the promotion channels.
- Adapt the policies of the site to current legislation.

2. Online Learning Methodology

As per the suggestion of the EEC, CDA College has further enriched the online learning methods by enhancing the capabilities of Moodle, our online leaning platform by uploading some e-lectures: (Appendix 7)

- YouTube video lectures or technical assignments,
- Downloadable pre-recorded lectures
- Microsoft PowerPoint presentations with or without voice-over
- The students will work on these e-assignments and upload their solutions on the web and
- The lecturers will evaluate and do e-assessment through Moodle.

Finally, CDA College firmly believes that all the observations/suggestions raised by the EEC have been fully materialized. We strongly believe that will further reinforce, improve and upgrade the ICT sector. Moreover, the ICT program will continue having outstanding graduates and strengthening the ICT/Business industry and will be able to offer high quality educational services to the students and it will also contribute to the local socio-economic development of Limassol area and Cyprus in general.

Attachment 1 COM115 Introduction to Programing

Course Title	**Introduction to Programming**				
Course Code	**COM 115**				
Course Type	Compulsory				
Level	Diploma				
Year / Semester of Study	1st Year A Semester				
Lecturer's Name	Olga Pelekanou				
ECTS	6	Lectures / week		Labs / week	3
Course's Aim and Objective	By the end of the program students will have gained a fundamental understanding of programming in Python by creating a variety of scripts and applications for the Web and for systems development. Python is a versatile programming language, suitable for projects ranging from small scripts to large systems. The certificate program emphasizes best practices such as version control, unit testing and recommended styles and idioms. Students will explore the large standard library of Python 3.0, which supports many common programming tasks.				
Learning Outcomes	• Identify/characterize/define a problem • Design a program to solve the problem • Create executable code • Read most Python code • Write basic unit tests				
Prerequisites	None				

Course Syllabus	**Week**	**Contents of the Course**
	1.	Introduction to Python General Introduction, Basic Data Types, Functions
	2.	Functions, Booleans, Modules
	3.	Sequences, List, Tuples
	4.	Dictionaries, Sets, Exceptions Files and Text Processing
	5.	Unicode, Advanced Argument passing, List and Dict Comprehensions, Testing
	6.	Lambda, Functional Programming Object Oriented Programming

	7.	More on Subclassing Multiple Inheritance Special Methods
	8.	Revision. Mid-Term
	9.	System Development with Python: Desktop GUIs: wxPython
	10.	More OO: Special methods, magic methods Iterators and Generators
	11.	Decorators, Context Managers,
	12.	Packages and Packaging
	13.	Web Development Class, Python Specific Formats, Interchange Formats, Data Bases
	14.	Revision
Methodology	Lectures, presentations, articles discussion, independent and private study, preparation of projects, fieldwork and group work. Preparation for mid-term and final examinations	
Bibliography	**COURSE BOOK:** 1. Starting Out with Python, Author: Tony Gaddis, Publisher: Pearson 4th ed. 2017, ISBN: 0134444329 **RECOMMENDED BOOKS** 2. Starting out with programming logic and design, Author: Tony Gaddis, Publisher: Pearson 4th ed. 2015, ISBN: 0133985075. 3. Logic and design of computer programs, Author: Y. Dniel Liang. Publiher: Addison-Wesley 2nd ed. 2015.	
Evaluation	40% coursework and 60% final examination Passing mark: 50%	
Language	English	

Attachment 2 COM124 Cloud Computing

Course Title	**Cloud Computing**				
Course Code	**COM 124**				
Course Type	Compulsory				
Level	Diploma				
Year / Semester of Study	1st Year A Semester				
Lecturer's Name	Pavlos Panayi				
ECTS	6	Lectures / week		Labs / week	3
Course's Aim and Objective	This course introduces students to fundamentals of cloud computing and software development for cloud platforms. It covers topics such as virtualization, architecture of cloud systems, programming for the cloud, resource management, as well as privacy and security issues. The course introduces students to the core concepts of Big Data.				
Learning Outcomes	• describe the key concepts and technologies in cloud computing • evaluate cloud computing technologies and platforms in the context of the needs of a specific application • design data storage components for cloud-based software systems • design cloud applications for current cloud platforms • evaluate privacy and security issues for cloud infrastructure and cloud applications.				
Prerequisites	None				

Course Syllabus	**Week**	**Contents of the Course**
	1.	***Chapter* 1 Introduction** • Cloud computing definitions • Brief historical overview • Cloud delivery models • Ethics in cloud computing • Cloud and security
	2.	***Chapter 2 Cloud Service providers and the Cloud Ecosystem*** • Cloud ecosystem • Cloud computing delivery models and services • Examples of modern cloud platforms (e.g. AWS, Google Cloud Platform, Microsoft Azure) • Interoperability • Licensing • User experience

	3.	***Chapter 3 Concurrency in the Cloud*** • Overview of concurrent programming • Communication and concurrency • Coordination and synchronization • Load balancing
	4.	***Chapter 4* Overview of parallel and distributed systems** • Overview of parallelism • Parallel architectures • Speedup and scaling • Modular distributed systems
	5.	***Chapter 5 Cloud and Networking*** • Interconnection for clouds • Scalable communication architectures • Network resource management • Content delivery networks • Ad-hoc networks
	6.	***Chapter 6 Cloud Data Storage*** • Overview of storage systems and models • Distributed file systems • NoSQL databases • Data storage for online transaction processing systems • Dealing with large data • Reliability
	7.	Revision Midterm
	8.	***Chapter 7 Cloud Applications*** • Architecting cloud applications • Cloud application development • Workflow patterns • Examples and case studies: commercial applications, research applications • Dealing with software faults
	9.	***Chapter 8 Cloud Resource Virtualization*** • Virtual machines and hypervisors • File virtualization • Hardware support for virtualization • OS support for virtualization • Performance of virtual machines • VM software and platforms

	10.	***Chapter 9 Cloud Hardware and Software*** • Virtual machines and containers • Cloud hardware: warehouse-scale computers • Cluster resource management • Container architecture examples
	11.	***Chapter 10 Big Data*** • Big Data: Definition. Why and Where. The 3V challenge. Technologies. Applications. • Big Data: Computing in the cloud: Amazon Web Services
	12.	***Chapter 11 Cloud Resource Management and Scheduling*** • Policies and mechanisms • Resource utilization and energy efficiency • Application resource management • Models for cloud-based web services • Scheduling algorithms for the cloud
	13.	***Chapter 12 Cloud Security*** • Cloud security risks • Privacy and trust on the cloud • Cloud data encryption • Security of cloud infrastructure
	14.	Revision
Methodology	Lectures, presentations, articles discussion, independent and private study, preparation of projects, fieldwork and group work. Preparation for mid-term and final examinations	
Bibliography	**<u>COURSE BOOK:</u>** 1. Marinescu, Dan (2017) *Cloud Computing Theory and Practice* (2nd Ed.) **<u>RECOMMENDED BOOKS</u>** 1. Nikos Antonopoulos, Lee Gillam, (2012) Cloud Computing: Principles, Systems and Applications 2. Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, Wile, (2011), Cloud Computing: Principles and Paradigms	
	40% coursework and 60% final examination Passing mark: 50%	
Language	English	

Attachment 3 MAT111 Basic Mathematics and Statistics

Course Title	**Basic Mathematics and Statistics**				
Course Code	**MAT 111**				
Course Type	Compulsory				
Level	Diploma				
Year / Semester of Study	1st Year A Semester				
Lecturer's Name	Dr. Tryfon Pneumatikos				
ECTS	4	Lectures / week	3	Labs / week	
Course's Aim and Objective	Study some fundamental concepts of Mathematics like Systems of Arithmetic, the Dyadic System, Basic Counting Techniques, Propositional Calculus, Boolean algebra, Induction and Recursion, Alphabets and Languages. To learn several techniques and concepts of probability and statistics. Descriptive statistics, Normal distribution, Hypothesis testing with one and two samples. To learn about the t-distribution, Correlation, Regression and analysis of Variance.				
Learning Outcomes	• Understand what a system of arithmetic is. • To handle the Dyadic System and realize its connection and its importance for the computers. • To use counting techniques and principles. • To understand the relations and the differences between alphabets and languages. • To carry some investigation and some elementary research and be able to write projects on Statistics. • To realize and understand the connection and the interrelation between statistics and other disciplines and realize that statistical methods can be used almost everywhere.				
Prerequisites	None				

Course Syllabus	**Week**	**Contents of the Course**
	1	The Foundations: Logic and Proofs
	2	Basic Structures: Sets, Functions, Sequences, Sums, and Matrices
	3	Algorithms
	4	Number Theory and Cryptography
	5	Induction, Recursion, Counting
	6	Descriptive Statistics. Standard Scores.
	7	Standard Distributions. Applications.
	8	Introduction to Hypothesis Testing
	9	Mid – term examination
	10	Sampling. Hypothesis testing and samples. Comparison of samples.
	11	Significance error. Introduction to the analysis of variance.
	12	Multiple comparison. Discussion. Independent measures ANOVA
	13	Linear correlation and regression.
	14	Final revision

Methodology	Lectures, presentations, articles discussion, independent and private study, preparation of projects, fieldwork and group work. Preparation for mid-term and final examinations
Bibliography	**COURSE BOOK:** 1. Discrete mathematics and its applications, Author: Kenneth Rosen, Publisher: McGraw-Hill 7th ed. 2015, ISBN: 9780071315012. 2. Statistics explained. Author: P. R. Hinton. Publisher: Routledge 3rd ed. 2014, ISBN: 9781848723122. **RECOMMENDED BOOKS** 3. Discrete mathematics with applications. Author: S. Epp. Publisher: Cengage 4th ed. 2011, ISBN: 0495826162. 4. Understanding basic statistic. Author: C. H. Brase, C. P. Brase. Publisher: Cengage 7th ed. 2017, ISBN: 9781305954908.
Evaluation	40% coursework and 60% final examination Passing mark: 50%
Language	English

Attachment 4 COM122 Introduction to Mobile Applications

<table>
<tr><td>Course Title</td><td colspan="5">Introduction to Mobile Application Development</td></tr>
<tr><td>Course Code</td><td colspan="5">COM 122</td></tr>
<tr><td>Course Type</td><td colspan="5">Compulsory</td></tr>
<tr><td>Level</td><td colspan="5">Diploma</td></tr>
<tr><td>Year / Semester of Study</td><td colspan="5">1st Year B Semester</td></tr>
<tr><td>Lecturer’s Name</td><td colspan="5">Pavlos Panayi</td></tr>
<tr><td>ECTS</td><td>4</td><td>Lectures / week</td><td></td><td>Labs / week</td><td>3</td></tr>
<tr><td>Course’s Aim and Objective</td><td colspan="5">This course introduces students to programming technologies, design, and development related to mobile applications. Topics include accessing device capabilities, industry standards, operating systems, and programming for mobile applications using an OS Software Development Kit (SDK). Upon completion, students should be able to create basic applications for mobile devices.</td></tr>
<tr><td>Learning Outcomes</td><td colspan="5">Upon successful completion of the course, the student will demonstrate the ability to:
Explain mobile devices, including their capabilities and limitations.
Use current mobile platforms and their architectures.
Develop mobile applications on a popular mobile platform.</td></tr>
<tr><td>Prerequisites</td><td colspan="2">None</td><td></td><td colspan="2"></td></tr>
<tr><td>Course Syllabus</td><td colspan="5"><table>
<tr><th>Week</th><th>Contents of the Course</th></tr>
<tr><td>1.</td><td>Chapter 1: Mobile and Ubiquitous Computing
This chapter introduces Mobile Networks; Mobile Computing: Characteristics, Limiting factors, Hierarchy, Client/Server – Impact of Mobility; Persuasive/Ubiquitous Computing: Evolution of Computing, P2P Computing</td></tr>
<tr><td>2.</td><td>Chapter 2: The Fundamentals of Programming
This chapter introduces beginners to programming and its applications. Using a variety of examples, it explains data types, variables, functions (methods), conditionals, and more. It serves as a foundation for Chapter 2, in which readers begin to write real Java code.</td></tr>
<tr><td>3.</td><td>Chapter 3 Beginning Java
In this chapter, the reader runs his or her first programs by applying the fundamental concepts covered in Chapter 1. The chapter also begins a discussion on classes and objects.
Chapter 4: Designing Better Objects
Advanced object-oriented concepts in order to design better objects..</td></tr>
</table></td></tr>
</table>

	4.	**Chapter 5: Laying the Foundations** This chapter shows a step-by-step approach to building a Java game development framework from scratch by clearly outlining the requirements and showing each step of the design and implementation. The simple Java game development framework built in this chapter is functional, but has room for improvement. In Chapter 5, we make changes to the timing mechanism of the framework and add some utility classes to simplify basic tasks such as random number generation.
	5.	***Chapter 6: keeping it simple*** Using the game development framework built in Chapter 4, we build our first Java game–a simple single-player *Pong* clone with a twist. This chapter explains how to design and implement model classes and incorporate them into a single state class, which represents a game screen. Other topics covered include collision detection, input handling, dependency reduction, and simple physics. **Chapter 7: The next level** Building on the topics covered in Chapter 6, this chapter shows you how to build your own infinite-runner with framerate independent movement, animation states and scrolling obstacles. The chapter also begins a discussion on game optimization techniques and discusses how to minimize garbage collection.
	6.	**Chapter 8: Beginning Android Development** his chapter provides a quick introduction to Android and Android application development, bridging fundamental Java concepts with Android ones. It discusses Activities, Layouts, and Views along with other building blocks of Android applications. It teaches users how to write, build, and run event-driven applications on emulators and on physical Android devices. Other topics covered include LogCat debugging, Intents, and the Activity Lifecycle. Describe Android Platform; Create a Project; Simple App (Lists, Passing Data, IOs, Messaging); Overview of Sensors; Maps; Tutorials.
	7.	**Chapter 9: The Android Game** This chapter will combine the knowledge you've gained from building a Java game development framework and a simple Android application and walk you through the design and implementation of an Android game development framework. **Chapter 10: Building the Game** This chapter is all about creating an Android game, exploring principles of optimization and getting your application ready for publication
	8.	**Revision.** **Mid-Term**
	9.	**Chapter 11: Releasing Your Game** In this chapter, we learn how to publish our game, push updates, and incorporate social features such as a global leaderboard or an achievements system.
	10.	**Chapter 12: Continuing the Journey** Describe how to design programs that display menus and execute tasks according to the user's menu selection. Explain the importance of modularizing a menu driven program.

	11.	**Chapter 13: Windows Phone Development** Introduction to Windows Phone Development: List Box + Datat Binding, IOs, Sensors, Map Control, Web Control, Web Services, Push Notifications; Monetizing your app in Marketplace	
	12.	**Chapter 14: Mobile Social Networks** Describe Social Networks, Social Graphs, Mobile Social Networks, Applications, APs	
	13.	**Chapter 15: Crowdsourcing and Big Data** Define Crowdsoursing; Type of Crowdsourcing; Crowdsourcing with Smartphones; Define Big Data; The 3V challenge; Technologies; Applications	
	14.	***Revision***	

Methodology	Lectures, presentations, articles discussion, independent and private study, preparation of projects, fieldwork and group work. Preparation for mid-term and final examinations
Bibliography	**Required Textbook** **Title** The Beginner's Guide to Android Game Development **Author**(s) James S. Cho **Publisher /Year** Glasnevin Publishing (July 28, 2014) **Edition** 1st Ed **ISBN** 978-1908689269 **Website** http://jamescho7.com/book **Textbooks, References, Other Bibliography** **Title** Android Programming: The Big Nerd Ranch Guide **Author**(s) Bill Phillips and Brian Handy **Publisher /Year** Big Nerd Ranch Guides; 1 edition (April 7, 2013) **Edition** 1st Ed **ISBN** 978-0321804334
Evaluation	40% coursework and 60% final examination Passing mark: 50%
Language	English

Attachment 5 COM 214 Database Design and Development

Course Title	**Database Design And Development**				
Course Code	**COM 214**				
Course Type	Elective				
Level	Diploma				
Year / Semester of Study	1st Year A Semester				
Lecturer's Name	Olga Pelekanou				
ECTS	6	Lectures / week		Labs / week	3
Course's Aim and Objective	The object of this course is to teach students the general concepts of relational databases and how to design a database that is anomaly free. Students will learn to design, create, populate, and query a database by working with the Oracle ™ database engine and the SQL language. Students will also learn basic database administration skills such as creating users, granting/ revoking privileges individually or collectively to several users through the use of roles. The main objectives of this course are: • To emphasize the features of a Relational Database, in particular, the most widely used model, the relational model, and the use of the Oracle ™. Know the basic components of a relational database management system (RDBMS) and how these parts interact during the normal activities of a database engine. • To construct a conceptual model (E/R diagram) and a physical model (Relational Design) from a general data description that runs in an Oracle ™ engine. Create and populate the database and impose the necessary constraints to satisfy data integrity and operational requirements. • To normalize a database from 1NF to BCNF and the necessity of this process to avoid data anomalies by identifying partial and transitive functional dependencies by the correct application of Armstrong's inference axioms. • To write queries in SQL that uses features such as group function (AVG, MIN, MAX, COUNT), individual functions (arithmetic functions, character, conversion functions), processing of date and time information using functions such as TO_DATE, SYSDATE pseudo columns. • To write basic reports using the BREAK and COMPUTE commands of SQL Plus™.				
Learning Outcomes	• Understand terms related to database design and management • Understand the objectives of data and information management • Understand the database development process • Understand the relational model and relational database management system • Assess data and information requirements • Construct conceptual data models • Develop logical data models • Evaluate the normality of a logical data model, and correct any anomalies				

<table>
<tr><td></td><td colspan="3">Develop physical data models for relational database management systems relational databases using a RDBMS
Retrieve data using SQL
Understand database performance issues
Understand the basics of data management and administration
Understand the basics of data warehousing</td></tr>
<tr><td>Prerequisites</td><td colspan="3">None</td></tr>
<tr><td>Course Syllabus</td><td colspan="3"><table>
<tr><th>Week</th><th>Contents of the Course</th></tr>
<tr><td>1.</td><td>Database Environment
1.Explain why database management is an exciting and growing field with ample job opportunities 2. Provide definitions of key terms and concepts that describe the database environment 3. Describe data models and how they are used to capture the nature and relationships among data 4. Identify the broad spectrum of applications and describe how business organizations are using database applications for competitive advantage 5. Describe the major components of the database environment and explain how these components interact with each other</td></tr>
<tr><td>2.</td><td>Database Development Process
1.Provide a comprehensive overview of various concepts and issues in database management. 2. Provide a review of systems development methodologies, particularly the systems development lifecycle and prototyping; show how database development fits with these methodologies. 3. Describe how packaged data models can be used to shorten the development process and improve the quality of data models. 4. Describe the different roles involved in a database development team.</td></tr>
<tr><td>3.</td><td>Modeling Data
1. Describe why understanding of organizational data is important. Argue why unambiguous representation of data in logical terms is needed for implementing a database that will effectively serve the needs of management. 2. Present the E-R model as a logical model that can be used to capture the structure and much, although not all, of the semantics (meaning) of data. 3. Apply E-R modeling to several practical examples.</td></tr>
<tr><td>4.</td><td>Enhanced E-R Model and Business Rules
1.Describe the concept of supertype/subtype relationships and recognize when to use these relationships in data modeling. 2. Describe the use of specialization (top-down perspective) and generalization (bottom-up perspective) as complementary techniques for defining supertype/subtype relationships. 3. Use the notation for specifying both completeness constraints and disjointness constraints when modeling supertype/subtype relationships. 4. Describe the basic premises of a business rules paradigm and a simple framework for categorizing business rules. 5. Use the notation for modeling typical operational constraints that can be incorporated in an EER diagram.</td></tr>
<tr><td>5.</td><td>DATABASE DESIGN
Logical Database Model and the Relational Model
1. Describe the position of logical database design within the overall database development process. 2. Describe the relational model including the properties of relations, integrity constraints, and well-structured relations. 3. Describe the principles and detailed steps</td></tr>
</table></td></tr>
</table>

		involved in mapping EER diagrams to relations. 4. Describe the principles of functional dependencies, determinants, and related concepts of normalization. 5. Describe why normalization is important to stable database design with the relational model and concisely describe the various normal forms and the normalization process. 6. Describe some of the anomalies that arise when merging relations and discuss how these anomalies can be addressed. Install and configure the following software – MAMP or WAMP, Oracle Workbench, and Visio.
	6.	**Physical Database Design** 1. Argue why physical database design is a critical element in achieving overall database objectives, rather than as an afterthought. 2. Describe the factors that must be considered in distributing data effectively and how a simple model can be used to obtain at least a first-cut distribution. 3. What are indexes and what are the trade-offs that must be considered in their use. 4. Describe why denormalization must be used with great care and for specific reasons.
	7.	**Mid-term exmaniation**
	8.	**DATABASE IMPLEMENTATION** Introduction to SQL 1. Describe SQL and summarize its basic operators. 2. Provide a historical perspective of the development of SQL and its continuing development. 3. Show that SQL, although standard and a high level language, does have some flaws, and that SQL must evolve to include additional features. 4. Explain and illustrate the power of relational views for simplifying relational database processing. 5. Illustrate data definition language (DDL) commands for creating tables and views as well as for modifying and dropping tables. 6. Formulate single table SQL queries. 7. Formulate SQL queries that use functions. 8. Show how to establish referential integrity using SQL. 9. Use of the group by and order by clauses in SQL queries.
	9.	**Advanced SQL** 1. Demonstrate SQL capabilities such as multiple-table data retrieval (join and other operators such as difference, union, and intersection), explicit and implicit joining, and built-in functions. 2. Illustrate the differences between the joining and subquery approaches to manipulating multiple tables in SQL. 3. Describe triggers and stored procedures and provide examples of how these might be used.
	10.	**Client/Server Database Environment** 1. Provide a comprehensive view of the possibilities of client/server computing and the advantages and disadvantages of different architectural structures. 2. Provide a framework for discussion of tiered architectures and the vocabulary that goes along with it. 3. Describe the conceptual underpinnings of connections to remote databases.
	11.	**Internet Database Environment** 1. Describe the importance of new and emerging technologies that will carry businesses forward in a constantly evolving environment. 2. Define the different constructs of the Internet and the Web-enabled database, and provide a comprehensive view of how they work together. 3. Describe how clients pull up remote applications and data.
	12.	Data Warehousing 1. Argue the fact that many organizations today are experiencing an

		information gap; they are drowning in data but starving for information. 2. Define data warehousing and describing characteristics of a data warehouse. 3. Describe major factors that drive the need for data warehousing as well as several advances in the field of information systems that have enabled data warehousing.
	13.	Data Warehousing 4. Contrast operational systems and information systems from the point of view of data management. 5. Describe the basic architectures that are most often used with data warehouses. 6. Contrast transient and periodic data, and discuss how data warehouses are used to build a historical record of an organization. 7. Discuss the purposes of populating a data warehouse and the problems of data reconciliation. 8. Contrast data warehouses and data marts. 9. Describe and illustrate the dimensional data model (or star schema) that is often used data warehouse design.
	14.	Revision
Methodology	Lectures, presentations, articles discussion, independent and private study, preparation of projects, fieldwork and group work. Preparation for mid-term and final examinations	
Bibliography	**<u>COURSE BOOK:</u>** 1. Fundamentals of Database Systems, Ramez Elmasri and Shamkant B. Navathe, 7th Ed.2015 Pearson. ISBN: 0133970779 **<u>RECOMMENDED BOOKS</u>** 2. Databases Illuminated, Catherine Ricardo and Susan Urban, Jones and Bartlett, 3rd Ed. 2017. ISBN: 978-1-284-05694-5 3. Learning SQL, Beaulieu Alan. 2nd Ed.2009. Beijing : O'Reilly SBN: 978-0-596-52083-0	
Evaluation	40% coursework and 60% final examination Passing mark: 50%	
Language	English	

Attachment 6 Seminar On New Technologies

As per the suggestion of the EEC, CDA College has added a seminar so as to enable students to read, communicate and present a technical topic. A seminar on new technologies such as e-commerce.

The purpose of the seminar:

- Students to be able to design, implement and manage the security policy of the website and the data being transferred.
- Choose electronic payment systems supported by the website.
- Supervise the website development team.
- Inform and manage the site.
- Evaluate the function of the site and select the promotion channels.
- Adapt the policies of the site to current legislation.

The aim of the seminar:

- Students to acquire knowledge, skills and abilities to successfully practice the profession.
- Be able to adapt qualifications to the specifics of the profession.
- To acquire social skills and a new professional - work identity that will enable them to integrate into new work needs.

Topics of the seminar:

- Internet and entrepreneurship
- Introduction to e-commerce
- Ecommerce models
- Security and encryption
- Electronic payment systems
- Web Design
- Strategies to promote e-presence
- Presence assessment
- Legal aspects of e-commerce.
- Communicate and present the topics of the seminar

Attachment 7 Online Learning Methodology

As per the suggestion of the EEC, CDA College has further enriched the online learning methods by enhancing the capabilities of Moodle, our online leaning platform by uploading some e-lectures:

- YouTube video lectures or technical assignments,
- Downloadable pre-recorded lectures
- Microsoft PowerPoint presentations with or without voice-over
- The students will work on these e-assignments and upload their solutions on the web and
- The lecturers will evaluate and do e-assessment through Moodle.

The lecturers use CDA College Moodle our e-learning platform. The main advantage of e-learning is that it is self-paced. If you need to watch a video again, you can. If you want to take a break from the material, you can stop and come back to it when you are feeling refreshed.

However, with standard training – conducted in the training room, with live trainers – the student use a hands on training whether is cabling using certain tools or using computers to practice configuring operating systems or other software.

Our ICT 2-year diploma program of study is a vocational program and students have the opportunity to gain the skills needed from real life experiences in the Lab or from visiting industry affiliations.

Furthermore, as per the current education legislation and ministry rules regarding the category of the program of study should follow specific rules. The category of our ICT program of study is traditional (it's not distance learning) which specifies that a student must be present in the classroom 80% of the time.

However, since the ICT is an information technology program of study, CDA College will further enrich the use of online methodology material to enhance their knowledge on a variety of subjects such as CCNA exams, Microsoft and My SQL online lectures etc.

Attachment 8 Revised Structure of Information & Communication Technology

INFORMATION AND COMMUNICATION TECHNOLOGY PROGRAMME
(2 Years, Plus an Optional Foundation Year, Diploma)
C.D.A. College Limassol

A/A	Course Type	Course Name	Course Code	Periods per week		Period duration	Number of weeks/ Academic semester	Total periods/ Academic semester	Number of ECTS
				Theory	Lab				
A' Semester									
1.	Theory	Business English	ENG111	3		50	14	42	4
2.	Practical	Introduction to Computer Applications	COM 111		3	50	14	42	6
3.	**Practical**	**Introduction to Programming**	**COM 115**		**3**	**50**	**14**	**42**	**6**
4.	Theory	Introduction to Computing	COM 113	3		50	14	42	6
5.	Theory	Basic Mathematics and Statistics	MAT 111	3		50	14	42	4
6.	Practical	Computer System Architecture	COM 121		3	50	14	42	4
B' Semester									
1.		Elective *****		3		50	14	42	4
2.	Practical	Introduction to Computer Systems	COM 221		3	50	14	42	6
3.	Practical	Introduction to Relational Databases	INF 121		3	50	14	42	6
4.	Theory	Management and Information Systems	INF 111	3		50	14	42	4
5.	Theory	System Analysis and Design	INF 123	3		50	14	42	6
6.	**Practical**	**Cloud Computing**	**COM 124**	**3**		**50**	**14**	**42**	**4**

A/A	Course Type	Course Name	Course Code	Periods per week		Period duration	Number of weeks/ Academic semester	Total periods/ Academic semester	Number of ECTS
				Theory	Lab				
C' Semester									
1.	Practical	Communication and Networks	COM 211		3	50	14	42	6
2.	Practical	Users Support	COM 212		3	50	14	42	4
3.	**Practical**	**Visual Programming**	**COM 123**		**3**	**50**	**14**	**42**	**6**
4.	Practical	Introduction to Multimedia	INF 221		3	50	14	42	4
5.	Theory	Internet Technologies & Web Design	INF 223	3		50	14	42	6
6.	**Theory**	**Introduction to Mobile Applications**	**COM 122**	**3**		**50**	**14**	**42**	**4**
D' Semester									
1.	Practical	Fundamentals of Computer Security	COM 222		3	50	14	42	6
2.	Practical	Introduction to Java Programming	COM 215		3	50	14	42	6
3.	Practical	Network Design and Support	COM 223		3	50	14	42	6
4.	Theory	E-Business	INF 222	3		50	14	42	4
5.	Theory	Final Project	PRO 221	3		50	14	42	8

* Students may replace the course with an asterisk with one of the following four electives. Greek speaking students cannot choose GRE101 Greek Language

Elective Courses:

A/A	Course Type	Course Name	Course Code	Periods per week	Period duration	Number of weeks/ Academic semester	Total periods/ Academic semester	Number of ECTS
1	**Practical**	**Database Design and Development**	**COM 214**	**3**	**50**	**14**	**42**	**6**
2	Theory	Business & Professional Communication	ENG 121	3	50	14	42	6
3	Theory	Greek Language	GRE 101	3	50	14	42	6
4	Theory	Russian Language	RUS 101	3	50	14	42	6